Introduction and guest background

Hi. Welcome. I'm doctor Roger Murphy, and I'm your host of the freedom from Fibromyalgia summit. And I have my friend and colleague here, Ari Witten. And Ari is, has quite the, the energy expert.

That's, that's what I call him. Whenever I have a conversation about, are you going to be sharing some information with us today about things, steps you can take to really boost your energy?

We're going to focus on that. But he's the founder of the Energy Blueprint, and he's the bestselling author of The Ultimate Guide to Red Light Therapy and eight for Energy How to Beat Fatigue and Supercharger Mitochondria for All day energy.

That's something we're really going to focus on today. All right. Hey, I've been looking forward to this conversation. If anybody needed to have more energy, it's it's people have fibromyalgia.

Absolutely. Yes. And thank you so much for having me. It's a pleasure to be here. And, yes, most definitely. I'm here to help out with that problem. So you the energy blueprint, this is something that you have really just devoted your career to for the last decade or so.

And you know, the blogs that you put out, the material that you put out, I'm always really impressed by what detail you go into this. And if anybody is an energy expert, ish you.

But one thing is I want to really focus on is mitochondria. So had a laugh from Ontario that was on here with a couple people talking about mitochondria.

We know in the fibromyalgia community genetically, just the way God made you. Oftentimes you don't have as many mitochondria, and the mitochondria that you have are dysfunctional.

They're not working as well as they could. First of all, for those that haven't seen the interview I did with Laura Frontera, tell me what what is the mitochondria and what is what's its role?

Yeah.

What mitochondria do and why they matter

So the mitochondria are well, everybody remembers this one thing from from high school and college biology courses. The mitochondria are the powerhouse of the cell.

That's what everybody remembers. And, yeah. And unfortunately, most people's knowledge doesn't go much deeper than that. And including most doctors, especially conventional doctors, really don't know anything about the mitochondria, that probably their level of knowledge around mitochondria has the same level of sophistication. Well, it's the powerhouse of the cell.

That's what I you know, when I take my multiple choice test and it asks me what mitochondria are, that's the option C powerhouse of the cell, you know, but it turns out that mitochondria are actually extraordinarily important in human physiology.

And there's, a couple decades now of research from researchers all over the world that have painted a story of the importance of mitochondria in regulating, human physiology in many, many different, profound ways such that we now know that the health of our mitochondria has a huge impact on our risk of countless diseases, has a huge impact, of course, on our risk of energy related issues like fatigue.

And is is, of course, central to the story of why there is a chronic fatigue epidemic. Now. And it influences the rate of aging itself. Like how healthier mitochondria are will have a huge impact on how fast you age at a cellular level.

So it's this seemingly tiny thing, you know, and in our biology courses that in physiology courses, we took, you know, in high school and college and graduate school, it's kind of just like one of many different a million things we have to memorize.

And, you know, here's the lysosomes and the endoplasmic reticulum in the nucleus. And, Golgi apparatus and here's a mitochondria. And other than, you know, and yet the mitochondria are so much more than just one of a million things going on in human physiology.

They are very, very central to our overall health, our overall energy levels, our risk of disease, and the aging process itself. Now, they're also really central to the story of fibromyalgia and fatigue syndromes.

And for various reasons that I'm sure we will talk about when mitochondria are not producing energy adequately. A couple things happen. One, there starts to be much more a much more inefficient process of cellular energy production that happens outside of the mitochondria, called anaerobic glycolysis, one of the byproducts of which is lactate or lactic acid.

Yeah. And that is obviously tied in with the story of fibromyalgia. It is is thought to be part of the, the pathogenesis of fibromyalgia and that the pain and tender spots that occur in fibromyalgia and, and that production of lactic acid is again directly dependent on the, the health and the status of your mitochondrial machinery.

How how robust is is your cellular energy machine, your cellular engine, and cannot produce a lot of energy or very little, the other key aspect to understand here is that, in our biology and physiology course as mitochondria, we're often framed as these sort of mindless cellular energy generators that just take in carbs and fats, and they pump out energy in the form of something called ATP, adenosine triphosphate.

