Introduction to Energy and Fatigue in Parkinson's

Welcome to the Parkinson's Solutions Summit. I'm your host, Dr. Ken Sharlin. I have a very special guest today, Ari Whitten and he has many levels of expertize.

But I think you're going to particularly enjoy this interview because we're going to talk about something that is so central to Parkinson's disease, and that is the problem of problems of energy versus fatigue.

Ari is the founder of The Energy Blueprint. He's a bestselling author of The Ultimate Guide to Red Light Therapy and Eat for Energy. Ari Whitten, thank you so much for joining us to the Parkinson's Solutions Summit.

Thanks so much for having me, Dr. Sharlin It's a pleasure to be here. Well, Ari, this is like I said in the introduction, energy and fatigue. They are the most common complaints and many of the conditions that I treat as a neurologist and MS and Alzheimer's disease and ALS.

And, of course, this is the Parkinson's Solutions Summit. It is the number one concern that people with Parkinson's have. Can you talk about first of all, I want to know kind of how you got interested in all this, but let's really then dive into this subject of energy.

Mm hmm. So my my background really is as a dedicated and himself an obsessed health geek, since I was a little kid, really? Since I was 12 or 13 years old, studying health science has been my passion.

I was an athlete. I was an aspiring bodybuilder. As as a teenager all throughout my childhood.

Ari Whitten's Background and Fatigue Research

And so I became at a very early age, obsessed with knowledge in those realms, in the realm of enhancing athletic performance and fitness and changing body composition.

And and I was also naturally very gifted in science at that time. You know, at that I wasn't a particularly dedicated student or anything like that, but I would always score, you know, 98th, 99th percentile.

And on national standardized testing in science, not in other subjects, but definitely science. So, you know, I had some natural talent and proclivity and then all of that was channeled into the field of health science.

So, you know, I was reading college level exercise, physiology and nutrition textbooks by the time I was 14 or 15 years old. And that was really my world for a long time.

I went on to be a personal trainer. I did a degree in exercise science degrees as a performance, enhance or certify certifications as a performance enhancement specialist, as a nutritionist, as a corrective exercise specialist. And for many, many years that was my world.

And then in my mid-twenties, something happened that shifted things, which was I got mononucleosis from Epstein-Barr virus and I was left with pretty debilitating chronic fatigue for close to a year after that. Hmm.

And that prompted me to become interested in the science around fatigue and what regulates human energy levels. And there's there's a very long story that I could tell you around the details of what took place after that point.

But basically, I sought out conventional medical doctors who generally didn't have much to offer when it comes to fatigue or any kind of scientific understanding of it, or effective treatments for it.

And I sought out alternative and functional medicine doctors who generally, especially at that time, were operating in the in the paradigm of adrenal fatigue and very short version of the story is I initially got sort of I discovered as I was learning more about understanding adrenal fatigue, that within conventional medicine they brush off the whole idea of adrenal fatigue as pseudoscience and quackery.

And at that time, I got kind of very irked by that. And I had this desire to kind of stick it to them and prove that adrenal fatigue really was a real thing and that the science supported it.

So I went on a mission to kind of dig into the primary literature and the actual research to find an answer to this, to find support for adrenal fatigue.

And I ended up spending about a year of my life doing nothing but reading all of the literature on this in a very, very dedicated way and doing a very comprehensive literature review and making sense of all of this, this, this research.

But the short version of it is the research actually didn't support my bias that I went into it intending to find it actually validated the views of conventional medical doctors about adrenal fatigue.

The bulk of that body of evidence does not support that. Adrenal fatigue is, in fact, a real thing. And certainly it doesn't support the idea that any kind of adrenal or axis or cortisol abnormalities are to blame for fatigue in the vast majority of people with chronic fatigue, in fact, the vast majority by a long shot of people with chronic fatigue have no detectable abnormalities in cortisol or HPA axis function compared to normal, healthy people without fatigue.

So after all of that, I basically discovered what I didn't expect to find what I did. The research didn't support my biases, and at that point I was kind of left thinking, well, if conventional medicine doesn't really have any understanding or effective treatments for chronic fatigue and even alternative natural health functional medicine, they seemed to be misunderstanding it by being dedicated to this adrenal fatigue hypothesis.

