Introduction to Ari Whitten and the health paradigm

Welcome to this episode of the Reverse Alzheimer's Summit. My guest now is Ari Whitten, the founder of The Energy Blueprint. He's the bestselling author of The Ultimate Guide To Red Light Therapy, and Eat For Energy: How To Beat Fatigue, and Supercharge Your Mitochondria For All-Day Energy. From his big picture perspective.

Most people are focused on the external causes of health problems like the toxins and pathogens and stressors and the poor diet that you've heard all about on this summit.

These treatments and interventions for health problems and for dementia are important. But we want to talk today about the internal side of how we develop disease in terms of our communal dynamic space and our reserve capacity, and really how we prevent ourselves from ever having to go down the path of dementia to begin with.

Ari, welcome. Thanks so much for having me, Dr. Sandison. Pleasure to be here. So tell me a little bit more about your perspective and kind of how you've evolved to understand health and well-being and what keeps us healthy.

Yeah, well, let me let me start by saying I'm really big into paradigms, understanding that it's how we think about a particular problem, what our what our world view is in relationship to that problem massively influences how we understand it in terms of what we think causes it and how we think about finding solutions to that.

For example, when I did a Ph. D. program in clinical psychology, I was I was really fascinated with all of these different paradigms, psychological paradigms of mental illness and what the best approaches are to treat them.

And you have everything from, you know, a cycle, a psychodynamic or psychoanalytic or union perspective where, you know, from a psychoanalytic frame you might spend years and years and years talking about different memories from childhood.

And the the path to freedom is, is framed as once we unlock these unconscious aspects and become more conscious of, of these layers of our early childhood upbringing through years of psychotherapy, maybe we can heal these things.

Some somebody else might frame it as well. You know, from a cognitive behavioral therapy perspective, we really just need to focus on interrupting these negative thoughts and then replacing them with positive thoughts.

Homeostasis, homodynamic space, and disease risk

And rejecting the therapist might say, Well, really, I just need to sit across from my patient and sit in a in a very loving, empathic attitude and mirror back to what whatever they're expressing and all that we really need to do is cultivate that relationship.

Somebody else, maybe have a new age spiritual bent, might say, well, we really need to heal your your chakras and your past life. Karma, right? And these are different paradigms that different types of people would apply to the same individual with the exact same problem.

Right. And so what most people don't understand is that same that same principle also goes on in medicine, and it goes on in our paradigms of medicine in relationship to how we think about health problems.

So I the way my brain has always worked is really kind of from that meta perspective. I like to analyze how we think about things to make sure that we're thinking about things in the right way.

So when it comes to dementia and Alzheimer's, I think there's some really interesting things to think about from this

meta perspective. So first of all, from a conventional medical perspective, the way that they will typically frame disease, including dementia and Alzheimer's, is really from the perspective of how do we research what's what we think is causing this disease, which really comes down to like the micro level phenomena of this disease.

So we go down to the smallest scale possible. We figure out what's happening in these people with this disease at the micro level in their brain. What are the biochemicals?

They're what genes are related to this? What different cellular and molecular processes are going on in this person? Okay. There are some misfolded proteins here that seem to be related to this.

And once we zero in on what we think are the micro level sort of causes of this particular disease, then what we typically do in the conventional medical model is go to a chemistry laboratory and synthesize manmade chemicals.

We invent chemicals to try to target those specific mechanisms that we think are causing the disease. So, you know, some an example of this could be as simple as we think low serotonin levels are at play in depression.

Let's go synthesize a chemical that forces the brain to have higher levels of serotonin or LDL is involved in atherosclerosis. Let's synthesize a chemical that lowers LDL levels the same things that play in Alzheimer's.

We have these amyloid beta proteins. Let's synthesize a chemical that blocks the formation of these amyloid beta proteins. And that's kind of the way that paradigm tends to operate.

The antibodies that have been lit can be, which is an antibody to the amyloid plaques that shows that we can clean them out, but it doesn't really get us any improvement in cognition.

It just slows the tortuous process, right? So we don't we don't really arrive at a full recovery when we use that paradigm. So I couldn't agree more. We need alternative paradigms to this, particularly this problem.

Yeah, that's right. So a functional medicine paradigm approaches things more from the frame of how can we go one layer deeper, one layer deeper, you could say to root causes or more upstream of these micro level phenomenon that we we see our correlated to this disease, the Tao proteins, the amyloid beta proteins, the neurodegenerative processes, the neuroinflammation what's, what's causing the oxidative stress and the inflammation and driving these misfolded proteins.

Let's do lots of different testing, blood testing, urine test and hormone testing, microbiome testing. And let's see if we can zero in on some of these factors like toxins, pathogens, poor diet, stress, poor sleep and modify things at that level.

