

**[Transcript] The Diary Of A CEO with Steven Bartlett / E263: Harvard Professor: "10,000 Steps A Day" Is A LIE! Revealing The 7 BIG LIES About Exercise, Sleep, Running, Cancer & Sugar!!! Daniel Lieberman**

A lot of people exercise because they believe it will help them to lose fat.

One of the biggest debates on the planet.

What advice have you got for me?

So this is not a well-known fact.

But Daniel Lieberman.

He studies and teaches.

Humans are supposed to live.

Author and professor at Harvard University.

Exercise.

Disease.

Nutrition.

He has the answers on all of those things that most of us care about.

We evolved to be very physically active.

Working in the fields, hunting and gathering.

But now we have in a world where only 50% of Americans ever exercise.

And the rest of the world is headed our way.

Cancer is depression, anxiety can attribute that to less physical activity.

In fact, women who get 150 minutes of physical activity a week

have about 30 to 50% lower breast cancer risks.

And it's crazy, right?

Problem is that we spend 3% of our medical budget on prevention.

And yet 75% of the time the disease is preventable disease.

It's a completely backward, stupid system.

When you started writing this book about exercise,

was there any instant changes that you implemented into your own life?

Strength training.

The more I study the importance of doing weights, especially as you age,

the more I start kicking myself for being lazy about that.

When people retire, they become less active.

They tend to lose muscle and then that starts off a vicious cycle.

So would you say we shouldn't retire?

Well, it's a very modern Western concept.

And yes, we do pay a price for it.

So how does one go from having a negative opinion towards exercise to becoming an exerciser?

As an evolutionary biologist, there are multiple ways of doing that.

So Daniel.

What are some of the biggest myths within exercise?

Gosh, there are so many.

One of the most common, of course, is...

Daniel Lieberman.

He's been to every corner of the world visiting native tribes

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to understand how humans are supposed to live.

And now he has the answers on all of those things

that most of us care about on sleep, nutrition, exercise, disease.

You know, on disease, he says that 74% of them can be prevented.

And he knows how to prevent them.

Aging.

Running.

Are we born to run?

He tells me the story of a CEO that forces his employees to exercise and the impact that that's had on that company.

And he talks about how as humans, we've evolved to either use it or lose it.

So maybe.

Maybe retirement is a really bad idea for many of us.

One of the most thought-provoking pivotal conversations I've had on this show.

You're really going to take a lot from this one.

And I suspect, after listening, you'll probably start running too.

For exercise or from some of the decisions you've spent your life making.

Daniel, your work is so, so incredibly impressive.

Reach is such an incredible depth.

Charters, new territory.

And it's been an unbelievable, clearly very passion-driven career you had.

So my first question for you is, why are you doing this?

It's a good question.

I started off being obsessed by human evolution.

Ever since I was a kid, I was really interested in human evolution.

And I spent much of my early career working on skulls and heads and why they are the way they are.

And then I kind of got involved in public health and issues of health and disease.

Kind of through the back door, I sort of slowly shifted my research trajectory towards studying the evolution of running and then the evolution of physical activity.

And its relationship to health and disease.

And I've become part of a movement that's often known as evolutionary medicine, which is how to apply evolutionary theory and data to issues of health and disease.

Evolutionary medicine.

I've never heard that term before, but I love it.

Where has your work on evolutionary medicine, let's call it, where has that taken you?

Where has it taken you to learn to research to study?

You know, so much of what we think about in terms of health and disease comes from a tiny fragment of the world's population.

Almost entirely, like 90% of all the medical information comes from people from the United States, Canada, Europe, and Australia.

So in order to study how bodies really work and how our bodies evolve to be,

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you have to leave places like Boston where I live and go to places like Africa or Mexico or wherever to look at other populations and look at how those populations are transitioning to lifestyles like mine.

And so we've been working in Kenya for the last 15 years or so.

And I've traveled to some other parts of the world as well.

India, you know, to kind of collect some data, but mostly in Africa.

After doing all of this work and after taking in all of this information, how has it shifted your perspective on running, exercise more broadly?

Have there been any sort of significant cognitive perception changes?

Yeah, I actually had a, I mean, it doesn't happen very often, but I had kind of an epiphany moment when I was working in Mexico, we were collecting data on the Tata Humano, very also famous for their long distance running.

And there was this elderly guy, he's about 70 something years old, and he's famous for his distance running.

And I was asking him how he trained and I had asked this question of a whole bunch of other people. And the translator I was working with was always struggling to ask that question because it turns out

there's no word for training in that language.

The concept of training doesn't exist.

So she was trying to explain to this guy what my question was.

And I could, even a translator I could figure out just from his tone of voice, he was like, why would anybody run if you didn't have to?

And I suddenly realized, yeah, of course, exercise is a very weird thing, right?

Well, if you're a farmer and you're working super hard every day in the fields without machines and whatever, or if you're a hunter-gatherer and you're walking, you know, five to 10 miles a day and digging and throwing, you know, doing all kinds of hard work and you're barely getting enough food, why on earth would you go for a needless five mile run in the morning?

I mean, it's crazy, right?

The most viewed videos of yours and the most viewed moments in those videos address one question.

Do you have any idea what it might be?

No, actually.

The biggest myths in exercise.

Right.

I think you actually pointed out one there with the insight you got in Mexico, the way we exercise, going to gyms, practicing is natural or human, but evidently it's a consequence of the privilege of our lives and the comfort we have of not having to seek out our dinner every day.

What are some of the other biggest myths within exercise that you've come across in writing this book?

Gosh, there are so many.

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I had to actually limit it to 10.

So I think if you want to understand physical activity in exercise, you also have to understand inactivity.

And I think one of the biggest myths out there is that you need eight hours of sleep a night and that sitting is the new smoking, you know, that basically, and if you think about those two different myths, why is it that they were constantly told to sleep more and to sit less?

Actually, it seems a little contradictory to me, right?

And it turns out that let's take sitting first.

So, you know, there are all these, you know, the slogans like sitting is the new smoking and it's really bad for you.

And, you know, every time you sit in your chair, you lose two hours of your life and whatever. Turns out that all animals sit, right?

My dog sits, cows sit, chickens sit, every animal sits, and hunter-gatherers also sit.

In fact, if you, some of my students actually put sensors on hunter-gatherers, and we're doing some research in farmers as well, but they sit just as much as Westerners.

So, sitting is, there's nothing special about being, about today's life.

It's sitting, it's that we sit all day long and don't do anything when we're not sitting, right?

So, if you, and furthermore, the big difference is not so much how much we sit, but how we sit.

So, it turns out that people who, if you get up every once in a while, right, interrupted sitting is actually much more healthy than non-interrupted sitting for the same amount of time.

So, in other words, two people might, in the West, people sit for an average about 40 minutes at about, whereas hunter-gatherers, for example, or farmers in Africa where we work, get up every about 10, 15 minutes.

When you do that, you actually, it's like turning on the engine of your car, if you don't drive it around the block, you're turning on all kinds of cellular mechanisms, you lower blood sugar levels, all kinds of genes get activated.

And it turns out that that is by far the most important way to sit.

So, just get up every once in a while, just pee frequently, make a cup of tea, pet your dog, whatever.

Thinking when I'm on planes and I've got a long flight.

I always sit in the aisle, right, so I can get up a lot, always.

What about sleep then?

So, sleep is another interesting one.

So, this idea that you need eight hours of sleep has been around for a long time.

It's been around basically since the Industrial Revolution.

But if you actually, so colleagues in my field, so an evolutionary medicine, put sensors on people who don't have all the things that we're told have destroyed sleep.

So, think about it, we're told that TV and lights and our phones and all these things are preventing us from sleeping, you know, Edison destroyed sleep, right?

So, when you put sensors on people who don't have any electricity and they don't have TVs and they don't have phones and they don't have any of these gadgetry, right, electricity.

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They, it turns out, they sleep like six to seven hours a night.

And they don't nap.

So, this idea that natural human beings sleep eight hours a night is just nonsense.

It's just not true.

And furthermore, when you start looking at the data, seven hours, if you actually look at, if you graph sort of how many hours a night you sleep on the x-axis and sort of, you know, some outcome like cardiovascular disease or just how likely you are to die, it's kind of a U-shaped curve.

So, people who don't get much sleep are in trouble.

But the bottom of that curve is pretty much always about seven hours.

So, people actually do better if they sleep seven hours rather than eight hours.

And we're told that if you don't sleep eight hours, there's something wrong, right?

Oh, so you can oversleep.

Well, yeah.

I mean, there's also some complexity to this too, because of course, people who are ill might be sleeping more.

And so, there's some biases that creep into the, how you analyze the data.

But basically, it turns out that seven is, for most people, optimal.

But there's a lot of variation, right?

Teenagers sleep more, older people sleep less.

It's complicated.

One of the things that are popular in culture as well is this idea of doing 10,000 steps a day.

Yeah.

Now, that's fun.

You know, that started because of a Japanese pedometer.

So, right before the Olympics were in Tokyo in the 60s, they had invented the pedometer.

And they were sitting in a boardroom and they were discussing what to call the pedometer.

And they picked, just out of the blue, they picked 10,000 steps because that's apparently an auspicious number.

And it sounded about right.

There was no science behind it.

Interestingly, it turns out it's pretty good.

If you look at steps per day and health outcomes, your average hunter-gather walks between 10,000 to 18,000 steps, depends on male, female, et cetera.