It seems like nobody understands the real story of human energy levels and chronic fatigue. So maybe since health science has been my passion, since I was a kid, maybe I can direct my energy into building out a scientific framework for what really explains human energy levels.

And that's what I've been doing for the last ten years.

Defining Fatigue and the Limits of Testing

I'm wondering if we can start even by just defining fatigue versus energy. It seems like maybe that would help frame things then for what you ultimately discovered.

Yeah, well, I wish it was a complex and very sciency story to answer that question, but in a sense it's very simple. Do you feel energy or do you feel a lack of energy?

It's sort of that simple because, you know, you can go to a doctor and they can do a blood test. There's nothing there. There's no biomarker of fatigue.

And you can go to a functional medicine doctor and you can do $20,000 worth of functional medicine testing and gut microbiome and oral microbiome and salivary hormone testing and organic acids testing and everything else you can think of.

There's still no biomarker for fatigue. There's no biomarker that will directly correlate or combination of biomarkers that will directly correlate with your energy levels.

So as primitive as it might sound, it is actually more scientific and more accurate, more evidence based to simply take a survey and maybe ask a person a few questions of, you know, what are your energy levels like?

Do you wake up in the morning with lots of energy or do you wake up groggy? And is it hard to get out of bed? Do

you crash easily after doing any bit of of mentally or physically demanding work?

And you find yourself exhausted after that, you tend to crash in the middle of the day. Do you tend to have difficulty doing any mentally or physically demanding thing for more than a few minutes?

Right. These are these are the kinds of questions that are as, again, as primitive as it might seem. These the answers to those questions will tell you much more than what $10,000 of biomarker testing will tell you.

Now, though, the biomarker testing might uncover certain causes of that, right? So might not. And specifically, I'll point out that there was a review, maybe ten years old at this point, but it's called it was published in the American Journal of Family Physicians, and it's called Fatigue and Overview.

And this was essentially a set of evidence based guidelines for physicians to treat their patients with chronic fatigue. And, you know, it really offers like four treatments.

This is for conventional medical doctors, what they're calling evidence based treatment. First of all, I'll point out it doesn't mention nutrition at all in the whole document.

It doesn't mention sleep and circadian rhythm. You know, there's a whole long list of things that it doesn't mention. So the that's why I put evidence based, quote unquote, because in my view, it's not really a good reflection of the evidence that the treatments that they offer are things like stimulants.

A recommendation to walk for half an hour a day and anti-depressants and cognitive behavioral therapy. Those are the four things they offer. But one of the things they they state in this is in the in the section on testing is they say you know, basically what's recommended for patients with chronic fatigue as far as testing is standard blood tests.

And then they go on to say that only in 5% of cases do they find anything on those blood tests that explains a person's chronic fatigue, meaning 95 out of 100 patients with chronic fatigue who go to a doctor who are going, they're thinking, I've got this weird fatigue thing going on.

I don't understand what's causing it. Can you do a blood test? Can you can you figure out what's going wrong inside my body?

Stress, Adrenal Fatigue, and Cortisol Evidence

And they're thinking as soon as you get the results of this blood test, it's going to be it's going to have the explanation of what's going wrong. But 95 out of 100 people have nothing that shows up on their blood test that can explain their chronic fatigue and the 5% that do are things like maybe they catch hypothyroidism or they they catch some diabetes or maybe some other condition.

And so. Energy, it sounds like what you're saying essentially is that energy or fatigue are really sort of gestalt experiences that are possibly the summation.

They're ultimately subjective in that we talk about what our experiences, they're empirical, but they really are driven by a whole variety of factors.

As you brought up, for example, nutrition can play a major role in one's fatigue versus energy. And I'm wondering because you were talking about adrenal fatigue and as a as a as a neurologist who's still certainly very principled, if you will, by functional medicine, I don't personally use the term adrenal fatigue, but I think that the work that was done by CLIA and well published not only in book form but in, you know, journals like the British Medical Journal and in the mid-fifties.

Help us understand what I call the biological stress response and understand homeostasis and understand what happens in the body involving multiple systems.

As we talk about in functional medicine, really it's kind of takes me as a traditionally train neurologists from understanding what is it that we define as health and then what, you know, let me back up and say I've always said it in medical school.

Year one is everything that's normal anatomy, physiology, right? Biochemistry, year or two is everything that's not normal. It's about disease. It's about pathology.