Some of these stressors are what are called allo static load. And this is this is really what's called an aloe status model of of human health or a homeostasis model of human health.

It's the central assumption is basically we maintain health and homeostasis. Yes. But if we have too much of these demands on the system from these external stressors, whether it's toxins or poor diet or psychological stress or toxic relationships or whatever it is, that basically brings the system out of homeostasis and we get damage and eventually disease.

And of course, there's a lot of truth in that paradigm, and it works to a large extent. What I have really zeroed in on is that there's another half of this equation that really doesn't get a lot of attention despite the fact that it's really, really important.

And that is what's called the homo dynamic space. And this is a model most people haven't heard of. It's only really known and talked about in the Jarrow science space, which is the field of aging, science and homo dynamics space model is a little different than the homeostasis model.

And basically what what the key difference is, is that it's not just about these external stressors and demands on

the system, it's about the systems capacity, the organisms capacity to deal with those demands.

Right. And understanding that an organism can have a very large capacity, stress buffering capacity or physiological resilience capacity to handle those stressors versus some organisms can have a very minimal capacity to handle those.

Now, in relationship to that, think about this the number one risk factor for Alzheimer's is is aging is old age. Why don't young people why don't 15 year olds and 25 year olds get Alzheimer's disease?

So the reason why is basically that as this homo dynamics space shrinks and shrinks and shrinks and shrinks as we get older, these stressors and demands on the systems that didn't affect us when we were young and healthy and had a large had a robust homo dynamic space, now they start to affect us.

And so when there is a when there's a differential, when essentially when they're the demands on the system or the stress on the system exceeds the organism's capacity to handle those demands.

Now, you have accelerated biological aging.

Longevity lessons from low-dementia indigenous populations

Now you have damage, accumulated accumulation of damage to those cells, and you have degeneration and oxidative stress and chronic inflammation and all these sorts of things.

But what's upstream of those things that many people frame as the causes is the shrinkage of the homo dynamic space. So that's what I really want to zero in on in this conversation.

And I want to give one more point of reference from the meta perspective to think about. There is a tribe in Bolivia, in South America that is has been studied in recent years for a couple of things.

It was it originally became famous for their extraordinarily extraordinary cardiovascular health and extremely low rates of atherosclerosis and heart disease, almost nonexistent in their population, also almost non-existent levels of obesity and diabetes and lots of other conditions.

And this tribe is called the Simonet tribe, Tsai AMA and E and there's another tribe that's also studied in relationship to them called the Mosa ten MOOC t and and this tribe was recently studied just last year for their incidence of dementia and Alzheimer's.

And what they found is that Alzheimer's is close to nonexistent in this population. So it's in the United States are rates of dementia and Alzheimer's are over 1,000% higher, not 10%, not 20, not 50% higher.

Not 100% higher, 1,000%. It's actually 100% higher incidence in the population. So one thing that I think you know from a from a meta perspective, one thing that's really instructive if we're trying to find solutions to particular diseases is to look at, look around and basically say, hey, are there any human populations that exist that have already figured out how to not have this disease?

You know, and I think once we have that answer and in this case we have that answer to a large extent, then the question is, why don't they get it? And by the way, this is controlling.

A lot of people might say, well, yeah, they don't live as long as us. What the study I'm referencing is talking about adults over 65 years of age. So obviously they control for that.

We're not comparing 40 year olds to 80 year olds. So the the reason why they don't get it is a robust homo dynamic space because of their lifestyle. And we can talk about some of the specific reasons and the modern research that links up to this.

Yeah, go into that. I'm curious, how do these people live that don't get Alzheimer's? What do they eat? What do they how do they maintain that homo dynamic capacity?

We also we use the word horn Mrs.. And that hermetic effect of stressing the system so that you can get more resilience. And I wondering how that intersects with this concept of homo dynamic capacity or health.

So I'd love for you to go into all of that. Yeah, well, it's all about that. So but I think this is a bit more philosophical, but our current understanding of what we're missing is and how it works is a bit limited, but it centers around this principle. So, you know, we talk a lot about how stress and stress on the system is harmful.

But there is an interesting counterpoint to it of paradoxical thing to this, where lack of stress is equally harmful and contributes to disease. I personally would argue because this is my bias and my focus of my work, that it's even a bigger contributor than a lot of the things that we focus on in terms of stressors on the system.

Now, of course, if someone is swimming in a toxic soup, you know, and eating a standard American diet, I would say that's that's going to be a bigger stressor than like proportionally.