And if you look at steps per day and outcomes, about around 7,000 to 8,000 steps, the curve kind of bottoms out, right?

There doesn't seem to be a huge advantage to taking more than that per day in terms of, you know, large epidemiological studies.

So, it turns out to be not that bad a goal, but it's not a, there's no, it's not a perfect number like a lot of things, right?

It's just a kind of a, it's a reasonable goal to shoot for.

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When you, when you started writing this book about exercise and running and all these subject matters, was there any instant changes or any real lasting changes that you implemented into your own life from everything you'd learned?

I think about that all the time with this podcast.

I'll have a guest on.

I'll have these mini Eureka moments and then something will stick.

So, I'm wondering, having studied all of these people all around the world and looked at their bodies and exercise and physical exertion,

what have you taken into your own life that has stuck?

I would say that I've become more serious about doing some strength training.

You know, I've always loved walking and running and, you know, endurance kinds of activities and I've always sort of hated doing weights.

You know, I just don't like it.

And I'm a wimp, you know, I'm not a very well, I'm not a very strong person.

And, you know, people tend to do what they like, right?

You get reinforcement from it.

And the more I study the importance of resistance training

and the more I study the importance of doing weights, especially as you age, the more I've started kicking myself for being lazy about that.

So, now I try to do good two strength workouts out of every week, at least, and take it more seriously.

Because especially as you age, loss of muscle mass can be really debilitating.

There's a, the technical term for that is sarcopenia.

Sarco is the Greek word for muscle and pinea is loss of muscle loss.

So, as people get older, they tend to lose muscle.

And when you do that, you become frail and you lose functional capacity.

And then that starts off a vicious cycle, right?

Once that happens, then you're less likely to be physically active.

And then, of course, when you're less physically active, your muscles begin to waste away more and it's very debilitating.

So, I think as we get older and I'm getting older,

it's more and more important, you know, to kind of incorporate that.

So, I think that's the one thing that I've taken to heart.

From what you said there, it sounds like not doing resistance training,

not lifting weights as you age almost accelerates aging in any sort of superficial sense.

But also in a physiological sense, you're increasing the speed of aging.

Yeah, I'm not sure if I'd think about it that way.

But I think I'd kind of reverse it slightly, which is that, you know, aging is just the clock ticking on, right?

There's nothing we can do about age.

But senescence is the way our bodies degrade as we get older.

And what physical activity does,

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actually maybe the most important thing about physical activity, is that it slows senescence, especially for certain organs and systems. And there are different kinds of physical activity. So, there's endurance physical activities, you know, like running, walking, etc., swimming, and then strength or resistance physical activities. And they have different kinds of ways in which they slow various properties of senescence, which we, you know, colloquially call aging. And all of them are important. And I think one of the things that's really interesting about humans, in fact, I think it may be the most important thing about this book, and you asked about myths earlier. The most important myth, I think, by far, is this idea that as you get older, it's normal to be less active. And that is just not true. We evolved to be grandparents. We evolved to live, one of the things that's most interesting about humans, maybe, is that we evolved to live about 20 years or so after we stopped reproducing. No other animal does that except orcas, maybe killer whales. But with the exception of killer whales, humans have this really weird life history. We evolved to be grandparents. But grandparents in the old days weren't retiring to Florida, or I don't know where they do it, but they do it in England or whatever, go to Mallorca or whatever, and kick up their heels and play golf or whatever with carts. Grandparents in the olden days, or in many cultures still today, are working. They're working in the fields. They're hunting. They're gathering. They're getting food for their children and their grandchildren. They're helping with childcare. And that physical activity, that's what their job is, to be physically active. But in turn, that physical activity turns on an amazing suite of physiological processes that counter-aging. It turns on repair and maintenance processes that not only keep our muscles strong, but also keep our DNA from accruing mutations, keep our mitochondria numbers high, keep the cells in our brain from accumulating gunk so that prevents Alzheimer's and other forms of dementia. I mean, for every system of the body, physical activity has benefits that slow the aging process. And so when you stop doing it, you accelerate, and that's the way in which you perceive it as accelerating aging. But really, it's the absence of physical activity which lets aging run amok.

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In your first book in 2013, the story of the human body, chapter 12, you said, use this phrase, use it or lose it, basically.

We evolved to use or lose our bodies.

And I was sat with someone recently, and I was trying to figure out why it appears that when people retire, or the other instance I've seen is,

when their elderly partner passes away, it appears as if they don't live much longer.

It's kind of like folklore or something that once you retire, your days are kind of numbered.

Yeah.

And I was trying to figure out the evolutionary reason for that, but it sounds like it's kind of what you've explained there.

Well, I mean, I think part of that is depression.

When you lose a partner, I mean, grief and depression, your cortisol levels go up, your immune system goes down.

I mean, it's really tough on your body.

I mean, psychosocial stress plays a serious physiological toll.

But also, as you just pointed out, when people retire, they become less active.

And that loss of activity has enormous effects on every aspect of our body.

I mean, on our minds, I mean, physical activity is important not just for physical health, but also vital for mental health.

And I think a lot of the problems that mental health issues we have today, depression, anxiety, some of them, to some extent, we can attribute that to less physical activity.

And as people age, becoming less physically active, again,

makes them much more vulnerable to a wide suite of diseases.

So would you say we shouldn't retire?

Well, or if you do retire, I mean, retiring is, again, another modern, weird thing, right?

Nobody retired in the past.

I mean, if you're a farmer, it's like a subsistence farmer and name it any place, right?

It's not like suddenly you hit 65 and all of a sudden,

you no longer have to work in the fields.

You work in the fields until you're dead, right?

And hunter-gatherers don't retire.

They continue to be physically active until they die, right?

Or until they get too sick.

So it's a very modern Western concept.

And yes, we do pay a price for it.

But you, of course, can replace work that you do with challenging, rewarding, fun things to do.

The important thing is just not to stop being physically active.

One of my favorite studies ever published, without a doubt,

is a study done by a guy named Ralph Paffenbarger.

He realized that places like Harvard are fantastic for studying aging,

because Harvard, like other private universities, never lets go of their alumni.

So until the day you die, they're asking you for money on a regular basis.



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So he got the Alumni Association, the Harvard Development Office, to let him follow a series of Harvard alumni from several years and keep asking them questions about their physical activity levels and also their diet and whether they smoked and stuff like that. And then he tracked them for 25, 30 years. And what he found was that the alumni, we have to correct it for every factor you could think of, that as the alumni got older, the effect of physical activity on their health outcomes was bigger and bigger. So alumni who were in their 20s, 30s, and 40s, for example, who were exercising four or five times a week, they had about 20% lower death rates. By the time they got to their 60s and 70s, the alumni who were exercising more had 50% lower death rates. So as you get older, and this has been replicated again many times, but what he showed was that as you get older, exercise becomes more, not less important for maintaining your health. I've been thinking a lot about this because I was saying to Jack, my dad is 60-ish, but he's very, very out of shape, very, very out of shape. And I was in Indonesia and I was with my girlfriend and we went and we were going white water rafting. So we had to go down this really big hill with all these stairs. It was like 300 meters of stairs. And I remember just thinking, my dad wouldn't be able to do this at his age at 60. And I want to be able to go down those stairs when I'm his age because at the bottom there was a fun activity with someone I loved. And to think that I'll get to a point in my life where not so far away in the grand scheme of things, where I won't be able to go up or down some stairs because I'm 60, because of my sort of genetic predisposition as I saw it, was quite sad. But having heard you say that, it really feels much more like a choice than it is genetics. Yeah, look, we have this expression in my field, which is that genes load the gun and environment pulls the trigger, right? Some of us have genetic predispositions towards being more likely to get diabetes or heart disease or this or that or the other. But our great, great, great grandparents in different environments weren't getting these diseases or they were getting them at much, much, much lower frequencies. And it's not because they were dying earlier. It's because these diseases were less common. So I think we too often blame our genes for many of these diseases or many of these health problems. And I'm not in any way denying the role of genetics,

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but that environment is way more important.

And we have control over our environment to some extent.

And so if you want to reduce your risk of cardiovascular disease, reduce your risk of diabetes, reduce your risk of Alzheimer's, dementia, exercises in a magic bullet.

It's not going to prevent you from getting those diseases completely, but it lowers your risk quite substantially.

And we know why too.

I mean, we have an immense amount of data on why that's the case.

For every single one of these diseases, we understand the mechanisms by which physical activity has important mechanistic effects on these diseases.

So there's epidemiological data.

There's mechanistic data.

There's personal data.

The problem is that it's hard to do.

It takes willpower to overcome the inertia of doing what's completely normal, which is wanting to take it easy.

I just flew yesterday from Denver to Boston.

And in the airport, there are these escalators right next to the stairway.

And the escalator and the stairway, it wasn't a huge stairway.

Everybody's lining up to take the escalator, and the stairs are totally free.

Being me, of course, I'm not allowed to take the escalator unless I have to.

So I run up the stairs, but those people taking the escalators, there's nothing wrong with them.

They're not lazy.

It's just an instinct.

It's an instinct to take it easy when you can.

And we now live in a world where everybody can do that, because we have escalators, and lifts, and cars, and shopping carts, and all these wonderful devices to make our lives easier.

And now you have to overcome this fundamental basic instinct to take it easy in order to be physically active.

And that's basically what exercise is.