Right? It's, you know, everything that makes us sick. But we don't really have year one B or, you know, do minus or whatever that midway. Like, how do we actually get sick and I have found and been very informed by Celia's work, not necessarily specifically to talk about fatigue, but to talk about, you know, homeostasis.

And what happens from a systems biology perspective when when inflammatory drivers ultimately take us down that road to illness, how how are mitochondria affected?

How is immune system affected, how are hormones affected? And so forth? Is that I mean, did you find evidence that that essentially says even that information is faulty or just curious what what you've discovered?

Yeah, certainly there's lots of things that are faulty in the way that Celia's work has been extrapolated. Robert Sapolsky, the Stanford stress researcher, has talked pretty extensively about that one. I mean, but one of the findings, you know, what Celia did in a lot of his experiments was animal studies, where essentially animals were tortured, you know, for a long period of time.

Yeah. And and these kinds of chronic, inescapable torture, if an animal is including a human is subjected to those kinds of things, there's no question that it will absolutely wreak havoc on your physiology, and it will cause all kinds of really horrible dysfunction in dozens of different physiological systems.

But what a lot of modern people have done is take Celia's work and and use it to try to explain the adrenal fatigue model, these these phases of alarm and then ending up in exhaustion. Yes.

But the actual literature that is tested this on and I've done, you know, I don't mean to sound inflated or anything, but I've probably spent more time looking at this literature than maybe all but a handful of people on Earth.

If you look at the research on the link between stress and axis function and cortisol levels, in order to try to find validation for this model that chronic stress eventually depletes or exhausts, the adrenals leads to burnout such that the adrenals can't produce enough cortisol.

You don't find any evidence to support that, and you can look at this. I've looked at this on every type of stressor imaginable. Even you, you can look at multiple types of psychological stress, everything from work stress to financial stress to relationship stress.

You name the type of stress and you can find studies on how that links up with cortisol. You can look at it in terms of toxin exposure. You can look at it in terms of chemical, in terms of physical overtraining like athlete's overtraining.

And there's there's dozens of studies on that. You can look at it in terms of metabolic stressors, like what does chronic cigaret smoking do? What does chronic alcohol consumption do in sort of broadly defining stress in that kind of context, even broadly defining it as metabolic stress derive from disease itself.

So let's say looking at people with diabetes or obesity who have widespread metabolic dysfunction, does that allow static load? Does that stress load eventually exhaust the adrenals?

And when you look at that, those studies, when they track it out over the long term, over a year, five years, ten years, 20 years, you never see a point where a cortisol levels go down and the adrenals can't produce enough cortisol.

Overwhelmingly, that body of evidence shows that cortisol levels are higher in almost every type of chronic stressor that you can think up. There's never a point where that changes to go to the inverse.

It's high initially and then it goes down with chronic stress. The research doesn't support that at all. There are a few examples of scenarios where low cortisol does appear, certainly with actual Addison's disease.

You know, if that's a clear case where hypo cortisol is and it's very real and it's a true case of the adrenal is actually cannot produce enough cortisol outside of that.

There are other contexts that might mimic that in terms of on a solid, very cortisol test, certain types of toxins in chronic mold exposure. There is some research to support that that can suppress cortisol levels.

It's not from an inability to produce cortisol from the adrenals. It's not that they're burned out and they can't do it. It's more a suppressive effect.

Mitochondria, Cell Danger Response, and Energy Regulation

Post-Traumatic stress syndrome is linked not with really suppressed cortisol, but is linked is one of the few things that is linked with lower cortisol levels on average compared to healthy controls.

And the biggest thing that will show up as low cortisol levels is actually just being a night owl. Chronotype not even having any particular dysfunction or symptoms of any kind, but simply being somebody who goes to bed very late and wakes up late.

If you test their salivary cortisol compared to somebody who's a morning type, the night owls will have about half of the morning cortisol levels. And is that just because they've disrupted their circadian rhythm, then they reset their they've set their biological clock in a different way.

Makes wonder if, you know, do they have a peak at some other time of day? Will it happen at. All because of the light exposure issues? I mean, my argument would be that, I mean, first of all, we have to understand I know you know this, but I'm sure the audience may not that cortisol is a hormone that is produced on a on on what's called a diurnal curve.