And that's, that's cellular currency. That's cellular energy. Is this ATP? Now it turns out that mitochondria are actually way more important than just mindless cellular energy generators.

They actually have. And this is largely thanks to the work of Doctor Robert Navajo, who runs a lab for mitochondrial medicine, the University of California, San Diego.

And he wrote a paper about a decade ago called The Cell Danger Response. And this was a synthesis of a huge body of literature from researchers around the world on on mitochondria and the roles of mitochondria, what they're doing in human physiology.

And basically, the summary, the way that he synthesized all of this into, a kind of coherent, framework, conceptual framework to understand what mitochondria are actually doing in our body is basically he said, there's two roles, two fundamental roles of mitochondria.

One is cellular energy production, and the other is cellular defense. And what he says is that mitochondria and what a large body of literature supports is mitochondria are environmental sensors.

They're basically like the canary in the coal mine of our body. And they are the most sensitive, the most upstream thing that is detecting when there is danger present.

Cell danger response and stress overload

And they when they detect that there is a significant amount of danger present, they basically respond by turning down the dial on energy production and shifting resources towards cellular defense.

And so that's like a fundamental principle of how our body is designed to respond to being overwhelmed by stress, by danger, by threat, turn down the dial on energy production, shift resources toward cellular defense.

And, this is what doctor Navajo calls peace time metabolism or war time metabolism. Okay. Peace time metabolism, mitochondria producing abundant energy, War time metabolism.

They're turning down energy production, shifting resources towards cellular defense. So this takes mitochondria out of the frame. The paradigm of them as these mindless energy generators that just take in carbs and fats and pump out energy.

I mean, wouldn't it be great if solving the energy problem, the fatigue problem was as simple as just saying, well, just eat more carbs and fats, you know, provide more fuel to your mitochondria of course, we know that doesn't work very well.

So the real story is much more complex than that. It's how do we get our mitochondria to be in a mode where they are producing abundant energy? There's no shortage of fuel. That's not the problem.

The problem is the mitochondria are not using the fuel adequately. And in fact, this is a bit of a digression, but much more commonly there is an excess of fuel which actually is toxic to mitochondria, to be constantly putting in too much fuel into that system for various reasons, creates a toxic environment that damages mitochondrial function.

Now, the goal of of all of this is basically we in order to shift our body back into a healthy mode of energy generation and to shift it back into peacetime metabolism, where the cells are producing abundant energy, we need to figure out what are the factors that are causing the mitochondria to shift out of that mode into defense mode.

Okay, so that's one layer to the story. The other big layer to the story is, sort of the status of the mitochondria in our cells. Do you have cells filled with lots of mitochondria that are big and strong and healthy, or do you have cells filled with weak mitochondria and very few of them.

So those are that's kind of the high level overview of what's going on. At the cellular level, that is ultimately translating into, of course, our physical energy levels and how well our cells, virtually all the cells of our body, from our brain to our muscles to our internal organs to our hormone producing glands, virtually all of the energy that powers virtually all of those trillions of cells comes from mitochondria.

And if mitochondria are not producing adequate energy, those cells, whether they're brain cells or heart cells or liver cells or intestinal cells or muscle cells, those cells do not do their job adequately when they are in an energy deficit.

Okay. So that story revolves around mitochondria. So that's the high level overview I'll let you take it from here. So it's great to hear you share this because and when in some of the interviews I've already talked a bit about the cell danger theory to me and I and I'll share this for the summit, I did last year.

It was a game changer, really kind of hearing that again and really finally wrapping around this whole idea that our body goes into a defensive posture.

Because when I read Neil Nathan's book toxic years ago, when he talked about Nadia to work, I thought, wow, that's interesting. I wonder if that has to do something with what I see with fibro flares.

You know, I get I get people doing really well. They go into their, you know, they're dramatically reduced. Their fibromyalgia symptoms are doing good.