And furthermore, if you're unfit and you're not really exercising isn't any fun, it's unpleasant.

You sweat, and you get hot, and you get cranky.

And it's not that rewarding until you get fit.

And so people hate it, right?

And then we blame them for being lazy, but they're actually just being normal.

And I think we need to have more compassion towards people who struggle to exercise.

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Quick one before we get back to this episode.

Just give me 30 seconds of your time.

Two things I wanted to say.

The first thing is a huge thank you for listening and tuning into the show week after week.

Means the world to all of us.

And this really is a dream that we absolutely never had and couldn't have imagined getting to this place.

But secondly, it's a dream where we feel like we're only just getting started.

And if you enjoy what we do here,

please join the 24% of people that listen to this podcast regularly and follow us on this app.

Here's a promise I'm going to make to you.

I'm going to do everything in my power to make this show as good as I can, now and into the future.

We're going to deliver the guests that you want me to speak to,

and we're going to continue to keep doing all of the things you love about this show.

Thank you.

Thank you so much.

Back to the episode.

This basic instinct to take it easy.

Are we evolved to be lazy, take escalator riders?

Well, I wouldn't use the word lazy,

but we are evolved to take it easy, to rest whenever possible.

Right.

So we've now got ourselves into a bit of a comfort crisis here,

because everything in our lives is optimizing us for convenience and ease.

Right.

Right.

And well, it's also, it's, it sells, right?

I mean, comfort, I mean, who prefers to sit in economy

as opposed to business class, right?

Nobody, right?

Comfort is nice, right?

Who prefers shoes that are uncomfortable, right?

We, we, we, you know, comforts, comforts, you know, we love comfort, right?

But since when is comfort necessarily better for you, right?

I mean, are comfortable shoes actually better for you than going barefoot,

or comfortable chair is better for you than we're taking the,

the left better for you than taking the stairs?

It isn't the short term, or at least it appears to be today.

Right.

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Yes.

Because we often value the short term benefit over the long term cost, right?

That's hyperbolic discounting is the technical term for that.

But, but, so we, you know, we live in a world where, where we, we, we, you know, we pay extra for, for comfort, or we, and we'll, we'll prefer it.

But, but now we also live in a world where we have to now go out of our way to be physically active because it's no longer necessary.

And so again, I go back to my original statement, which is that people have all to be physically active for two reasons and two reasons only.

When it's necessary or rewarding, when we don't make it necessary, we need to figure out ways to make it rewarding.

And, and that's hard.

It's very hard.

Making it rewarding.

So one way that you might make something rewarding is by looking at the stick.

And then the other side is maybe the carrot.

But just looking at the stick then, you were going through a series of diseases, a second figure, Alzheimer's, high blood pressure, all of these kinds of things, cardiovascular diseases.

I almost think we've come to assume that these are inevitabilities of life.

Yeah.

We'll get cancer.

One of us will get, someone in here is going to get Alzheimer's.

And that's the way we live.

So we're, we're, we're preparing to medicate when that day comes.

That's right.

I get, God forbid, diagnosed with something.

That's absolutely right.

In fact, that's what medical students today are taught, right?

If you go to medical school today, you're taught that as people get older, their blood pressure goes up.

I can tell you that's just not true.

It's in the Western world where people are physically inactive and eat crap diets, that their blood pressure tends to go up.

But there are plenty of people, I'm actually one of them, right, who don't have high blood pressure as they age.

And guess what's the best way to prevent getting high blood pressure as you age?

It's, you know, it's not like a broken record, but we have this idea that as you get older, yes, you're going to, you're, and we're lucky, right?

You know, because we don't die from smallpox when we're 30.

We're lucky to get cancer when we're 60, right?

What we've done is we've confused diseases that are more common with aging,

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with age being a cause of those diseases in the first place.  
And they're not inevitable, inevitable diseases.  
And many of them are preventable.  
And the problem is that in our society, we don't value prevention very much.  
We may talk about it, but we don't really put our money where our mouth is, right?  
In the U.S., which is arguably one of the worst healthcare systems,  
it is the worst healthcare system among the industrialized Western world,  
we spend approximately 3% of our budget, our medical budget, on prevention.  
And yet when people walk into a doctor's office, 75% of the time,  
the disease is, according to the Center for Disease Control, a preventable disease.  
So we especially spend nothing to prevent diseases that overwhelm our system  
and cause enormous amounts of misery.  
It's a completely backward, stupid system.  
And so, and the good news is it's not that hard to prevent a lot of these things.  
It takes willpower and takes education and it takes access to good quality food and whatever.  
But so, in the one sense, it's very depressing.  
On the other hand, the optimist in me says, you know, we really can do something.  
And people, even if they're not wealthy or whatever,  
I mean, there are simple things that everybody can do to improve their health outcomes.  
These diseases we encountered today as we age, and just generally in our society,  
when you look at hunter-gatherer communities,  
where you look at certain tribes around the world, maybe in Africa,  
do you see the same types of diseases in the same occurrence, level of occurrence?  
Or is there some diseases which just don't, like, I'm wondering if like,  
because you know, cancer seems to be so popular for as disease and Alzheimer's  
and these kinds of things.  
So I wonder, has that always been the case throughout human history?  
And is that the case in other parts of the world?  
That's such a good question.  
So first of all, some of these diseases are really hard to measure.  
In non-Western populations, because we don't have the diagnostic tools.  
So nobody really knows how common cancer is in a lot of parts of the world, right?  
There's just no, the data don't exist.  
That said, when you make estimates and you do look at the studies that are out there,  
and even if you look in historical records in places like Europe,  
where people have been keeping track of this,  
there is no question that cancer rates have been rising,  
and that cancer rates are much, much more common in the Western world.  
There's a strong association between cancer and wealth.  
And that's because cancer is basically a disease of energy, right?  
When your cells, because cancer is basically natural selection gone awry in the body.  
It's when cells start competing with each other in ways that cause,

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basically, and start, you know, going, you know, multiplying and dividing out of control, right?

It's a kind of natural selection.

And what is it that those cells are doing?

They're competing for energy.

And when you have more energy, like when you're eating more and being less physically active, you can basically feed those cells.

So, high levels of insulin.

Insulin is highly related to cancer.

High insulin levels are carcinogenic.

High levels of body, of energy, you could cause women, for example, to increase the amount of estrogen and progesterone that they produce.

Men produce more testosterone.

These are hormones that, of course, are good for reproduction.

But, again, we evolved to be as many babies as possible, right?

But that doesn't mean that translates into health, right?

So, more estrogen, more progesterone, increases risks of, say, breast cancer.

More testosterone increases the risk of prostate cancer.

So, if you look at most diseases, right, people are more physically active.

They have lower levels of estrogen, progesterone, testosterone.

They have lower levels of insulin.

They have lower levels of blood sugar.

All of these depressed cancer rates and, on average, people who are physically active have much lower rates of almost every single kind of cancer that you can think of.

Women who walk 150, you know, get 150 minutes of physical activity a week have, on average, about 30 to 50% lower lifetime breast cancer risks than people who are sedentary.

And yet, for some reason, this is not a well-known fact.

And we have epidemiological data.

We have mechanistic data.

We understand how and why it works.

And yet, how often do you hear about cancer prevention?

We talk about treating cancer, which is all important.

If I get cancer, I would like it treated, too.

Thank you very much.

But why don't we spend more energy and activity and have more education about how to prevent cancers in the first place?

Physical activity.

I mean, I've never heard that before.

So, that's really helped me to add more value to exercise in my mind.

You're talking there about insulin levels,

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and how that has, there's a link between your insulin levels and your chances of getting cancer.

Sugar.

Glucose.

Inflammation.

Bad.

Yeah, I mean, look, if you want to, if you want to take, like, the three things you should, you know,

if you really care about your health, don't smoke, right?

That's kind of obvious.

I think everybody knows that.

Get some exercise.

I don't think you need me to tell you that, right?

And cut down on sugar and foods

that are high in sugar and low in fiber, right?

That, you know, what we call high glycemic foods.

Those are the foods that elevate your blood glucose levels.

Your insulin levels shoot up.

And insulin, the basic function of insulin is what we call an anabolic hormone.

It's job is to store energy.

Glucose.

Glucose, but also fat.

Okay, okay.

So what insulin does is to get energy into cells.

So it's like a taxi.

It's like an Uber.

It's like a taxi.

Yeah, well, I mean, it's not a taxi.

It's like it's telling other cells to do that.

So insulin, for example, binds to other cells that are the actual taxis.

So it's like it's like calling the Uber, I would say, maybe, right?

And insulin is, you know, it's the fund.

So when you when you eat food, insulin levels go up

because this job is to store that energy.

And when you exercise, insulin levels go down

because you want to then use that energy, right?

So when cells get more energy, they're more prone to going out of control, basically.

And inflammation is caused by basically by getting you store so much fat in your cells that those fat cells start to swell.

And when those cells swell, like anything, they start to rupture.

They get damaged.

And that damage attracts the immune system, and the immune system gets turned on.

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And that causes inflammation.

So so too much adiposity, too much fat, you know, over swollen fat cells is the is a primary cause of systemic inflammation.

And inflammation is like the slow burn in our bodies that causes widespread damage to pretty much everything you can think of.

And it turns out that so the two ways to deal with inflammation are one to prevent it, right?

So don't eat foods that are pro-inflammatory.

Mike.

Anything with a lot of sugar, basically, right?