It's it's hard to outdo that one as a factor that generates disease. But for somebody who's reasonably healthy and trying to live a healthier lifestyle, it's actually the shrinkage of the homo dynamic space, the shrinkage of our stress buffering capacity, our physiological resilience that is a massive driver of disease.

Cognitive reserve and lifelong mental challenge

Now, let me give some specifics. So well, here's one interesting thing I didn't mention about the the Simonet tribe and the most intense. So let me just connect a couple dots.

I mentioned aging is the number one risk factor for dementia and Alzheimer's. Now, what this is, is it's not just chronological aging. It's the rate of biological aging.

Okay. So not how many years you are alive, but essentially the rate of how much damage and dysfunction your you have, how rapidly you're accruing cellular damage and dysfunction.

What they found in the Tea Money tribe is that their brains are aging 70% more slowly than people in the U. S. and Europe. So, in other words, a 70 year old has the the approximate brain age of a 40 year old, let's say, in in the U. S.

or in Europe. So the rate of biological aging is different and the rate of biological aging is different as a function largely of the homo dynamic space, being able to buffer the demands on the system.

Okay. So what, what are these key areas that relate to dementia and Alzheimer's risk? There's there's four that I've really zeroed in on. The list is probably longer than this.

And ten years from now I'm sure there'll be more layers to the story. But what we have really good research on right now is, number one, mitochondrial reserve capacity or the homo dynamics space in the mitochondrial networks of our body and our brain and the rest of our body.

And this is essentially are our bio energetic stress buffering capacity. So every type of stress can essentially be seen as increasing the energetic demands on the cells of our body or on our brain.

And the degree to which we can meet those demands or not determines whether we are going to incur damage from that. So if I can maybe create a crude analogy for how this principle works, the demands relative to the capacities, if I have a muscle, for example, that's only capable of stretching this far, but I take it into I force stretch it deeper than that.

The muscle will start to tear. Okay. If I have skin that is capable of going out in the Costa Rican sun where I am

right now for 20 minutes, but I stay out for 2 hours in midday, I'm going to incur a lot of damage in my skin.

Sunburn and DNA damage, right. If I have an exercise capacity where I can go for a jog for two miles before I tire out, but somebody is behind me whipping.

Whipping me and forcing me to run a marathon. I'm going to end up with stress fractures and a lot of muscular damage and maybe kidney failure and big problems.

I'm going to incur a lot of damage where somebody else with a bigger capacity for those things can do the same exact thing without incurring damage. So again, demands on the system relative to capacity.

So mitochondrial capacity is a huge factor here. We'll come back to this and I'll I'll I'll mention some of the other ones. I'll just list them out and then we can come back to them.

The other one is cardio vascular reserve capacity. Cardiovascular. Yeah. So mitochondrial, cardiovascular, psychological resilience, psychological stress, buffering capacity and cognitive cognitive reserve capacity.

I need to work on mine because it took me a moment to remember it. So cognitive reserve capacity is a really interesting one, so we can talk about any one of those and there's a lot of overlap between them as well. Yeah, absolutely.

Let's jump into cognitive reserve because this is one of the most fascinating things I see in my clinical practice. I was reviewing a few cases with the Pacific Neuroscience Institute yesterday and a couple of the people we were talking about who are struggling with cognitive decline in their 67 is actually one of the patients is in her nineties and they had an immense amount of cognitive reserve graduate degrees.

They were very involved in highly intellectual, very psychologically cognitively demanding tasks and they stayed that way. And although they had experienced cognitive decline and they had experienced stressors and probably at 96, some growing up in the US mitochondrial reserve capacity was diminished and cardiovascular reserve capacity was diminished.

They had really worked on their cognitive capacity and they had a an immense amount of cognitive reserve. So if you or I were to chat with them, we might not notice they had dementia.

Now they weren't able to do the rocket surgery that they had been doing professionally 20 years previously, but they were still functioning at a very, very high level.

So it's fascinating to see that the more education and we know that one of the modifiable risk factors, right. You talk about aging being a risk factor, the biggest risk factor for dementia.

There's nothing we can do about our chronological age. We can't change the year we were born. But there are a bunch of these modifiable risk factors and certainly this idea of our biological age is is in that.

And then there's a lot of things to discuss underneath that. But another modifiable risk factor that's well documented by The Lancet, very reputable journal out of the UK is how much education we have, especially in early, early childhood and through early adulthood.

And that kind of creates this reserve. It's like we've got a bank account, we've got a savings account of intellectual capacity that we can then draw on as we age.

Yeah, absolutely. And let me simplify this concept. I'm going to oversimplify it a bit, but it will facilitate some understanding. So imagine if we're looking at the concept of physical frailty and sarcopenia loss of muscle mass and being physically weak.