It's it's tied into our circadian rhythm. So we're designed to produce a big spike in the mornings. And then that declines throughout the day into the into the evening, in the night, and then it spikes again the next morning.

So it's intimately tied to our circadian rhythms, our sleep and wake cycles. So if you have a disrupted circadian rhythm, and I would argue a large portion of the world does, and particularly most night owls, I would actually argue, are not true night owls, but have been trained into that by modern society and culture.

Is that likely to affect a hormone that is tied to your circadian rhythm? If you have disrupted circadian rhythm, I would say, yeah, that should be pretty obvious.

Right? Right. Well, what's the energy blueprint? Kind of lay it out. What? What are the basic principles? Sure. Right. So the you know, the there's one thing that you said earlier that I that I want to circle back to, which is the idea that energy is is sort of just a subjective state.

I actually want to I actually do believe very strongly that there is a very real objective physiological basis for energy. I just also believe it doesn't happen to show up on most of the kinds of tests that we do.

So what what happened when I kind of came to this realization that adrenal fatigue wasn't the explanation for all this chronic fatigue is? I basically said, well, what the heck is?

And at that point, I sort of just started by saying, well, I know that sleep is this. And circadian rhythm is tied to this story of energy. If you don't sleep enough, you you obviously don't have much energy.

But what are the mechanisms that explain that link? How does sleep and circadian rhythm actually affect our energy levels? And so I spent months digging into that literature and I knew nutrition ties into this story.

So I would spend months digging into the the what are the mechanisms of how nutrition affects our energy levels and and then I knew exercise in some way ties in to this story.

So all these things I had a background in, I basically said, well, let me let me dig into the literature and figure out what these mechanisms are. And I did the same with toxins and the same with gut health and lots of other factors.

And at the end of years of doing that, I was sort of left with this list of like 150 different physiological mechanisms that are in one way or another tied to this energy story.

But it wasn't really until I found the work of Dr. Robert Navajo, who runs a lab for mitochondrial medicine at the University of California, San Diego, that I placed all of this knowledge into sort of a coherent framework that made sense and was supported by lots of lines of evidence.

And basically the gist of his work says that mitochondria did these things that, you know, we're all taught about in college and graduate school, biology and physiology courses as these sort of they're the powerhouse of the cell.

That's what everybody remembers. But they're we're taught about them as sort of these mindless cellular energy generators that just take in carbs and fats and pump out energy in the form of ATP.

And that's true. They are they are energy generators. But what Dr. Navias work did was synthesize this large body of evidence from researchers all over the world that showed that mitochondria were doing all these other roles beyond that.

And mitochondria, in Navias words, are the central hub of the wheel of metabolism. So metabolism is not just a word like most people think of it in the context of weight loss.

It's become synonymous with resting metabolic rate. But the true meaning of metabolism is all of the biochemical reactions that occur in your body. And he's saying there mitochondria are at the center of everything going on in our body.

And in particular what his work did was say mitochondria are not just energy generators. It turns out they actually have a second role that's just as important.

And that role is as environmental sensors, really as danger sensors. They're they're like the canary in the coal mine of our body. And they're not just producing energy.

They're not just mindless energy generators that take in carbs and fats and pump out energy. If that was the case, the having more energy would be very simple.

Just tell people to eat more carbs and fats. But of course, that doesn't work. In fact, it will do the opposite for the vast majority of people. It will give them less energy.

So it turns out mitochondria are not just producing the energy, they are regulating the energy. They're deciding whether or not energy should be produced and how much should be produced.

So as an example, if you if you think of a car, there are many parts of a car that are necessary for that car to function. If you remove the the tires and the wheels, car is not going to function very well.

If you remove the spark plugs, not going to function very well. You remove the engine block or the pistons not going to function very well. But none of those things are regulating and controlling whether the car is driving down the road or at a standstill and how fast it's driving down the road.

That's the person sitting in the car deciding whether to press the accelerator pedal or the the brake pedal. And this is essentially what mitochondria are doing in our body.

They're the ones making those decisions to decide, should we be in what Dr. Nabeel calls peacetime metabolism, producing lots of energy abundantly, or should we be in war time metabolism defending against threats and basically what our energy what the energy story in our body revolves around is to what extent are mitochondria are operating in energy mode or are detecting so much threats, dangerous stress signals that are present that it's turning down the dial on energy production and shifting resources towards cellular defense, towards defending those threats.