I mean, you know, the sugar is highly inflammatory or trans fats are highly inflammatory.

But also, it turns out, many people don't know this,

but you also want to turn down your immune system, right?

You want to turn the dial down.

And I don't know, just give you one guess what it is that does that exercise.

And the way it does that is that when you when you're physically active,

you're using your muscle cells, it turns out muscles are also an endocrine organ.

Your muscles are producing a molecule called interleukin-6, IL-6,

that in low levels is pro-inflammatory, but at high levels,

it's actually anti-inflammatory.

It turns down inflammation.

And your muscles, because a third of your body is muscle, right?

When you go for a run or swim or bike ride or whatever,

you're producing a ton of this stuff and it turns down levels of inflammation.

So people are physically active, even if they're overweight,

are actually controlling and regulating their inflammation.

We never evolved to regulate inflammation because in this way,

because we never evolved to be physically inactive.

Until recently, nobody was physically inactive, unless they were dying, right?

So we never evolved an alternative mechanism

to regulate our inflammation other than physical activity.

And we didn't live in a world with this much sugar.

We never lived in a world.

I mean, it's astonishing.

You pay more money for foods today that have less sugar added, right?

I mean, that's just ridiculous, right?

Because it's so cheap and sugar is, we love, everybody loves sugar.

I mean, I've gone hunting with hunter-gatherers, foraging hunter-gatherers.

And I can tell you that they're honey addicts, right?

I mean, I've gone out with these guys and they go from,

you know, if they fail on their hunt, like by 10 or 11,

if you haven't killed an animal, that's it for the day, right?

And then it turns from being a hunting expedition



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to a honey collecting expedition.

And they'll go from hive to hive to hive, get smoke, burn out the bees and just gorge themselves on more honey than I could possibly imagine to eat.

Except these are lean, physically active hunter-gatherers, and they handle it just fine.

But it's, you know, it's the Paleolithic equivalent of, you know, eating Mars bars all day long.

But they've been out doing physical activity for how long?

Yeah, I mean, the average day is about 15 kilometers of walking with some running.

Yeah, so they can cope with it.

How many hours is that?

Oh, that's two to three hours, probably.

Okay, so from that, I have commented that I need to do 15 kilometers a day for two or three hours every day.

Well, remember, it's not a prescription, right?

So that's kind of like the Paleo fantasy, sort of naturalistic fantasy, that if you live like a hunter-gatherer, somehow your role will be perfect, right?

That's basically what the Paleo diet is sort of all about, right?

And that's not true either.

Yes, you need to be physically active, but it turns out that a certain amount, you know, if you're any physical activity is better than none, right?

And if you look at the kind of any curve of any output, any health outcome, like how many years you live, or whether you're at cancer or heart disease or whatever, you know, any little physical activity, your curve starts to fall quickly, right?

Your likelihood of cardiovascular disease starts just, you know, a few minutes a day of exercise has big benefits.

But eventually that curve flattens out, right?

And it flattens out well before the hunter-gatherer level.

So you don't need to be a hunter-gatherer in terms of physical activity to get the benefits.

This is a, I've asked a few people this question.

I don't think anyone's really answered it, but I suspect you might be able to.

If you were responsible for redesigning the nature of our modern world to make it more matched and less mismatched, what are some of the first things you would do to help society benefit in terms of our happiness and our health?

I think about this all the time, because we don't seem to be turning around.

We seem to be hurtling in a direction kind of unconsciously towards artificial intelligence and moving less

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and being more sedentary and taking pills more to fix everything, lonelier than ever before.

And if we were to redesign it, blank canvas, piece of paper.

That's a tough question, because we've essentially given ourselves what we want.

I can go into a supermarket and I mean, I can do something that's unimaginable until recently.

I can have basically anything.

I can eat better than the king of France a few generations ago.

I can New York.

There's like every cuisine possibly available to me.

I don't ever have to climb the stairs.

I can take elevators.

I mean, we've made our world so convenient and comfortable, and yet there are consequences to many of the things that we crave and want.

So in an ideal world, you don't want to honor and respect people's desires, right?

I don't believe in preventing people from taking the elevator,

right, or forcing them to eat whole grain bread as opposed to white bread, right?

But if you banned white bread and you banned elevators other than for those people that need it for accessibility reasons, etc.

They would do better.

Over the long term, they'd be healthy and happier.

They would, right.

So it's really a balancing act between respecting people's liberties and choices and educating them and helping them.

So in my world, I would do more to nudge people, right?

I would instead of banning sugar, I would tax it more.

Instead of pushing all kinds of foods on people,

I would push, I mean, why don't we advertise healthy foods the way we advertise unhealthy foods, right?

I mean, when's the last time you saw an ad for just how amazingly healthy asparagus was, right?

But that doesn't get the part of my brain going, does it?

No, it doesn't.

But we could do more to nudge and encourage and help people, right?

You don't have to ban sugar and cookies, right?

But simply promote and help people help themselves, right?

Most people want to eat healthier food.

Most people want to exercise, but they live in a world where it's hard to do it.

And they live in a world where there are very few incentives.

I would make it such that healthy food would be as inexpensive as unhealthy food.

And make sure that people had incentives and make it also fun to be physically active.

For example, I mean, who doesn't like to dance, right?

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Every culture in the world has dancing, right?

Dancing is a form of physical activity.

It's social, it's fun, it's engaging.

Why doesn't every town in America sponsor dancing, right?

It would probably do an enormous amount for people's physical health and their mental health.

I mean, we could do that.

I mean, that's just one example, right?

And why is it that in medical schools, doctors don't study nutrition and they don't study exercise and they don't learn, because our medical system is designed to treat people after they get sick rather than prevent people from getting sick.

So we need to reverse how we fund health care, right?

And so schools of public health are these kind of little marginalized places where great ideas go to die, right?

And medical schools where all the money is, right?

And doctors aren't taught to, I mean, their entire fields of medicine that don't have the word preventive associated with it.

I mean, you ever heard of preventive orthodontics or preventive optometry or preventive orthopedics?

I mean, it just doesn't exist, right?

So we could do a lot more and have enormous benefits.

Chapter 11 of this book, you talk about someone who has taken their own approach to getting people moving and exercising in their own business.

That's the Bjorn Board Company.

I love that.

Bjorn Board Company.

Can you tell me about that company?

Yeah.

So I was curious about this idea of how to get, how to help people be more physically active, right?

And again, my fundamental hypothesis is that we evolve to be physically active either when it's necessary or rewarding.

And so I was curious if there was any companies in the world that have made physical activity necessary.

And I was, what if we forced people to be physically active?

And I found one.

So far, I think there's only one company in the world that I know of.

Maybe there's some others, but this is the only one I've ever found so far.

And it's the Bjorn Borg Sports Company in Sweden, where the CEO of the company is this crazy sort of exercise addict.

And he requires every member of the company to exercise.

They have sports hour every Friday at 11 o'clock.

So when I was searching around and I was thinking, right, working on the book,

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I actually got, I found an article about them and I clicked on the company website. And you know how most companies have a little contact us? So I clicked on the contact us and I wrote a little note saying, Dear Bjorn Borg Company, I'm a researcher and evolutionary biologist. I'm an interesting exercise and I'm fascinated by how your company requires people to exercise. Could I learn more? And the next morning, there was an email from the CEO of the company saying, why don't you come and visit us? So I hopped on a plane a few months later, went to Sweden and they let me, he was so nice. He just let me just go anywhere in the company. And I went to sports hour and I talked to employees throughout the company. And it was fascinating. I mean, a lot of the employees of the company, first of all, a bunch of people apparently left the company when he took over as CEO and required this. But it doesn't matter who you are, you could be working in the mail room, you could be the CEO, you could be a visiting board member, whoever you are, if you're there on Friday, you have to go exercise with them. And they have this pretty serious kind of exercise thing. And apparently some people quit. But pretty much everybody else said, you know, it's actually a pretty damn good thing. Do you agree with that approach? Well, yes and no. Every university in the world used to require, and every school, supposedly requires exercise. I'm sure you had some kind of phys ed required in your school. Those standards are slipping around the world. And more and more kids are doing less and less in school. Universities are no exception. It used to be that all universities required some degree of physical education. Mine was no exception. In fact, Harvard was a leader in that back in the, you know, 100 something years ago. And over the, since basically the 1970s, that's basically disappeared. Although most students, if you ask them, they think, yeah, it's actually a pretty good idea. So I don't know. Maybe we can bring back exercise as a, and the thing is that if you get used to it, right, when you're young, you're more likely to do it when you're older, right? Because you set, those are the, that's the age in which your habits become, become, well, your habits become your habits, right? And so there's a certain age where, where if you can keep, keep, you know, get that making it, making it a habit, you're probably more likely to continue doing it for the rest of your life.

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We kind of see it as overreach, don't we?

I was thinking about, if I was to announce one of my companies that everyone is now required to exercise, it would seem like, like tremendous overreach.

If I announced that everyone is required to read a certain book, they'd do it and it'd be fine.

And it might be seen as a positive thing, right?

It might be a representation of our values that we are learners and we're innovators and we keep, you know, nourishing our brains.

But you turned around to your team and said, listen, we're all required to, you're all required to go for a run every day or something.

People would, it just feels personal.

Yeah.

Like that's not the responsibility of an organization to tell me to go exercise.

But we have, we have company, you know, retreats.

I mean, we do all kinds of stuff where people are required to do it.