So like degeneration of muscle tissue, you end up physically weak. We call this sarcopenia, we call this physical

frailty. If I spend a lot of my time, for example, in my early life or in my older adulthood, middle age and older, building up my muscles, I'm going to massively build up those reserve arms of my my muscular reserve capacity, such that it's very hard for me to degenerate to the point of circa here and physical frailty where I have so little muscle mass on me and I'm physically frail and very weak and unable to perform basic tasks in comparison to someone who didn't do all that work to build up their muscular, reserved capacity.

They're going to and dozens continue to do it in adulthood and into old age. They're going to be many, many orders of magnitude more likely to end up in sarcopenia and physical frailty.

Okay, now most people aren't used to thinking about this way, but the brain essentially works the same way. And it's harder because we can't visually see it.

Like we can see muscles. We don't really process things this way, but the same thing is true. We our brain physically changes its physical structure and builds more robust physical structure analogous to building more robust physical muscles.

It changes the physical structure of the neural networks to be more robust. When we do cognitively demanding stuff, our brains are highly neural plastic, just like our muscles are plastic.

And that system becomes more robust in response to being challenged. The same way that when you challenge muscles by using by lifting heavy objects, they become more robust and physically stronger and bigger.

Same thing happens at the level of the brain. The more you have built up that reserved capacity through a life of cognitively demanding things, the more we have what's called in the scientific literature.

As you were describing cognitive reserve capacity. And we know through now through many, many studies that higher levels of education and higher levels of job complexity in adulthood are both indicators of cognitive reserve capacity that can also be directly measured on tests and things like that.

And that cognitive reserve capacity is massively protective against dementia and Alzheimer's. So in terms of magnitude of effect size, we're used to thinking, you know, our current paradigm of dementia and Alzheimer's is very biochemistry centric and very metabolic centric.

We we think that if we do a blood panel and look at somebody's data on their what circulating in their blood, that this is giving us a full picture of what's going on.

But what that piece of paper with all the list of what's in their blood doesn't tell you anything about their cognitive reserve capacity. Okay. So it's not a full picture of their health.

And this is, as I was describing at the beginning, it's a this is a problem of paradigm. It's that we are focused on the the biochemical, this biochemistry centric, pharmaceutical centric version of health.

But there are there are many blindspots to this paradigm and physical structure. The degree to which our health and our disease risk and our longevity is determined by the physical structure of our of our organ systems, is a huge blindspot of that system, including the physical structure of the brain.

So to give you an idea of magnitude, obesity as compared with being normal weight increases your risk of dementia and Alzheimer's by about 37%, 40%.

Mitochondrial reserve capacity and hormetic stress

And low cognitive reserve capacity increases your risk by even more than that, by 40 to 60% in most studies. So this is not a small, trivial thing. This is as significant of a risk factor as obesity, which we know is massively detrimental to our metabolic health.

So this is this is a side to this discussion that you just rarely see discussed. But what what it points to, you know, there are so many layers of the story.

One of the things that we have in our in our culture is this idea that we're going to work hard and work and work and work. And then when we get to be 65, finally, I can retire and I can do nothing and sit on the beach and sip margaritas and relax and watch TV and whatever.

And I don't have any stress on me. That's one of the worst, most toxic things you can do for your brain is to stop engaging in cognitively demanding tasks.

Because what happens when you stop engaging? Well, let me put it this way. We go to a gym, which we lift heavy objects. Our muscles adapt by growing bigger and stronger.

What happens if you immobilize muscle in a cast when you break an arm or a leg? Eight weeks later you go to the doctor. They say Off your cast, your muscles have shrunk to half the size.

Okay? And that's how our body works. It's use it or lose it. The body tunes itself to the demands on the system and if you put demands on the system, it will adapt by growing stronger and more robust, physically altering its structure, even at the level of the brain and if you decrease the demands on the system, particularly not just over eight weeks, but over years and decades, you will incur massive atrophy of that system, and that will, at the level of the brain, hugely increase your risk of ending up with a degenerated brain and dementia and Alzheimer's in particular.

So cognitive demands on the system having a life where we regularly engage in cognitively demanding tasks, having that something that's built into our life that we do at least a few times a week, if not daily, that's cognitively demanding into old age, is one of the most powerful things that we can do to reduce our risk of of dementia.

And we like to add that it's something fun, great. Learning a new language, learning a new new recipe is learning something that you're passionate about, a new sport, and combining it with physical activity, whatever you're learning cognitively when having it be fun that you actually learn better and you'll get more of that cognitive reserve, but you're also more likely to stick with it if you're having a good time.

And so there's lots of ways that we kind of coach people through taking this advice and implementing it, putting it to good use. So, yeah, continue. Ari, this is such a great conversation.