And also now they get under additional stress and then they have a fibro flare. And sometimes it's really hard to get out of that flare. Eric Gordon came on one of my podcast and then one of my summits and talked about cell danger theory, and he went into detail about it.

And then Isaac Elias came on and he talked about the survival paradox. But the more I hear about cell danger theory, the more excited I get, because it helps me explain to my patients what they're going through.

It's not about just taking supplements. It's not about just changing your diet. It's deeper to that in that what we talk about in functional medicine, which is find the root causes and fix those.

So there's these triggers that are generating these symptoms which are warning signs. And the more that happens, the more likely you're one of these people where you get under too much stress is the straw that breaks the camel's back.

Everything shuts down. And now you develop these symptoms. So to me, the social danger theory, it just it weaves the whole story together for me. Exactly.

Made it easier to explain to my patients why we got to keep looking for these underlying triggers. Yes. Get those toxins, whatever that is, mentally, physically, these things out of you.

And by doing that now, we set up the the the body's innate, inborn, healing, homeostatic, mechanisms to be able to finally get healthy and stay healthy.

Exactly. Yeah. Very well said. And, you know, there's another layer to the story that's important. I think, one of the frames that I find to be actually the central frame that I find to be the most important thing that you can do if you want to understand human health, from, the level of paradigm, from the level of the lens that you are looking through to, to find answers, to arrive at the solutions to your problems is to study human health the way a biologist would study any other species here.

Okay. And, I find very few people do this, and it the reason very few people do this is because we are taught from the time that we are little kids through modern culture, various ways that this is done either in the context of religion or in context of just in general, the ways that culture emphasizes this for, for example, when you go to a restaurant, it'll say no animals allowed on the sign, and yet it's full of humans.

What are humans? You know, we're taught humans are taught to think of ourselves as separate from the rest of the the animal species on this planet. But humans are animals.

And obviously some people have, you know, sort of philosophical and or religious objections to that. I'm, I'm not here to say anything to to those if you want like obviously humans have differences from many other species.

There are things that make us uniquely human. But at the end of the day, we are one of many, many, many millions of animal species that exist on planet Earth and if we see ourselves through that lens as the way a biologist would study any other species, we immediately start to see things from a very different perspective.

Let me give you an example of what I mean. If you have a, a plant in your home and, let's say you, you know, how to plant in the room you're sitting in right now and you notice that that plant started to wilt and become depressed and the leaves instead of green, they started to turn brown.

You would immediately think a few things. You would immediately think must be something wrong with either the water. I'm either not giving it enough or I'm giving it too much.

The light. Maybe it's not getting enough sunlight, or maybe it's getting too much or something's off with the soil or the air quality in the room, but and and you know, you know that that plant genetically is designed to express health if given the proper environmental conditions of water and soil and air and light.

Okay. Similarly. And that's intelligent thinking. That's that's how we should think about our health. Similarly, let's say you encountered a lake and, a bunch of fish started washing up on the shore with tumors, and, and it's washing up on the shore dead.

Okay. And a huge amount of these fish started getting all these diseases, and, and, you know, the fish were going extinct because of that. And the birds that were eating those fish, were also getting sick and then producing very frail eggs.

And those birds were then starting to go extinct as a result of that, you wouldn't set up little hospitals on the shore of the lake where you administer drugs to the fish to combat their cancerous tumors.

And and to you wouldn't administer drugs to the birds to start to build the the quality of their shells a little thicker so that they, you know, are are able to produce, offspring better.

As a biologist studying this, you would go something's off in the ecosystem here. Some things there's probably some toxic stuff going on in this lake.

Something is clearly not right here.

Human biology, root causes, and functional medicine

You don't set up hospitals to administer drugs to these creatures. You you fix the underlying cause at the environment level. And for some reason, as much as every the examples I just gave are totally common sense to everyone listening to this.

I hope so at least. Humans are terrible at doing this for ourselves and thinking of ourselves as other humans and us through this lens, but this is the exact lens that we all need to think about.