So I don't know, I challenge you, try it.

What we do, and what we've always done, we even do it with this team.

The Diary of a CEO team is about 30 people.

So we have a fitness channel in the company Slack channel, the communication channel that we use.

And in that channel, and we did this at my previous company as well, where we would enable and facilitate.

So we, someone started a women's football team.

So we enabled it and promoted it.

Someone started a men's football team.

So we enabled it and promoted it.

And this also applies to non-physical sort of exercise related clubs, like someone starts the reading club and we enabled it and promoted it.

And we also paid for it.

If they need to, if they need new kits, for example,

when the women's football team needed,

wanted to have their own uniforms, we paid for it.

Because we saw a huge value in terms of staff retention, connection, community and all those things that actually lead up to staff retention.

If we could have more social clubs outside of the office.

You know, if you're thinking about leaving a job, there's a number of things you weigh up, the pay, the job, whatever.

But you also weigh up how the community,

like the group of people I love and how much they bring to my life.

And I actually think in the remote working world,

it's something that CEOs and leaders have really not paid enough attention to, that if they really want to retain their team members,

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they should have them together as much as they can, even outside of the office, bonding in a world where screens are on the rise and pubs are on the decline in social activities and churches are on the decline.

There's less sort of institutions that connect to socially.

Work has a big opportunity to do that.

So one of my big things, always in my head,

is like, how can I get the team members of my companies

to hang out more and a multiplier to that is,

how can I get them to hang out more and move their bodies more?

Because then they'll feel better.

Right. Well, think about it. It's play, right?

Play, yeah, exactly.

And play is another thing we evolve to do, right?

Kids play and we're one of the few species that plays as adults, right?

And what is play?

Play is a way in which you learn cooperation.

You build community, but you also move your body, right?

In the first chapter of your book,

you say that you went to visit the Native American tribe,

and I'm going to try and pronounce this, the Tarahuma.

Tarahumara.

And they're famous for their long running.

Yes.

What did you learn about running from them?

Well, it's, you know, they have been famous for well over 100 years.

I mean, many people have gone to study the Tarahumara

and have commented on their amazing ability to run.

But what I really learned from them is that for them,

physical activity is spiritual.

You know, there's this book Born to Run

that describes their running and calls them

a hidden tribe of super athletes.

They're not hidden and they're not super athletes.

And the one thing that the book missed

was that the main impetus for the running,

they do these famous long distance races,

is that it's a form of prayer.

It's really very beautiful.

And it's a metaphor for life.

And it's also an opportunity to bet and sports and all that.

It's all wrapped into one.

And what I've learned was that this actually used to be

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almost universal among Native American populations,  
right, Native American tribes.  
Everybody had long distance races and ball games  
and they all had a spiritual element.  
It's just that they've retained their traditions  
because they're in a very remote part of Mexico  
that's essentially inaccessible.  
We all used to do this.  
All humans used to do this.  
And in fact, if you look around the world,  
every population has this tradition of endurance,  
endurance events.  
Some of the subject that you talk about in your book,  
but also outside of your book, is how we used to run in terms of,  
you know, I was at the foot doctor.  
What's it called?  
I don't know what they're called.  
All the people.  
Pediatrist.  
That's what I said.  
But pediatrist.  
But I went to the pediatrist the other day  
because I got this, what's it called,  
when you're going to point it on my foot.  
This part of my foot here started to get lots of pain every time.  
Plantarophysiitis.  
That's it. Plantarophysiitis.  
I started to get some plantarophysiitis.  
I felt fun.  
And it was just this ongoing pain.  
And they prescribed me some insoles.  
I stood on a couple of machines, some soft stuff,  
and they measured my foot and took this scan of it and said,  
right, basically you're standing wrong.  
Your arch is a bit too flat.  
Take these insoles and wear them in all of your shoes.  
I always think in these moments  
when someone prescribes me something that's not natural,  
I go, why?  
Like, where did I go wrong?  
And I think that's the key question.  
Where did I go wrong?

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Who lied to me to the point now that at 30 years old,  
I have these bloody insoles that I have to put in all my shoes?  
Because presumably that's not natural.  
Presumably my ancestors don't have bloody insoles.  
So plantarophysiitis is what I would call a mismatch disease,  
a disease that's more common or more severe  
because our bodies are inadequately adapted  
to modern environments.  
And in your case, and as is the case with a lot of people,  
you have a weak foot.  
So you look like you go to the gym.  
Looks like you're a pretty fit person.  
I'll make a bet you strengthen pretty much  
every muscle's group in your body except your feet.  
Well, but we don't.  
And one of the reasons is because we encase our feet  
in stiff-soled shoes that are very comfortable.  
And the reason the shoes are comfortable  
is that your foot muscles have to do less work  
when you're using those shoes.  
We have shoes that are stiff-soled.  
They have arch supports.  
And your foot has four layers of muscles in them.  
And those muscles are supporting your arch.  
And at the bottom of those four layers of muscles  
is this layer of connective tissue  
the plantar fascia.  
And the problem with the plantar fascia  
is that if it stretches too much,  
it, like anything else, it gets inflamed.  
But it's got almost no vascularization.  
So it's very hard for it to repair itself  
when it gets inflamed.  
To prevent plantar fasciitis,  
the best way to prevent it is having a strong foot.  
A strong foot's a healthy foot.  
So the way to treat the disease on the long term  
is to strengthen your foot.  
But if you want to just alleviate the symptoms,  
that's what your podiatrist did.  
By giving you an insole,  
it's basically preventing your arch from collapsing as much,



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making it more comfortable  
so your plantar fascia gets stress less  
and so it can kind of alleviate that stretching  
and hence the pain.  
So that's a typical example of what I call disevolution.  
It's what happens when you treat the symptoms  
of a mismatched disease  
rather than their causes of preventing their causes.  
So podiatrists are a bit like drug pushers  
in that respect because they're essentially  
putting your foot in the cast  
and then for the rest of your life,  
you kind of have to keep using them  
unless you strengthen your feet.  
So there's nothing wrong with those treating the symptoms.  
Pain is no fun.  
So where are the insole to kind of alleviate the pain  
but also work on strengthening your foot  
and I think you'll find that the plantar fasciitis  
will disappear and never come back.  
So the plantar fasciitis has now healed  
after about a month of wearing the insole.  
I no longer have the insole with me here in New York  
and I don't have them in any of my shoes  
because I've also taken a bit of time off  
running on my feet.  
I was playing a lot of football.  
So now I'm at a point where I can go to the preventable stage,  
prevent it happening again  
and you said to strengthen my foot.  
How does one strengthen their foot?  
Good question.  
So there are some exercises.  
They're kind of foot doming exercises  
and things like that.  
I can send you some links to videos  
showing you some good foot strengthening exercises.  
So that's one way to do it.  
But the other way is to wear more minimal shoes,  
to wear shoes that aren't stiff sold,  
that don't have arch supports.  
Go barefoot a lot and that will naturally strengthen

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the muscles in your foot  
because you'll have to use those muscles.  
So you've ever gone for a long walk or run on a beach  
and afterwards your feet are kind of tired.  
The reason your feet are tired  
is because you're now walking on a compliant surface.  
It's not stiff.  
So your muscles having to work more  
to stiffen your foot to push you forward, right?  
Jack, could you go grab the black shoe out of my bag?  
I just want to show him something.  
So wearing shoes that aren't as stiff sold  
when they don't have arch supports  
will slowly strengthen your feet.  
But, and this is a huge but,  
if you do too much too fast,  
your plantar fasciitis will come roaring back  
and you'll hate me.  
You'll be like, you'll never forgive me  
because yeah, there's a Vivo barefoot.  
Yeah, I wear the same shoes.  
Ah, you've got the same shoes on.  
Great shoes.  
Yeah, those are wonderful shoes.  
Those are exactly the kind of shoes  
that will help strengthen your feet.  
These are fairly a new addition in my life.  
And they feel really strange  
because you can kind of feel the floor.  
It's exactly what you've described is.  
But you can transition,  
if you have weak feet, which I'm guessing you do,  
if you go, if you suddenly,  
that's the only shoe you wear all the time,  
you'll probably regret it, right?  
So, slowly, slowly, slowly,  
increase the percentage of time,  
just like anything else.  
So, if you suddenly decide to lift huge weights  
that you can't lift before,  
you'll hurt yourself, right?  
The same thing as with your feet.

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So, slowly it does it,  
but if you do it gradually and slowly and carefully,  
you can build up strength in your foot  
and you'll be a happier person.  
And this goes back to everything else you've said  
about how choosing comfort,  
choosing to have a nice supportive shoe  
has actually just kind of deferred a problem  
off into the future for me.  
It's the same with diet,  
it's the same with avoiding exercise  
and being sedentary and all these other things,  
where when you choose the easy road in the short term,  
which is this wonderful cushioned shoe I've chosen,  
the muscle hasn't built up in my foot  
and I've paid the price.

Correct.

So, I need to, again, choose discomfort  
more in the short term,  
go up the stairs, run barefoot,  
to avoid the consequences later down the line.

Yeah.

I mean, I don't think you have to run barefoot,  
but though it can be fun,  
but yeah, I mean,  
I can think of plenty of other examples.

We love comfort,  
but comfort's not necessarily good for us.

When you look at these tribes,  
do you know who liver king is?

Huge, massive muscles,  
talks about ancestral living.