I'm so grateful for this perspective. Cool. So let's see one of the other layers this story. Well, since I just explain this kind of how the body tunes itself to the demands on the system, let's talk about mitochondria.

This is another hugely important layer to the story. There's lots of research now that has emerged in recent years, of course, linking mitochondrial dysfunction to Alzheimer's, to other brain conditions.

But there's research specifically now showing that mitochondrial spare reserve capacity, which is essentially that what I'm describing, it's the home of dynamic space.

The stress buffering capacity of your mitochondrial system is an early predictor of Alzheimer's risk and and precedes the development of the disease. And they're now looking at the development of measuring your mitochondrial capacity as a way as a biomarker for Alzheimer's disease, because we don't currently have very good biomarkers.

We have some things that can be measured sort of once that once you're more in the disease. But as far as an early predictor of risk, it's likely going to turn out that mitochondrial capacity is probably the most powerful biomarker we have.

I'm curious, do you think what's the best way to test mitochondrial capacity right now? Is that available? Yeah, so that's a complicated question. There's a there's a lot of there's a lot of tests that now exist that have come to the

market in recent years.

I can't say that I'm a big fan of any of them. And let me explain why and why this a lot of the tests test for electron transport, chain complexes, functions and or testing this very indirectly.

People say that organic acid tests indicate mitochondrial function and things like that. The tests are very limited and here's here's a big part of the reason why. So I talked about structure, the physical structure of our body and the idea that our body tunes itself to the demands on the system.

And the most. I like to use muscles a lot because this is where we all intuitively understand it, because we can visually see it and it happens in a time frame visually where we can see it.

Okay. Muscles growing bigger when they're challenged. I can look at a bodybuilder. They've got big muscles. I understand. That's because they challenge them in the gym by lifting heavy objects.

Okay, I broke my leg. It's half the size now as it was before. I understand that it atrophied as a result of disuse, as a result of lack of being challenged.

But what people don't fully understand is that principle is at play at every level of the system in our bodies, and it's at level, it's at play in our brains with cognitive function, as we just described.

It's at play in our bones with in terms of bone density, if you go into if you put lots of you've got the force of gravity, you're doing lots of weight bearing activity and handling heavy objects.

Your bones will physically grow denser if you hit heavy things like a martial artist, your bones will physically grow denser. In response to that, if you sit on the couch all day, or if you're an astronaut who goes into space, you're but especially that latter one, your bones will rapidly lose bone density.

And that is also true even of bed rest. Seven. We have studies showing that laying down in a bed for seven days, you can detect noticeable losses of bone density.

So, you know, even at the level of our skin, for example, I go out in the sun, my skin builds up a layer of adaptation to protect itself from DNA damage, which we call melanin.

If I don't go out in the sun regularly, my skin loses that, right? So it's adapting everywhere. And that same principle is at play with mitochondria and we have evidence, multiple lines of evidence that basically show that with every decade of life that we're alive, we lose about 8 to 12% of our mitochondrial capacity.

Maybe it doesn't sound like that much, but what this really means is the average 70 year old has lost 75% of their mitochondrial capacity. So for people listening, this is not just a trivial aspect of your physiology.

This is essentially your cellular engine. Okay? This is what produces almost all the energy that powers almost all the cells of your body. So this is what I'm describing here is like going from a Ferrari V8 in your cells when you're young to a moped engine by the time you're 70.

And now, while that sounds like really bad news and you might think, well, you know, that really sucks, that aging does that to us, we now know that this is actually not a natural, normal byproduct of the aging process itself.

This is actually a product of modern lifestyles. And specifically, it's due to a lack of comedic stress, a lack of physiological challenges on the mitochondria.

Just as a muscle shrinks when you don't challenge it regularly, your mitochondria, these subcellular organelles that are providing the energy that powers your cells, they also physically shrink in size.

They atrophy, they shrivel up, many of them die off. So we lose. Our cellular engine physically shrinks in size from

a VA to a moped engine as we get older now, the way that this is measured, going back to your question on mitochondrial tests, the way that they assess that is they take a thick needle and they jab it into your muscles and they pull out a chunk of muscle tissue and they look at it under a microscope and they look at the size and the structure of the muscles and they count the number of mitochondria per unit area.

And and that is a method by which you can more accurately, vastly more accurately determine the size of the cellular engine. And even that is limited because.

Yeah, this is a really invasive way to basically look at mitochondrial density. So how many mitochondria there are per amount of space Pacelle or per the high powered field or whatever you're looking at under the microscope?

But it doesn't tell us about how well those mitochondria are working. So that does sound like it would be limited. Well, I would argue that it's the other way around.