So from this perspective, we go, well, one of the foundational questions would be does fibromyalgia exist in traditional living hunter gatherer human populations?

And the answer is pretty much no, it doesn't exist. So is if you understand that, well, then the logical conclusion is why does this condition exist so commonly in modern humans?

Right. Well, it has to do with some of those, those, those, differences between traditional living humans and modern humans. Toxins in the environment, poor nutrition, lack of movement, lack of exposure to the climate to heat and cold, and, and various other factors like that.

You can you can find the solutions, fairly easily. And, and we have a lot of science to support those things, by the way. If you look at things through the right lens and if you don't, then you'll go to a doctor who will say, well, we have the scientific evidence that fibromyalgia involves this in this biochemical mechanism.

And fortunately for us, Pfizer or this other drug company, has developed a drug that interferes with that biochemical mechanism. And you can take this drug to block your brain's perception of the pain of these tender points.

And therefore, that's the cure, right? You will arrive at a totally different style of thinking, because you you have a different paradigm. Yeah. Well, and I think unfortunately, the where we're at in conventional medicine with fibromyalgia, it's not even here, take this drug and you can be cured.

It's take this drug and learn to live with it. Yeah. It's sad. It's sad that what we have available in the conventional medical practice for fibro is, is, a really, a void of anything that can be helpful long term.

And that's again, you know, I always say this, I'm not here to to badmouth conventional medicine. Thank goodness we have. But you can't drug your way out of fibromyalgia.

And what you're talking about is really the fundamental principle, functional medicine, which is to find and fix these underlying causes that are that are contributing to warning signs.

And as you do that now, you can get the body to come back online to be able to heal or start to heal itself. That's a fundamental difference. Then, hey, let's take a drug.

We'll suppress a symptom. You'll feel better, you'll be happy, I'll be happy. But I think or, you know, you bring up a good point. We're not trained that way. We're trained since.

And I know the way I grew up. If you're sick, you go to the doctor, they give you a pill. That's our motto. You know, fibro, like if you multiple pills.

And that approach just doesn't work. And in the summit, numerous people are talking about the whole idea of finding and fixing root causes. Yep. So here's a layer to the story that I would venture to guess no one has talked about.

So we've talked about this mitochondria piece being central to this story. Now let's let's dig into some specifics here. Now again energy mode defense mode piece time metabolism war time metabolism.

The first layer of this story is we want to get our mitochondria producing abundant energy because we know that our our cells, whether again brain cells, muscle cells, gut cells, liver cells, they're not going to function well unless we have mitochondria producing optimal energy.

So we gotta shift them back into energy mode instead of war time metabolism. How do we do that? Well, they're shifting into war time metabolism as a result of sensing too much total body stress load, too many dangerous signals.

Yeah. What what are those dangerous signals that they're sensing? Turns out they can sense basically any and every type of stressor and danger signal.

You can imagine real or imagined, real or imagined. So. And to that point, there's a whole field of, scientific research called mitochondrial psycho biology. Yes.

Which is the connection of the mind to the mitochondria. Right. So psychological stress and of course, this interfaces massively with one's belief systems, paradigms, self-talk, all of these things, emotional states, all of that interfaces directly with your mitochondria.

And they're they're experiments done, for example, by, Douglas Wallace and, and Martine Picard have done experiments where they subject people to, stress some interesting experiments where they, there's one in particular that I found very funny, where they basically have people do, public speaking and, you know, many people are more afraid of public speaking than they are of death.

You know, people have a very intense fear of public speaking. So they they had people go and do this public talk on stage in front of a lot of people.

And then they also recruited, audience members to shout obscenities at the person delivering, the, the talk, to make sure they subjected them to a significant amount of stress.

And, and then they measured, they measured a number of things, but they, they measured the amount of mitochondrial DNA in the bloodstream. And, this is important because mitochondrial DNA shouldn't be floating around in your bloodstream.