So that's the basic framework, the basic paradigm of what is actually regulating human energy levels. And I think for the listeners or viewers, that's called the cell danger response.

That's right. Right. So that becomes the central paradigm for understanding what's going on at the cellular level. And it's supported by some very good science.

The viewers can certainly look up Dr. Namibia's work, but what where we go from a solutions perspective, how can we what's the framework that we need to be thinking about then in terms of integrating that this holistically?

Yeah, great question.

Reducing Stress Load and Supporting Mitochondrial Health

So there's two components to this. One is a very natural, logical extension of what I just explained and one requires a bit more explanation. So first of all, what are these danger signals?

What are these stress signals that are telling our mitochondria to turn off? And why do they matter? The reason they matter, I should say bigger picture context is virtually all of the energy that powers virtually all of the trillions of cells in our body, from our muscles to our heart, to our gut, to our brain are powered by mitochondria.

That energy comes from mitochondria. And when cells don't get enough energy supply, they tend to become dysfunctional. And that's when they become damaged.

That's when they start to dysfunction. And that's a big part of the origin of most diseases. And this is now linked with many, many different diseases.

If you Google mitochondrial dysfunction or mitochondria and whatever disease, you're probably going to find some some some research on that. Certainly it's the case with Alzheimer's and Parkinson's, heart disease, diabetes, stroke, fatty liver disease.

Many, many other diseases. And it's also linked to the rate of aging itself. And the rate of biological aging itself is actually the major underlying risk factor for most of the chronic diseases of aging, not just and this is where a lot of a lot of medicine is is mistaken in in their perception.

It's this is well known in general science in the field among aging scientists. But the rate of biologic or aging itself, not just specific mechanisms of specific diseases, not just the LDL cholesterol in the bloodstream, not just the amyloid plaques in the brain or whatever specific mechanism of those specific diseases.

But the rate of biological aging is the primary driver of how quickly you will get the various diseases of aging and which kill eight out of ten of us.

So mitochondrial health is intimately tied to all these diseases and tied into the rate of aging itself. So it's really important is what I'm trying to say.

So so with that said, we need to understand what are these stress signals that are that are turning down the dial on

mitochondrial energy production? And basically the answer is pretty much every type of stressor you can think of.

We know that toxins do this. We know that sleep deprivation decreases mitochondrial energy production. We know that poor gut health, poor nutrition ties into this story.

And in a big way. We know that psychological stress directly interacts with our mitochondria. There's a whole field of research called mitochondrial psychobiology where they've done they've done research that shows literally within seconds and minutes what's going on at the level of the mind hugely impacts mitochondrial function.

It's fascinating. Okay. So all of these stressors, whether you're whether it's alcohol, whether it's sleep deprivation, psychological stress, poor nutrition, leaky gut, all of these things ultimately will turn into signals.

They all converge on a few pathways. Things like oxidative stress, increased inflammatory cytokines, cellular damage. And when cells get damaged, there is a leakage of certain compounds that act as dangerous signaling compounds that mitochondria are have receptors for and are designed to sense.

So they pick up on when the cells are being damaged. Doesn't matter if it's from a toxin or from even psychological stress or from leaky gut and endotoxin from your gut leaking into your bloodstream.

It doesn't matter if it's a pathogen and a respiratory infection, it doesn't matter if it's physical overtraining. All of these things ultimately converge on these pathways which are sensed by the mitochondria and turn down the dial on energy production.

So you have a system, though, that, you know, folks who are watching this interview, they're like, well, I definitely need more energy. I want more energy.

I'm fatigued all the time. What's what is the system that I can I can engage in so I can start to address these things? Yeah. So number one, step one is you have to figure out which of those factors, which of those types of stressors are overwhelming your system and work to minimize or eliminate it.

Okay, that's the first big part of the story. So you have to optimize your lifestyle and your behaviors in a way where you're easing that total burden of stress on your mitochondria.

Because if there is a total stress load that is surpassing their capacity to handle stress, they're going to go into wartime metabolism. So the logical extension of this principle is, is that stress load.