What do our hunter-gatherer ancestors look like  
in terms of that?

Not like him.

No?

Okay.

I mean, look, think about it.

Muscle is really expensive, right?

It's actually a super expensive tissue.

About a third of our body's muscle  
and it's using up about a fifth or more

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of the calories that we're expending, right?  
Just sitting there,  
not even using them, right?  
They're very costly tissues, right?  
And so, if you have more muscle than you need,  
you're basically adding to your cost of living, right?  
And if you're a hunter-gatherer  
or even a subsistence farmer  
living on the margin of food security,  
having more muscle than you need  
is actually deleterious, right?  
Remember, the only thing that natural selection cares about  
is how many offspring you have who survive and reproduce.  
It doesn't care if you're strong or healthy  
or nice or loved or, you know, fun or whatever.  
It only cares about whether you have grandchildren.  
That's it, right?  
That's the cold calculus of selection.  
My brain is going,  
if I have big muscles,  
I'll have more romantic opportunities  
and I'll have grandchildren.  
Only up to a certain point, right?  
So, if more muscles, if they attract the opposite sex  
and make them want to reproduce with you,  
yes, that could be a benefit.  
I'm not so sure how much women are attracted to the liver king,  
but that's not something I even want to know the answer to  
and certainly shouldn't ask him.  
But there's a reason we have use it or lose it,  
which you mentioned earlier, right?  
Because when we need, when we increase our demand,  
we increase our capacity, right?  
When you go to the gym and you work out,  
you build muscle,  
but if you stop using those muscles, you lose it.  
And that's an adaptation, right?  
Because you don't want to spend extra energy on muscles  
you're not using, right?  
So, you want enough, but not too much.  
You want to be economical with muscle mass, right?  
And so, if you look at the data from Hunter Gathers,

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and people have done that,  
they've done grip strength tests, et cetera,  
and all kinds of other fun things with it,  
like mini Olympics, when we've done this too,  
people are reasonably strong,  
but they're not super strong  
and they're not buff and built and bulked  
and all that sort of stuff.  
They've got enough muscle to do what they need to do,  
but no more.  
And the reason why people find muscle attractive, anyway,  
is because it's this evolutionary signal, isn't it,  
of reproductive value and resources, maybe,  
and the ability to go out and...  
Do you know what I mean?  
Why does a woman, for example,  
find a man with muscles  
or in good shape attractive in 2023  
when we're not hunting for gazelle?  
Well, I'm not a psychologist,  
so I'm not sure if I'm qualified to answer that,  
but I could venture the guess that, obviously,  
if you're trying to...  
We pair bond as a species,  
and we have been for millions of years, probably.  
You want to pair bond with somebody who's going...  
Because we also have cooperation and food sharing, right?  
You want to pair bond with somebody  
who's going to be able to bring home the bacon,  
literally and figuratively, right?  
But bringing home the bacon  
does not mean looking like Arnold Schwarzenegger,  
at least back in the day.  
Arnold Schwarzenegger back in the day, right?  
Bringing home the bacon back in the day  
meant being a persistence hunter,  
being able to run long distances  
and being moderately strong.  
So they looked more like a marathoner  
or a football player than they did a weightlifter, right?  
So it's conceivable,  
it's conceivable that someone who is really, really big

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is actually less attractive  
because they wouldn't have been able to hunt and run  
and hunt as well as someone who's a little bit...  
Yeah, you also have to feed them more, too.  
And those are precious calories.  
So I'm going to guess that...  
And look, if you look in non-Western populations,  
you don't see physiques like that.  
This is a privilege of people who are able to go to gyms  
and eat way powder shakes  
and all that kind of stuff  
to kind of build their crazy muscle mass.  
But it's not something that our ancestors  
were able to do on a regular basis, that's for sure.  
A quick word on Huell.  
As you know, they're a sponsor of this podcast  
and I'm an investor in the company.  
One of the things I've never really explained  
is how I came to have a relationship with Huell.  
One day in the office, many years ago,  
a guy walked past called Michael  
and he was wearing a Huell t-shirt.  
And I was really compelled by the logo.  
I just thought for a minute,  
a design aesthetic point of view, it was really interesting.  
And I asked him what that word meant  
and why he was wearing that t-shirt.  
And he said, it's this brand called Huell  
and they make food that is nutritionally complete  
and very, very convenient and has the planet in mind.  
And he, the next day, dropped off a little bottle of Huell on my desk  
and from that day onwards, I completely got it  
because I'm someone that cares tremendously  
about having a nutritionally complete diet.  
But sometimes, because of the way my life is,  
that falls by the wayside.  
So if there was a really convenient, reliable, trustworthy way  
for me to be nutritionally complete  
in an affordable way, I was all ears.  
Especially if it's a way that is conscious of the planet.  
Give it a chance. Give it a shot.  
Let me know what you think.

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There's another myth that you bust,  
which I thought was really interesting  
because I think I know a lot of people  
that have used this as a reason not to run.  
They say, it's really bad for your knees.  
Oh man, that gets me so mad, right?  
I mean, I hear this from doctors all the time, right?  
Oh yeah, running is bad for your knees.  
Now it is true that knee injuries  
are the most common running injuries.  
But arthritis, which is really what they're usually talking about,  
it's absolutely definitively not true  
that running increases rates  
of knee cartilage damage and arthritis.  
So arthritis is caused by cartilage  
wearing away in a joint, right?  
And it's a myth that running actually increases cartilage damage.  
If you have arthritis,  
running is excruciating and problematic.  
But if you don't have it, running actually,  
if anything, may be slightly preventive.  
Because cartilage joints, like everything else,  
benefits from being used, right?  
And so physical activity actually  
helps promote strong and healthy joints.  
We used to think that it just caused them to wear away.  
But actually, like cars, wearing away at their tires.  
But now we know that actually physical activity  
promotes repair mechanisms and cartilage,  
just as it does in other tissues in the body.  
Of course, the other thing about running  
is that I think a lot of people run incorrectly today.  
So that's why we started studying barefoot running.  
You know, a bunch of decades ago is because  
if humans have been running for millions of years,  
most of that time we were running barefoot.  
So I'm kind of curious, how did people run before shoes?  
And what we learned was that today,  
shoes have these cushioned heels  
that enable you to essentially run the way you walk, right?  
You land on your heel.  
And everybody who's barefoot sometimes lands on their heel.

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But people who are barefoot often, more often than not, land on the ball of their foot and then let their heel down. It's called a forefoot strike or a midfoot strike. And when you do that, we worked out the biomechanics of that and published a paper on the cover of Nature showing that when you do that, you actually prevent your foot from crashing into the ground causing what's called an impact peak, a collisional force. You run lightly and gently. So if you were to take your shoes off and run up Lexington Avenue here, I guarantee you, you would not be landing on your heels. Within a few steps, you'd start landing on the ball of your foot because it hurts less. And so that's how we evolved to run. We evolved to run in a way that doesn't involve slamming into the ground with every step. And that causes less force around your knee. The trade-off though, because nothing comes for free, everything has trade-offs, is that it's harder on your ankles. Your calf muscles and your Achilles have to do now a lot more work to let your heel down. And so people who switch from heel striking to forefoot striking often have Achilles tendon problems. They get calf muscle problems. If they don't do it properly, if their foot muscles aren't strong enough, they'll get all kinds of foot problems. So you can't just suddenly become a barefoot runner and start forefoot striking. If you're going to switch, you have to switch gradually and slowly and build up strength and learn to do it properly. Another thing people do is they tend to run like a ballerina high up on their toes. That's really hard on your ankles and your calves. So you've got to do it properly, but it can have enormous benefits. And so, and we know, again, if you run that way, there's put much less force on your knees. And again, knees are where people get injured the most. So I think a lot of knee injuries come from the way in which we run. So would you recommend, if you can, to run more barefoot, especially if you have those kind of shoes we just discussed? Well, I think what matters is how you run, what's on your feet. So I would say a barefoot style. How do I learn to run in a new way though?



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Well, I mean, there's some tricks.

So one of them is, first of all, I don't know how you run.

So maybe maybe you already run just fine.

But a barefoot style tends to be a high stride rate or high stride frequency.

So 90 strides per minute or 180 steps per minute, roughly,

you know, 170 to 180 steps per minute is about right.

Relatively short strides.

So you're not throwing your leg out.

And to me, the most important thing is not what we call overstriding.

You ask any coach on the planet, they'll say overstriding is bad.

Overstriding is when you throw your leg out way in front of you and you land.

And that leg is a stiff leg.

So that a stiff leg means more force, right?

And it's harder on your knees.

And so a good runner lands with their shank, with their tibia vertical.

So their ankle is below their knee.

When you do that, pretty much everything will work out properly.

It'll mean that you won't land hard on your heel.

It'll mean that your leg will be acting like an excellent spring.

You will produce a lot of breaking force.

It's a, it's a, it's, to me, I think the most important skill in running is not to overstride.

And so I actually, so don't worry about how you're going to hit the ground.

Just worry about your overstride.

If you solve your overstride, you're more likely to run well.

What do you think some, what's the best kind of sort of cardiovascular exercise for the promotion of good health?

Because I've been doing some cross fit stuff.

I've been doing some hit workouts.

I've been trying not to run because I've had a few injuries

and trying not to run as much because it seems to be a little bit more impact than if I'm bullshitting myself there.

But so I've been doing some like hit workouts every for 30 minutes a day when I leave here.