It should be inside of your cells, in your mitochondria. So, what they found was that literally within minutes, I think maybe even within seconds of, exposure to intense psychological stress, you have mitochondrial DNA present in your bloodstream, and that means damage to your cells, disruption of these membranes such that you have leakage of mitochondrial contents into the bloodstream.

It also turns out that that mitochondrial DNA acts as a danger signal. It acts as a signal of stress and cellular damage present so that other cells can detect the presence of that mitochondrial DNA floating around where it shouldn't be, and then respond to this dangerous signal.

Now, that's just one dimension of this story.

Mitochondrial resilience and rebuilding energy

We also know that environmental toxicants, whether we're talking about heavy metals or, toxins in the air or the water or pesticide residues, many, many of these toxins are directly toxic to mitochondria.

We of course, know that many elements of modern nutrition is toxic to mitochondria. I mentioned in passing earlier that just an excess of fuel, a chronic excess, overconsumption of energy, relative to how much energy you're expending is also directly toxic to mitochondria.

The accumulation of large amounts of body fat, which leads to insulin resistance. Chronically elevated blood sugar, leads to a chronic excess of fuel that the cells in the mitochondria are being exposed to is toxic to mitochondria.

So in other words, just having a large excess of body fat will chronically damage your mitochondria and send a signal to them to to turn themselves into, the cell danger response into wartime metabolism, turn down energy production.

We know that sleep deprivation and circadian rhythm issues are a huge factor in, sending these dangerous signals to our mitochondria. We know that the the gut is a is a huge issue.

And there's a lot of research related to gut health and intestinal permeability and leakage of, LPs of endo toxin that is tied into this story of, of fibromyalgia.

And we know that intestinal permeability and leakage of this bacterial toxin, LPs, into the bloodstream also is a danger signal for mitochondria, damages mitochondria and causes them to respond by turning more into into wartime metabolism.

And the story goes on, any and every other type of stressor you can think up is ultimately converged into a few different one or more of a few different biochemical signals that either are directly damaging cells or causing increased oxidative stress, reactive oxygen species, or increased inflammatory cytokines, or some combination of these and all of those are basically signals for the mitochondria to go up.

We're under attack. Let's turn down the dial on energy production, shift resources towards war time metabolism. It doesn't matter whether that is from emotional stress or sleep deprivation, circadian rhythm disruption, environmental toxicants, respiratory tract infection, any source of stress, and any combination of those.

If it's overwhelming to the mitochondria and their capacity to handle that stress, they will shift out of energy mode into war time metabolism. So the first big layer to this story is you have to do a self inventory to figure out what are those key stressors in my life that are putting this, that are contributing to this total body stress load on my mitochondria and causing them to turn down the dial on energy production and yeah, so so that's that's layer one to the story.

And the second layer as I mentioned before, is is really. What is the status of your mitochondria. Do you have a big strong healthy cellular engine or a very weak one.

And that's that's another layer to the story we can talk about. So when you're describing this I mean I'm sitting here thinking I just raise your hand.

And this makes sense to you because to me it tells probably most viewers story in that they're going along, they're doing okay. They got some aches, they got some pains, or maybe, you know, a little bit of stress, but also now they start to develop seasonal allergies.

Never had them before. They're in their 40s now. They can't go outside without, you know, getting congestion in their sinuses or in their lungs. They start to see that foods they used to berate, they can't eat anymore.

They see that things that, normally they could do physically now they can't do without having taking 2 or 3 days to rebound. And I think what you're describing is, is as this toxic load gets larger and larger and larger now it starts to rear its ugly head and symptoms showing up that previously, yeah, you were in a moldy house.

It never gave you any problems. Yeah. You're eating foods that maybe you had some sensitivities to that now are giving you a problem. Now you've hit a certain level of toxicity that even the pollen in the air is creating this response from the mitochondria.

And as that becomes more and more of, of an issue, now, you see that anything that you get, you see any kind of stimulation, any kind of stressful event can send you into a fibro flare, whatever an energy deficit that creates more and more and more and more problems.