And that's going to differ for each individual. For one person, it's massive amounts of psychological stress, chronic psychological stress from, you know, a toxic relationship with an abusive partner and another person has a job they hate and have no meaning in their life.

And, you know, they're socially isolated. Another person has chronic exposure to mold toxins, you know, and another person has a terrible diet and terrible circadian rhythm and sleep habits and so on.

So we have to figure out on an individual level which of those factors is at play for that person. The second big thing that's important to understand, and this is widely not understood by most of of medicine and functional medicine, we talk about mitochondrial dysfunction. Okay.

But the framing of this, the general understanding is sort of as mitochondria as these static structures in our cells that are just there and they can either be highly functional or dysfunctional.

And the general solution, the general way that this is framed by most people is if you've got mitochondrial dysfunction as detected by various tests or organic acid tests and things like that, indirectly, once we diagnose you with this mitochondrial dysfunction, the solution is we're going to give you supplements with B vitamins, with CoQ10, with alpha lipoic acid, with PCU, with, you know, things of that nature, magnesium and so on.

And that that can be important if you're if you're deficient in B vitamins or magnesium or still L-CARNITINE or Coke ten, then those things can absolutely be helpful.

But there's another huge component that's being missed, which is that mitochondria are not just static structures in our cells. And it turns out that there's multiple lines of evidence to show that the average seven year old has lost 75% of their mitochondrial capacity.

And this this is like going from a Ferrari V8 engine in your cells when you're 20 to a lawnmower engine when you're 70. Now, what's important to understand is that even if you provide that lawnmower engine the best fuels possible and you correct whatever deficiencies it has, so you give it you give your lawnmower engine of your mitochondria and your cells, you give it B vitamins and magnesium and Coke, Q10 and acetyl carnitine and all these things.

It's still a lawnmower engine. Okay, now, the people might be thinking right now that, you know, this really sucks that we lose so much of our mitochondrial engine as we get older.

But but the good news is the good news is this this is actually not a natural, normal product of the aging process itself. This is a product of modern lifestyles.

And we know that because when we look at seven year olds who are lifelong exercise users, athletes, they don't lose 75% of their mitochondrial capacity.

They have the same mitochondrial capacity as young adults do. So was it. Go ahead, please. Well, I was going to say then it sort of leads into this whole idea that can you make new mitochondria?

Mm hmm. Yeah. So what this really is, is a lack of challenge, lack of stimulation to the mitochondria. So think of the principle at play like this, and this will indirectly answer your question and then I'll directly answer it.

Exercise, Mitochondrial Biogenesis, and Parkinson's

So this is easier to see for us when we look at it on a macro level instead of, you know, sort of at a micro level, mysterious things that are on a very small scale inside of our bodies.

So if I go to a gym and I lift heavy objects, my muscles will try to adapt to that stimulus by growing bigger and stronger. But conversely, if I put a cast on my muscles and immobilize them for two months and then two months later I go to the doctor, they saw a forecast.

I look down at my leg and it will be half the size of the other one because. All those muscles atrophied from disuse, from lack of challenge. That same principle also occurs at the level of the mitochondria.

If you don't challenge them, they atrophy. They shrivel, they shrivel up and they die off. Hmm. But the good news is, just as you can regrow that muscle, you can also do that with your mitochondria.

And we have research, for example, and there's many different kinds of studies that show this. But certain studies have shown eight weeks, 12 weeks of, for example, high intensity interval training or endurance training can increase mitochondrial capacity in muscle cells.

By upwards of 60 or 70% in two or three months. So these are dramatic effects. It might take decades to lose them, but within six months or a year, two years of dedicated training, you can absolutely, massively grow your mitochondria and actually grow new ones.

A process called mitochondrial biogenesis. Yes. Yes. You know, I want to just step in for a moment because, folks, and tell the people watching this that this information is extremely critical.

And I hope everyone is listening. Listen carefully to what Ari is saying, because it would be very tempting to say, well, all of that is fine and true, but I know I have fatigue.

I know why I don't have energy. It's because I have Parkinson's disease and the principles that underlie functional medicine and the things that Ari is saying as well.

Yes, that's just sort of the sum total and expression of all of the things that we have been about. So if you go back and even listen to some of the other interviews where you talk to somebody who's, say, an exercise expert in Ari as to but that that that the discussion of exercise is the primary discussion of the interview.