Well, you do hit, you do hit, hit, hit works every single day.

Pretty much every day at the moment.

We track it with a group of friends we have.

There's 10 of us in a WhatsApp group.

Whoever's last, whoever does the least workouts every month is evicted.

And there's a raffle.

So there's a raffle yesterday on the first, wasn't the first yesterday?

Yeah. For a new member.

And we do that every month and we've done it for three and a half years.

That's great.

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I've been in there, I was the first ever member.

So I've been in there for three and a half years.

Well, I think, you know, I mean, the most, the best exercise, the one you like, do it.

Is there one that's like better, you know, like the...

You know, I think you got to mix it up.

There is no one perfect exercise, right?

I mean, I think what you do is sounds actually pretty good, right?

You got a mixture of, you know, low, slow intensity, some high intensity.

You want to have some strength training.

You want to have some cardio.

I mean, we never evolved to do one thing and our bodies are too complex to benefit from just one thing.

Mixing it up is the obvious way to go, right?

I think the bedrock for any kind of physical...

I mean, you ask anybody, right?

Cardio is the bedrock of exercise, right?

It promotes the most health benefits, right?

It's good for your, you know, your burning energy.

It's good for your cardiovascular system.

It's good for controlling inflammation.

But there are different kinds of cardio in high intensity versus low intensity.

And there's also strength training, right, which is also important.

So, you know, there's no...

Look, we've tried to medicalize exercise, right?

It's like there's a proper dose, right?

You know, take this pill, this many milligrams, this many times per week, right?

Exercise, it doesn't work that way.

There is no optimal dose.

Everybody's different.

Depends on, are you more worried about heart disease or Alzheimer's or diabetes or depression?

Or, you know, are you previously injured?

Are you fit?

Are you unfit?

It's impossible to prescribe exercise in this kind of medicalized way.

It doesn't work.

A lot of people exercise because they believe it will help them to lose fat.

Belly fat.

One of the biggest debates on the planet.

It has been a huge debate.

Even on this podcast, I've had multiple people come and say a whole range of things about weight loss and cardio.

And I'm kind of, I don't know what to believe anymore.

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Well, anybody who isn't confused doesn't understand what's going on, right?  
You know, it's, it's sad that there's such a debate.  
But that's how science works, right?  
So, as you know, I wrote about that in this book.  
Part of the explanation for the debate is that, again,  
what dose are you analyzing and what population in what kind of context, right?  
So the, pretty much every major health organization in the world recommends  
that you get 150 minutes per week of physical activity.  
That's kind of like the benchmark.  
That's what the, you know, the WHO, the World Health Organization,  
considers the division between being sedentary versus active.  
So, and a lot of people are unfit and overweight  
and struggling to be physically active.  
I have struggled to get 150 minutes a week, right?  
So a lot of studies prescribe 150 minutes a week of exercise,  
walking, for example, or moderate intensity, physical activity,  
and then look at effects on weight loss.  
And guess what?  
When you, when you walk 150 minutes a week,  
which is what, 20 minutes a day of walking,  
which is about a mile, a mile a day,  
you're not going to lose much weight.  
You're basically burning about 50 calories a day doing that, right?  
That's a piddling amount of calories compared to drinking a glass of orange juice, right?  
So, so surprise, surprise.  
Those kinds of studies show that those doses of physical activity  
are not very effective for weight loss.  
However, plenty of rigorous controlled studies  
that look at higher doses of physical activity,  
300 minutes a week or more,  
find that they are effective at losing,  
for helping people lose weight,  
but not fast and not large quantities.  
So you're never going to lose a lot of weight really fast by exercising.  
It's just not going to happen because, you know,  
cheeseburger has what, you know, 800, 900 calories.  
You have to run, you know, 15 kilometers to lose that,  
to burn the same number of calories.  
You're going to be hungry afterwards too,  
so you're going to make some of that back.  
You have compensation.  
So, so physical activity is a, is actually,

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there's just no way around it.

You have to be a flat earth or not to argue this way, but there, you know, physical activity can help you lose weight, but it's not going to help you lose a lot of weight fast and not at the low doses that often are prescribed.

But the one thing that we do agree on, and I think this would not be controversial, is that physical activity is really important for helping people prevent themselves from gaining weight, or after a diet from regaining weight.

And there are many, many studies which show this.

One of my favorite was a study that was done in Boston on policemen.

You know, policemen are kind of a reputation for, you know, having too many donuts and being overweight, right?

And Boston is no exception.

So they did this great study at Boston University, right, across the river, where they got a bunch of policemen on a diet, a really severe diet.

The policemen all lost weight, but some of the policemen were, had to diet and exercise, some just dieted alone.

And as you might imagine, the ones who dieted plus exercise lost a little bit more weight, not a lot, just a little.

But, and then they tracked them for months afterwards, because most people after a diet, their weight comes just crashing back, right?

The policemen who kept exercising, even after the diet was over, and they went back to eating whatever the hell they wanted, donuts, whatever, they're the ones who kept the weight off.

But the ones who didn't exercise, the weight came crashing back.

Another good example would be the, have you ever seen the TV show, The Biggest Loser?

Yes, where people go on and lose weight.

Yeah, so there's crazy show, right?

These people, you know, this is like totally unhealthy.

They were confined to a ranch in Malibu, and these people lost ridiculous amounts of weight.

Guy named Kevin Hall at the National Institute of Health studied them for years afterwards,

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and looked at, and most of them regained a lot of the weight that they lost. And there was one person on the show who did not, and that was the person who kept exercising. And that's, you know, just yet more, one data point. But there's lots and lots of evidence to show that physical activity, what its other important benefit when it comes to weight is preventing weight gain or weight regain. When we talk about dieting, we talk about exercise or diet, exercise or diet. Like, why is it an or? I mean, why isn't it exercise and diet? Diet is, of course, the bedrock for weight loss, but exercise also plays an important role and should be part of the mix. On the police example and the biggest loser example, I can relate in the sense that when I exercise, when I go through the moments of my life where I'm most committed to exercise, I'm also most committed to my diet. Yeah. Because I, if I go to the gym, I will not then leave the gym and have a doughnut or a pizza. Absolutely not. It seems like wasting the effort. So if you look at the sort of correlation between the moments in my life where I eat healthiest, they're also the moments in my life where I'm most focused on the gym. And I noticed there was a couple of months ago, I had a bit of a motivation slump, managed to stay in our little WhatsApp group, but coasted down the bottom of the leaderboard for a couple of months on end, just like surviving every month by one. And through those moments, my motivation in the gym had gone down and my diet had gone down. The minute I managed to get in the gym

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and do a big workout,  
the same day my diet came back.  
Yeah. Of course.  
Right.  
And they covariate, right?  
And that's one of the reasons why  
when people do big studies of, you know,  
what, you know, you can look at what people die of, right?  
What's on the death certificate?  
You know, cancer, heart disease, whatever, heart attack.  
And then you look at what caused the cancer,  
what caused the heart disease.  
When people try to do that,  
it's almost impossible to separate diet and exercise  
because people who tend to eat better  
also tend to exercise more.  
They're both in our modern  
upside down chopsy-turvy world.  
They're both markers of privilege.  
People have money to go to the gym,  
also have money to buy healthy foods.  
And people who care about their physical activity  
also tend to care about their diet.  
So at that level, they're very hard to separate.  
However, if you're studying a particular component of a system  
in a randomized control's trial in a lab,  
you can separate them out.  
And so we know that they have independent  
and also interactive effects.  
What is the most important thing  
we haven't talked about, Daniel?  
I think the most important thing  
is that we need to be compassionate towards each other.  
I mean, there's so much shaming and blaming  
and prescriptions and, you know, you know,  
the reason I entitled the book Exercise  
is that we make people feel exercised about exercise.  
We make them feel uncomfortable  
and unconfident and shamed.  
And, you know, you and I are having this conversation,  
but I can tell that you take, you know,  
I mean, I know I've listened to enough of your podcast.

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You care about your health and you care about diet.  
You care about exercise.  
And people may look at you and think,  
gosh, I wish I was like him, but it's just not me.  
You know, I can't, I'm not there, right?  
And they may feel put off by our conversation.  
And I think that so often these discussions  
make people feel bad about what they're doing.  
And I think that what we need to emphasize  
is that if you put a chocolate cake  
and an apple in front of me here,  
I would want to eat the chocolate cake.  
And I might eat the apple only because you're there.  
But if you weren't there, I would eat the chocolate cake, right?  
And when I'm in my building at Harvard,  
my office is on the fifth floor of this old Victorian building.  
Every single day I want to take the elevator.  
And the only reason I take the stairs  
is that if anybody catches me in the elevator,  
I'll be a hypocrite.  
It's not that I don't want to take the elevator.  
I do want to take the elevator, right?  
I guess you guys say lift, right?  
And we make people feel bad for taking the elevator, right?  
They shouldn't feel bad.  
It's an instinct.  
And so I think we have to figure out ways to help people  
without shaming them and without blaming them  
and without bragging and whatever.  
Talking about the marathon they ran or this, that, or the other,  
make them feel less uncomfortable about the topic.  
And realize that you don't have to swim the English Channel  
or run a marathon or join your WhatsApp group  
and do crazy hit workouts every day.  
By the way, you don't need to do hit workouts every day  
to get the benefit.  
Instead, just taking the stairs in your building every day.  
Anything is better than nothing.  
And you'll get benefits from that.  
And I hope that that's the message that needs to get out, right?  
Anything is better than nothing.  
And if you can get started on that pathway,