So it meaning if you just look at function of whatever mitochondria are there, you're going to be blind to the size of the cellular engine. So but if you've got a large cellular engine, like a useful size cellular engine, you can reasonably assume that that system is functioning well.

If you only have a window into the degree that the aspect of function of the mitochondria that are there, but you don't know the size and the number of mitochondria there.

I would argue that's way more limited in what you can actually assess from that situation, and which is why I'm not a fan of most of the mitochondrial tests in the market.

It's you can know just as much by just asking somebody their energy levels. It doesn't sound as science or as sophisticated, but the truth is that it's just as good of a measure as any of the mitochondrial tests that exists on the market to just say, hey, do you feel energetic or do you feel tired?

A lot of the time if somebody reports being chronically fatigued, we can reasonably assume that their mitochondria are in pretty bad shape. So anyway, this this picture of this of the story, mitochondrial reserve capacity is hugely important to dementia and Alzheimer's risk.

Psychological resilience, courage, and stress training

And we know also that this is what explains to a large extent why so many different hermetic stress interventions, like many types of exercise, for example, which are a type of stressor on the system, sauna, fasting and time restricted feeding, photo, bio modulation, exposure to light and things like intermittent hypoxia, training all have proven research showing profound benefits in either preventing or actively treating dementia and Alzheimer's.

Yeah, so we use a contrast oxygen therapy at Marama at the residential care facility and I often will recommend that to patients even use at home or to find a system that they can use at a gym or a a local biohacking center, because it has been profoundly helpful.

If you can do it, if you can, will yourself to do it, if you can get in the habit of do it doing it, if you can get access to it to exercise and go through contrast oxygen where you're exposed to concentrated oxygen and then exposed to depleted oxygen through while you're exercising.

I mean, profoundly helpful. Yes. Yeah. And all what all of these different things have in common is they all create a bio energetic stress on the system.

They all have mitochondria. I didn't hear you say hot and cold. Did you mention temperature. Sauna. Stress on there? And then what about cold? It's likely that it has benefits, but it has.

There's not a lot of research to speak of as of right now. But the research on. The research on which I'm sure you're familiar with the research of Jarrell walking in and looking at sauna use and dementia risk.

And also we have lots of research looking at the mechanisms that can explain these findings. But the the observational research is almost mindblowing.

I mean, it's it's like the people who use the sauna 9 to 12 times per month relative to those who used it less than four times per month, had a greater than 50% reduced risk of Alzheimer's.

So, you know, this is not a small effect. This is like this is a massive effect. Not even using the sauna daily. We're talking about using sauna like once every three days, roughly.

And we can cut our risk of Alzheimer's in half as a result of that. And with that. And stack some of the interventions. Right, like you are getting some detox, you're getting improve circulation, you're getting this heart medica factor this this stressing that the system, if do it with someone else, you're getting that social aspect.

There's so many great things that come from start I guess. Please continue. Yeah. So would all of these interventions do is they counteract what I was describing before, which is this natural tendency of the Western lifestyle to take youthful Ferrari V8 engines and turn them into moped engines.

The good news is that system is malleable. It's dynamic, just like our brain is, just like our muscles are and our bones are. You take the demands off the system.

It shrinks, it, it atrophies. But if you put the demands on the system in a smart way, that's appropriate dosing, systematic and progressive and consistent, not just like one off or intermittent random sort of doing of these things.

It has to be consistent, systematic and progressive. And if you do that, you can rebuild those mitochondrial networks. You you stimulate mitochondrial growth and mitochondrial biogenesis, the creation of new mitochondria from scratch.

So we can rebuild more youthful mitochondria in our muscles, in our inner organ systems, our brain, and move back towards that Ferrari V8 engine. You know, if if you're 92 with end stage Alzheimer's, you're probably not going to make a ton of progress in that.

You know, if you're if you're right at the end of your life, but if you're 75, if you're 65, you know, and you're still in reasonable condition where you haven't lost your function dramatically, like if you can engage in some of these things, you can make enormous progress very rapidly.

We have studies, for example, using interval training, exercise that have shown in eight weeks or 12 weeks or 16 weeks of training, you can increase mitochondrial capacity by over 50% in two or three months.

So, you know, it's very powerful if you engage even, let's say, 10 minutes of the very oxy type of training, hypoxia, hypoxia while on a stationary bike type of thing.

I mean, you can make massive, massive changes in your physiology and the structure of your physiology very, very rapidly. And I would argue that doing something like that, it's hard, it's psychologically challenging.

And so you probably again, this is the overlap between the cardiovascular, mitochondrial, cognitive and then psychological reserve capacity is that as you stress the system, you kind of proved to yourself that you can do hard things and that adds to the psychological reserve capacity.