That's right, that's right. And to to that point, the there is a there is a, an issue that I think is, extremely important that, I think is very often neglected even among functional medicine doctors, even among very the best functional medicine doctors, I think, haven't yet incorporated this knowledge.

And that is, one layer of the story is the total amount of dangerous signals on the body and on the mitochondria that are contributing to this, pathological or dysfunctional physiology.

The other layer to the story is what is your body's resilience? What is your body's capacity to handle stress and maintain health and homeostasis? Yeah. And high energy levels. Okay.

And this is this is the big missing piece, in my opinion. In most people's paradigm because, there are massive differences in individuals capacity to handle that stress level.

Right. And part of the problem isn't just the presence of the stressors. It is that the body's resilient systems and stress tolerance capacity has been so weakened that even the most minor stressors are causing a negative reaction, as you just described. Yeah.

So yeah. Sorry. Do you want to jump in what you're going to say? I mean that's what we see with fibromyalgia. That stress becomes magnified. Yeah. The and I and I use this analogy that we're all born with the stress coping savings account.

And in that account we have certain chemicals that help us deal with stress serotonin, dopamine, cortisol, DHEA, magnesium, B vitamins. These are our stress coping chemicals and hormones.

And we're using those all day long to deal with stress. And most of us, you know, if we get too much stress, we can rest. And our body builds these these reserves back up.

But with fibro you bankrupt your stress coping savings account. Now stress becomes more magnified. And then you throw in this cell danger response. And now you've really you set the house on fire because it's hard to to to to solve that puzzle.

You've you're depleted and you've, you've gotten this, your body is not able to to create the stamina and resiliency to stress that maybe you could a year ago and now you're vulnerable to any kind of stress.

Yeah. So and and very much central to the resilience. So let me put it this way. Resilience is something that is often talked about in, you know, in, in, in the general public and even in academic circles as, purely psychological sort of phenomenon as, our ability to persist through adversity, our ability to bounce back through difficulty and challenge.

Yeah. Yeah. But there is actually a huge physiological component of resilience. And you, you spoke about an aspect of that which is, you know, providing these cofactors and vitamins and minerals that are used up, more during stress and how the depletion of those can contribute to lack of resilience.

But central to the story of physiological resilience is, again, the mitochondria, because stress is energetic demand on the system. And what is in charge of meeting energetic demands is mitochondria producing more energy to meet those demands.

If you have a deficit of an ability to meet energetic demands, that by definition means that you are have lowered your stress tolerance capacity. Yeah. And that ties in.

Yeah. To the whole cell danger response. And I was explaining before because what it means is that, you just as a, as a thought experiment, you could say, let's say you have, super strong, healthy mitochondria and I have very weak mitochondria.

We, we can be exposed to the exact same objective stress load. And yet you will be fine. And and you won't even notice it. You'll have no symptoms. And I will be overwhelmed with debilitating symptoms.

Yeah. Because of a difference of our cellular capacity for stress tolerance, our cellular resilience. So the way that this works and I'll give you some data points to kind of build out this story.

So number one and this is a really critical piece of this story that again not a lot of people know about, a number of lines of evidence have shown that on average, people lose about 10% of their mitochondrial capacity with each decade of life.

And, might not seem like that much, 10%. Here's another way of phrasing it the average 70 year old has lost 75% of their mitochondrial capacity. Yeah, 75%. Okay.

And specifically, the research shows the total number of mitochondria are cut in half and the, energy production capacity of each individual mitochondria is cut in half.

And if you do the math on that, that's a 75% loss of your your total cellular energy production capacity. This is like going from a Ferrari engine in your cells when you're 20 to a moped engine in your cells when you're seven.

And it doesn't matter if you eliminate all the stress in your life, if you have the perfect diet, if you supplement beautifully, if you sleep amazingly, if you do all those things, you still have a moped engine in your cells.

And one of the big things. And just to be clear, I'm not saying it doesn't matter in terms of your overall health. I'm saying those things will will create big improvements in your overall health.