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then it'll eventually become self-rewarding.  
And that leads me to the other topic that we didn't talk about,  
which is that the reward system of physical activity.  
You and I, if we go for, I'm really looking forward  
to my run tomorrow morning in the park.  
I love running Central Park.  
It's one of the best places in the world to run, right?  
A fantastic view from the top.  
And it's just gorgeous, right?  
But when I run Central Park tomorrow,  
I'm going to get a big dopamine hit.  
I'm going to, my body is going to produce all this dopamine,  
which is the molecule that says, do that again, right?  
It's a reward.  
Gamblers get dopamine hits, right?  
People eat chocolate cake get a dopamine hit, right?  
But if I were unfit and overweight,  
I wouldn't get that dopamine hit.  
And so when people start exercising,  
they don't get the reward that people who are fit  
and custom to doing it get.  
And then they're made to feel bad,  
like you didn't enjoy your run around Central Park.  
Well, it takes months, if not years,  
before you actually get that reward.  
And really?  
Yeah, because just like being overweight  
causes you to become insensitive to insulin,  
you become insensitive to all kinds of other hormones  
in neurotransmitters and dopamine is one of them.  
So it's not an instant benefit, right?  
It's hard.  
And so we need to be compassionate again  
towards people who are struggling  
to become fit and struggling to get the reward.  
And also if you're overweight  
and you run around Central Park,  
it's like if I were carrying weights  
and running around Central Park,  
it'd be much harder, right?  
It's challenging.  
And so once you get into that state,



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it's hard to get back to the state of activity.  
And so we need as a society to help those folks rather than judge them.  
Those folks that are struggling, and I was one of those folks that were struggling for many, many years, I would say to myself every year, pretty much all of my adult life, that this was going to be the year that I'd get fit. I try all of these various different, you know, fad exercise things by all this stuff I announced in 2017 that I was going to work out every single day. And that lasted for six months. And then I yoayed back out of that. It never stuck with me until 2020. And that's I've been exercising six days a week since 2020, 82% of days. And I reflect and try and diagnose how I went from someone who... What was it that changed? And if I can figure out what it was that changed at the most fundamental level in my mindset or my attitude or my life or whatever it was, then I can help other people figure out that too, or at least give them more sound advice, or at least be more empathetic, whatever's required to help them. You know, and I have a platform here where I speak about exercise a lot and these things. So what's your suspicion? What's your suspicion and what it is that makes people go from being, you know, maybe having a negative opinion towards exercise or their ability to be disciplined with it to becoming an exerciser? Do you know? I've... This is a question that obsesses me. In fact, we have a big project right now, a big grant to actually study this right now. Because I...

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The more I study it, the more I think it's social.  
The more I think that, again,  
I think people are physically active,  
i.e. in our modern world, exercise for two reasons.  
When it's necessary or rewarding.  
And what makes it rewarding for most people  
is the social aspect.  
And that social aspect can take many dimensions.  
It can be running with a group of friends.  
And, you know, you might want to go only a mile,  
but your friends convince you to run another mile, right?  
And you end up running two miles, right?  
Or you're feeling bad and crappy,  
and your friends help you do it.  
Or I'm a running buddy, right?  
And I often, you know, meet friends for early morning runs.  
And I can tell you that the evening before,  
it seems like a great idea to meet Aaron  
at 6 a.m. on the corner of Mass Ave in Linnaean.  
The next morning at 6 a.m.  
I want to stay in bed with my wife, you know?  
I don't want to meet this nasty, smelly guy,  
you know, at 6 a.m. in the cold and dark.  
But I agreed to meet him and out I go, right?  
And I'm usually glad I did it afterwards.  
Or, you know, we can go on.  
There are other social ways in which...  
But we're dancing, right?  
I mean, nobody thinks of dancing as exercise,  
but it's exercise, right?  
So that's one important social dimension.  
And the other one, though, is accountability.  
I describe in the book, there's a friend of mine in San Francisco  
who's struggling to exercise.  
So she signed up for a program.  
It's this company called stick.com.  
I don't know if you've run across it.  
Where it's a commitment contract.  
Where you send like \$1,000 to them  
and they keep it in their bank account.  
They probably invest it and make a lot of money on it, too.  
But you set up a referee and you agree

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that I'm going to not smoke or this or that or the other,  
or in this case, exercise.  
And if you don't do it and your referee is, you know,  
keeping track of what you do,  
you get to choose something negative.  
So in her case, her husband is her referee.  
And if she doesn't walk, I can't remember what...  
Every day she has to walk a certain number of miles.  
Her husband will tell her or tell the website  
and it'll send \$50 to the NRA that week.  
Oh, my God.  
And she hates the NRA with a burning passion.  
What is the NRA?  
The National Rifle Association.  
They're the people who are trying to prevent  
gun control legislation in the United States.  
And they have effectively prevented gun control  
legislation in the United States,  
which is now kills more children than cars in the United States.  
So if she doesn't exercise, sorry, she doesn't do it then...  
Then money goes to this organization that she hates.  
So this is a stick, if there ever was one,  
as opposed to a carrot.  
And I don't think she's...  
Every time I see her ask her, you know,  
you kept up the walk, she says,  
oh, no, NRA hasn't gotten the penny, right?  
So for her, it's been very effective.  
So it's...  
She's made a commitment contract that stings, right?  
That really hurts.  
Now, I think I might be a little on the extreme side  
and I wouldn't necessarily recommend that to everybody.  
But she's accountable, right?  
She's made herself accountable in some ways.  
And I think people can find ways to make themselves accountable  
to a friend, a loved one, a parent, you know, priest.  
Who knows what, right?  
You might...  
Or hire a trainer.  
I mean, that's kind of what a trainer does,  
makes you accountable, right?

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And I think...

So those are, again, social ways to help people be more physically active.

So I think there are multiple ways of doing that.

And I suspect that is going to be the most effective sort of set of tools that will help people.

One thing I actually do is that on the screensaver of my phone, it has something that really inspires me.

So I see it every day and it's that reminder for me which reinforces my why across my life.

It's actually my home screen on my iPhone is actually a bit of a mood board for me.

We have a closing tradition on this podcast where the last guest leaves a question for the next guest, not knowing who they're going to leave it for.

And I don't get to see it until I open the book.

The question is, what is one aspect or feature of your life that causes you the most friction

slash discomfort and how can you change or fix it?

I would say it's my tendency to compare myself to others.

I know life is short, life is precious.

We're all experiments of one.

And when I think about, when I engage in that, oh, so-and-so has such and such, that's a really bad habit.

That's a really bad trait.

It never leads anywhere good.

It only leads towards either I think about how I have more of something than somebody else that leads to,

I think, unhealthy feelings of pride or feelings of jealousy.

So-and-so has this award or such and such and that's kind of pernicious.

So I think that's a bad habit that I work hard to overcome.

Because it changes your expectations of yourself and that chain takes steals happiness?

It steals happiness, yeah.

It steals happiness.

Thank you for the work you do, Daniel.

Very important, very, very important and increasingly important,

I think, when we look at the health outcomes, especially here in the United States of people,

I mean, you actually share a number of them in the book, which we didn't really go into, but they're just horrifying.

Yeah, that's scary out there.

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Especially as it relates to exercise.

There was one in particular that I wrote down because it horrified me.

It was just all the stats around the current health care.

Only 50% of Americans ever exercise, ever.

Really? Ever?

Ever.

And only 20% meet those very minimal World Health Organization standards.

We're a nation of couch potatoes.

And the rest of the world is headed our way.

But not if they get this book.

Because I think it is a real perspective changer,  
and it's a real eye-opener, and it's a necessary one.

So thank you so much for writing it.

You're fantastic at what you do.

And I'm now a huge fan of your work after delving in deeper and deeper and deeper.

So I can't wait to see what you do next.

Oh, thank you.

And I recommend everyone to go get this book,

Exercise.

Because, yeah, I thought I knew a lot about exercise,  
but from reading that and having that window into  
hunter-gatherer ancestors and tribes and other cultures,  
it really, that whole idea of a mismatched life,  
how mismatched my life is in so many fundamental ways,  
from diet to exercise to socializing.

And these kind of books help to realign.

Well, thank you.

Although it seems that you're doing a pretty good job.

I'm trying, you know.

I think we're so far from being human, though, that  
there's still a long way to go for all of us.

So thank you, Daniel.

Quick one.

As you know, Airbnb are a sponsor of this podcast.

And I was actually in an Airbnb last weekend  
when me and my friends had a reunion in New York.

And it's from staying in Airbnbs over the years  
that led me to start hosting my own place.

I know friends of mine who actually Airbnb their own place  
in order to pay for the Airbnb they use  
when they're away on holiday, which is pretty smart.

And maybe you stayed in an Airbnb before and thought,

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this is actually pretty doable.  
Maybe my place could be an Airbnb.  
It could be as simple as starting with a spare room  
or your entire place.  
You could be sitting on an Airbnb and not even know it.  
Whether you could use some extra money to cover your bills  
or something a little bit more fun,  
your home might be worth more than you think.  
And you can find out how much it's worth  
at [airbnb.co.uk slash host](https://airbnb.co.uk/host).  
Check it out.  
Find out how much your home is worth.  
And let me know what you think.