Well, you speak to that a little bit. Yeah, absolutely. Great Segway. So one of the other aspects to the story that is pretty well researched is that chronic psychological stress is is definitely linked with risk of Alzheimer's.

And once you have Alzheimer's, the progression of the disease and you know, this is a weird sort of snowball effect because having the disease itself can also be very stressful on you and scary.

And so that itself can induce all kinds of its own stress. But what we really want to do as much as possible is get

out ahead of it. And I think most of the discussion of psychological stress really centers around how do we minimize sources of psychological stress, how do we get rid of stress once we feel stressed?

How do we do this breathing practice or this meditation mindfulness practice to release stress and that sort of thing? And there can be lots of benefits in those things.

Certainly, and there's good research on many of those interventions. I think one interesting layer that doesn't get a lot of attention is really looking at this from the homo dynamics based perspective.

So what is your level of psychological resilience? What level of objective circumstance in your life? Does your brain, does your nervous system even register as stress?

Right, because stress is very is very subjective thing. Right. So, I mean, I could I could give lots of examples here. Somebody could be thrown out of a plane with a parachute against their will and be terrified for their life.

And it could be the scariest experience imaginable. Or somebody could do this very same thing for fun and have a big smile on their face. Right. Stress is very subjective.

I went to when I was in France recently with with my kids, I took them to like a tree climbing adventure course. And my my four year old daughter was on these these obstacles hooked in.

You know, it's it's completely safe. You're hooked into a cable overhead and you're going over these obstacles. The initial obstacles for the little kids are only like maybe four feet off the ground, you know?

So it's very, very, very but you're on wobbly pieces of wood. They're moving and she's shaking, terrified, screaming, get me off of this thing, you know? And 20 minutes later, she's doing the same thing.

Pretty good. Still a little scary. We come back the next day. We come back the next day again. All of a sudden now she's 20 feet off the ground, doing zip lines with a big smile on her face.

No, no fear, doing obstacle courses that are way more complex and way scarier and without all the fear, without all the stress. So what's interesting is, is this territory of how do we make it so we perceive less of what's happening in our lives as stress.

So we register less stuff as stuff that is really stressing us out. And it's good to have tools to deal with stress once you're stressed, because we all inevitably get stressed.

But I'm really interested in how do we become more psychologically resilient so we can handle life without being stressed so much of the time in the first place and one of the things that you just alluded to as you segue into this is is a big focus of that.

So and it ties in to some of the things we talked about like like exercise, like sauna, cold exposure, hypoxia, training. Right? These are all uncomfortable things.

They're all difficult, uncomfortable things, sometimes a little bit painful things. They're challenging. They're not easy. We have lots of resistance to doing these things.

There's benefits. There's huge benefits in that. But one of the big things that we can do in in in while we engage in some of these physiologic cool challenges or hermetic stressors, is cultivate a certain internal attitude while we do them.

So, you know, kind of alluding to some of the examples I just gave, but let's, let's, let's picture this scenario. Two people go into a cold plunge into a tub of cold water, and for one person it's, oh, my God, oh, my God, get me out of this thing.

Oh, it's so uncomfortable. Oh, my gosh. Oh, my gosh. I'm freezing. It's terrible, you know? And the other person is right now. That was me this morning.

That's the first one. Which was okay. So eventually I got to the second one, but not initially. Yeah. Well, then you're you're right. You're teetering right on the edge, which is where you want to be.

So training. Yeah. So basically if we cultivate an internal attitude of calmness during while we have actually induced a physiological stress response.

So when you get into that cold plunge you are inducing, regardless of your reaction, you're inducing a stress response. The physiology of getting into that tub will create a big surge of stress, hormones, adrenaline, lots of other biochemical changes, activation of certain brain regions that sense pain and discomfort and are telling you to get the hell out of that uncomfortable, terrible freezing thing.

And if you practice intentionality and consciously deciding that you are going to relax and calm yourself down and not listen to those signals, you're going to use your prefrontal cortex to override those signals from your body, from your amygdala, from your stress hormones, telling you to get the hell out.

You are practicing how to cultivate mental calmness and serenity and resilience. You're practicing how to dissociate the what's going on psychologically from the physiological stress response.

So how do I train myself to be calm even when I actually have adrenaline pumping through my system? Equanimity is the work that I use and my mantra when I'm sitting or in one of those situations where the stress response is heightened, I'm like, All right, just get through this equanimity.

That's exactly, exactly suede. Too much too reactive when you're in a situation that that comes up because inevitably they come up for all of us. Exactly. Exactly. So what we do when we practice this is we train this greater.