But one of the big levers that you have to adjust is to correct the fact that you've got a moped engine in your cells and ideally move towards rebuilding the Ferrari engine, because at the end of the day, if you've only got 25% of the capacity, you still have a very low stress tolerance capacity for your body to handle any stressors that it's exposed to.

You still have a very low total capacity to produce energy to, like, actually feel energetic. If you've if you've got a moped engine instead of a Ferrari engine, guess what?

You're not going to feel anywhere close to as energetic as the people with the Ferrari engine in your cells. Right? And and again, it doesn't matter if you have the perfect diet, if you eliminate all the stress in your life and if you supplement amazingly well, you still have a moped engine.

So here's here's the good news. As I just alluded to, you can rebuild the engine. And we know that although the average loss is 75% of mitochondrial capacity, as a seven year old, we know actually that this is not just a natural product of the aging process itself.

So that's that's the good news because people listening to this thinking, oh my gosh, that sucks. We lose so much of our mitochondria as we as we get older.

Well, actually it is not a natural product of aging. And the reason we know this is because when we look at lifelong exercisers who are 70 years old, they have the same mitochondrial capacity as young adults.

They don't lose 75% of their mitochondrial capacity. So this piece of the story, which is, again, your cellular engine,

your capacity to produce energy, your capacity to respond to stress and maintain health and homeostasis and high energy levels in the face of stress is a function of hermetic stress exposure.

We build resilience at the cellular level through exposure to positive stressors, in particular exercise, and there are multiple types of exercise. Some work better for this than others.

Breath holding practices, heat exposure, cold exposure, Fasting. Certain things. Yeah. Yeah. Certain phytochemicals that stimulate these pathways. These these are the, the necessary conditions that, rebuild that cellular engine.

So the way we need to think about this is that if you immobilize your leg, if you break your leg, you get a cast on it. You eight weeks later, you go to the doctor, they off your cast, you look down at your leg and you're like, oh my God, it's half the size of my other one. This. This is because your body only cares about survival.

And as soon as you immobilize all that tissue, the body goes. Well, I guess we don't need all that energetically costly muscle tissue anymore, so let's get rid of it.

Right? That's how fast. Literally two months your body got rid. Got rid of half the muscle on your leg because it was immobilized for eight weeks. So that's how fast the body will atrophy.

Systems that aren't contributing a benefit to survival, and the way that that system works is if those muscles are being used and challenged, challenged, stressed, they will maintain a level of robustness to handle that stress load.

If they are not challenged and they're not stimulated, they will atrophy and weaken and shrivel. The same exact principle happens at the cellular level with our mitochondria.

If we do not challenge that system through regular or systematic exposure to our medic, stress through exposure to heat and cold and movement, physical activity, exercise through fasting and nutrient cycling.

Approach through the breath holding practices, through these other types of hermetic stressor light exposure, which I actually think is a big one for fibromyalgia.

We we atrophy and we weaken those systems at the mitochondrial level. And, and that's, that is fundamentally the reason why people are losing 75% of their mitochondrial capacity as they age.

And that story, that piece of the puzzle is a massive contributor to the fatigue, the chronic fatigue epidemic, and fibromyalgia in particular. So, you know, I'm I'm certainly, you know, with with my patients who complain about heat and cold intolerance, which certainly can be thyroid related.

But but oftentimes it's just when the weather changes. It's just that the body can't even handle that stimulation that's too stressful for them. And you've explained it very, very well.

It's has to do with this deficiency of the mitochondria, this dysfunction in the mitochondria. So how do we so we just got a little bit of time left and you've mentioned several different things.

And I want to make sure that everyone goes to the energy blueprint.com to learn more about you and your work. But before we go, before we in this informative interview, you mentioned exercise.

You mentioned, intermittent fasting. You mentioned, I assume red light therapy. So light therapy, there's a diet certainly plays a role. There can be nutraceuticals, supplements.

You can take that help. CoQ10, B vitamins, any kind of antioxidant is going to help the mitochondria, for those who are fibromyalgia. So they're hearing exercise and if they can, you know, or I can barely get out of bed, you know, forget that.