We enhance top down control, first of all, to dissociate our mental and psychological responses to stress from being physically stressed, which is an invaluable skill just to to have greater control over your responses to stressful things is is massively beneficial in life.

One of the other things that we're doing is we're actually adjusting our HPA axis set points, our sensitivity to stress literally at the brain and hormonal levels.

When we practice these types of things that they get adjusted to the demands on the system and our autonomic nervous system learns to regulate differently as we start to as we practice putting ourselves in that situation.

And the other thing that that I would say that's really interesting, that doesn't get talked about much, is doing things that are a little bit scary. So I've always been drawn, I've always been really scared of the ocean.

So and sharks, big waves and sharks. So I'm a surfer. So for me, that activity becomes like a training ground for my mind. It's like I get to regularly every day or every couple of days.

I get to confront my own fears and train myself to be more comfortable in an environment that's scary. And what doing there? Again, linking things back to adaptation, linking things back to structure and homo dynamic space is and what I was just describing with kind of adjusting these set points is when we are engaged in a stressful or fear inducing thing, we trigger certain brain regions.

The, you know, the classic, the stereotypical amygdala response and fight or flight response and that sort of thing. And when we do that and we brush up against our fear, you know, just outside of our comfort zone again and again and again and bring that intentionality into it.

Okay. How do I call myself down? I'm safe. I got this. I can handle this. And we have the experience of having courage to do that thing again and again and again.

Number one, we build the adaptation of courage itself, which I consider an adaptation that is analogous to building more muscle, building more strength, having more courage.

We think of it as this intangible thing. But the truth is, there's a part of the brain that relates to that capacity. And I bet you if you practice courage, that part of the brain goes physically bigger and stronger.

And we already know that's true. For example, with willpower, which also grows physically, the anterior cingulate cortex grows physically bigger and stronger.

In response to consistently controlling your impulses, consistently doing difficult things. Okay, so also true with courage. And when we do this, we also tamp down the the sensitivity of the fear and stress response circuitry.

So I really encourage people to also find some type of practice. I love surfing. I love rock climbing. I'm also little. When I was younger, I was scared of heights when I started rock climbing.

So for me, those became training grounds to continually brush up against these things that put me in situations where my brain goes up. Danger alert, danger alert.

This is scary. Get yourself of this situation. And I find that has been transformative. It's really been invaluable in my own life to build my own courage and to calm my fear circuitry of my brain down.

Yeah, this is just getting out of your comfort zone, right? And for somebody else, that might mean going to that party or, going to that new book club or, you know, inviting a neighbor over so you can get that social interaction.

It might mean starting a new sport, showing up or signing up for a class, all of these sorts of things that get us out of our comfort zone and what's easy, right?

This is that idea that stress can actually be really good for us. Those patients I mentioned that we were reviewing last night, one of them took on going to these classes for cognitive function.

And then from there, that led to her actually leading a new class for other people that were suffering with cognitive decline. And then that led to her going to this Fit Brain program.

And it all started to sort of snowball in the best possible way that she became like one of the like a matriarch of this whole program for them. And it just sounded like a really neat story and such a testament to exactly what you're describing.

Yeah, and that's it. Oh, I want to make sure everyone knows how to find out more. I mean, there's so much good stuff here, and there's no way we're going to be able to cover all of the insights and wisdom and perspective that you have here today.

So please, please add what you you have, because all of it is super relevant and amazing and then please let everyone know where they can find out more about you.

Sure. I just want to say, in response to what you said, one of the biggest things that people are afraid of is even beyond like sharks and big waves and heights and things like that is public speaking.

Yeah. So, you know, I forget the exact stats, but I think, you know, those, those famous studies that showed that I think more people were afraid of public speaking than they were of death.

Yeah. You know, it's like the fear of public shame and and humiliation and embarrassment is so great in people's minds. And what you were just describing of of this woman who infused this aspect of, okay, we're doing cognitive training, I'm building up my cognitive reserve capacity, and now I'm going to challenge myself to even teach you, put myself out in front of people, right?

Which is takes a lot of courage to go do that. So now we're we're also infusing that that layer of the story that I talked about. How do we tamp down the fear circuitry and build up that courage to the point where public speaking, getting on stage in front of people no longer induces a big stress response, no longer is so scary.

Right. That's that's the building of courage. That's and that's correlated with all these changes in in how the nervous system and the brain function. So yeah, a very cool example as far as where you can find more about me, theenergyblueprint.com and my new brand is called HumanOptimization.com.

Amazing. All right. It's such a privilege to have you here. Finally, as I mentioned before, I've been wanting to have you on the summit for several years and it's finally happened.

So thank you. Thank you so much for sharing your time from Costa Rica with us today. Thanks so much for having me.