But this is really important in this one. I always encourage my patients as you're getting taking the steps to get better exercise is crucial to get to the next level.

Practical strategies for supporting mitochondria

And that can be something as simple as getting in a pool and flopping around, or just walking five minutes a day. It's the habit. It's the beginning that then gets you into the next step.

And and to be able to build the stamina and resiliency that the mitochondria need. Yeah, there's an interesting paradox going on here because, let's use the example of somebody who who broke their leg and had it in a cast for eight weeks, and now they've got an atrophied leg.

That leg is going to be much weaker after those eight weeks. And if you go then try to use it, you're going to go, oh, it's so weak, I can barely use it.

And in other words, you will be intolerant to using that leg. You will be intolerant to, physical activity and intense usage of those muscles. Yeah. And in the same way, you just use the words cold or heat intolerant, right.

So one, you could say intuitive response to that situation would be, oh, well, my body seems to have a lot of difficulty and pain and discomfort through this thing.

Therefore, I should avoid it. Okay. So in the case of the weakened leg, you go, oh, my. My leg has a lot of time, a really hard time walking upstairs.

And it's really painful and uncomfortable. I guess I should avoid walking upstairs because it hurts this really weak leg that just recovered from a broken leg, intolerant to that activity.

Well, that might seem like an intuitive thing. And in fact, I would say there is even a cultural narrative that reinforces that kind of intuitive response that says, oh, if something feels uncomfortable and painful, you should avoid doing it.

But it is exactly the wrong advice. The way to get your functional leg back is by pushing yourself through some discomfort. Now, of course, can you overdo it and get great harm and negative symptoms?

Absolutely. Yeah. You can, you can, drink two gallons of water in the next ten minutes and cause permanent brain damage and put yourself in a coma as a healthy person, you know, you can you can die from water.

You can overdo anything. And of course, there are situations where our whole body or systems of our body are uniquely sensitive to even very small doses of things.

But that doesn't mean that we should avoid that thing, because it's just it's uncomfortable or painful or challenging. In fact, it is very often the case that the thing that is uncomfortable and painful and challenging is the absolute right thing that we need to do in order to recover and avoidance of that thing.

If someone says, hey, my legs weak, and hurts when I use it. So I think I'll just use I'll continue to use crutches forever. Guess what? You're going to have a really weak leg forever.

The only way to get the functionality back is through pushing yourself through discomfort and challenge. And it is exactly the same way with our physiology.

Now, the the challenge here is, of course, that people who are chronically ill and maybe have debilitating symptoms have to start that the Goldilocks zone is very tight, is very, very tight, and the optimal dosage can be very small.

And it's very easy to exceed that and then be convinced that doing that challenging thing, stressful thing was bad for you, quote unquote. And that is the wrong conclusion.

So, we, we know that regular exposure to physical activity to cold and heat exposure to fasting, to light exposure from sunlight or red in your infrared light therapy is profoundly important for our physiology in in so many different ways.

And this is the only way that we can rebuild our cellular engine. That, again, is central to our energy levels, central to the the energy that drives all of those tissues of our body, those cells of our body, from our brain to our muscles and everything in between to function and do their jobs correctly.

They they need abundant energy, which depends on healthy mitochondria and lots of mitochondria and, hermetic stress. Regular exposure to hermetic stress is the only way to rebuild cellular engine that most of us are losing atrophying as a result of living in the modern world.

Yeah, already this has been a very thoughtful and informative interview, and I really appreciate you going in and diving kind of deep into, the mitochondria and its role and what you've learned from over a decade of, really helping people get their energy back.

So I want to thank you so much for being part of the summit. I want to, again, encourage people to go to Ari's website because he's got a wealth of of free resources there as it is.

Podcast is, is is dynamite. I really love your podcast, but it's the Energy blueprint.com. And really again, encourage your mom to go there and check out all the free resources that are there.

Thank you so much, Doctor Murphy. Thank you. Are.