What we're saying is that, you know, and we can think of Parkinson's as a disease of a lack of movement, a slowness of movement, a rigidity. Right. But if we introduce conscious movement, conscious efforts, what we're doing is addressing one piece of the puzzle, of course.

But exercise is yet very powerful medicine. So it does, in fact, have an impact on your mitochondria. It does have an impact on other areas like hormones and your immune system and so forth.

And it it challenges it's that comedic effect that you're alluding to. It challenges the system to grow and to evolve in a way that gets us sort of out of the road of Parkinsonism.

Yeah, that's right. We also need to, you know, there's kind of a disconnect in people's thinking, we see specific mechanisms as causing our disease. And then, you know, the kind of thinking you were just describing was like, okay, and the disease is causing my fatigue.

Right. And the order of causation is reversed in this kind of thinking. What is really going on, as I was describing earlier, is accelerated biological aging is leading to dysfunction and leading to disease.

So if we want to understand things properly, we have to understand what is causing accelerated biological aging. And I want to do our best to reverse that process.

Now, let me let me add one layer to that, which is for about 75 years now, we've been operating in a model of medicine that says this was this was largely the result of the antibiotic revolution that influenced this.

But the antibiotic revolution basically found that, you know, after we noticed in a petri dish that Penicillium mold was able to block or kill that certain bacteria, it led to the development of synthesis and isolation of antibiotic compounds.

And this was a true revolution. You could cure diseases that were previously lethal in a few days by just taking this pill of this one isolated chemical that went like a heat seeking missile.

You swallowed it. It got absorbed into your bloodstream. And when it went after in a very targeted way, without damaging your body, it went and killed the bad guy and it cured the disease that was previously lethal.

And this idea was was so powerful in our minds that it basically led to the whole field of medicine going, well, if we can do this with bacterial diseases, maybe we can do it with all the other diseases, too.

And for the last, yeah, 57 years, that's what medicine has been trying to do. So what we do is we study the mechanisms of diseases and we learn about Alzheimer's and dementia.

It's these amyloid plaques and tao proteins and you know, Parkinson's. We have this degradation of the substantia nigra and the dopamine producing neurons and the depression is a result of this neurochemical imbalance and serotonin deficiency.

And atherosclerosis has to do with this LDL cholesterol stuff. So now with this knowledge of these mechanisms of diseases, let's go to a chemistry laboratory and let's synthesize chemicals that do what antibiotics did to bacterial infections.

Let's synthesize chemicals that kill the bad guy or block or neutralize or modulate or inhibit in some way, whatever

this mechanism is that's driving this disease.

So amyloid plaques cause a has Alzheimer's. Let's find the chemical process of how that amyloid plaque builds.

Medicine, Disease Management, and Closing Remarks

Let's take drug that blocks the formation of amyloid plaques and it on the surface looks really sophisticated, but it has been pretty much an abject failure when it comes to treating the chronic diseases of aging.

With some exceptions, there has been some exceptions, and I don't mean to detract from any of the successes of, you know, emergency medicine, orthopedics and prosthetics and, you know, diagnostic detection of cancer.

Early to get it out. And there's a million successes that have been there. Right? Right. For the chronic diseases of aging. It's been very unsuccessful.

So what I wanted to say is for decades we've been pouring trillions of dollars into this model of trying to address human health, studying disease, developing drugs, to try to fix these diseases.

We have developed millions of potential drug candidates, millions. And of those 19,000 of which have gone on to full FDA approval of all those 19,000 drugs, there is not one, nor is there a combination of them that comes close to the the anti-aging and longevity and disease prevention effects of exercise.

Salute like, you know, we've just had to, in our modern society adopt this concept of my disease is being managed when folks really want a different sort of solution, they want a resolution of this condition.

Or they they certainly want to be much more in the driver's seat. You know, I might have this disease, but this disease doesn't have me. I'm still me.

And I have things that I can do to maximize my daily function, slow the disease progression, in some cases reverse it entirely. If we're talking about type two diabetes, high blood pressure.

Right. It's it's really a paradigm shift all together. Well, Ari this has been a terrific terrific conversation. And I wish I'd love it to go on longer.

But if folks want to learn more about you, about your work, your books, you have a website, you have a system that people can get involved with. Can you just tell tell us the best place to go and what to do?

Yeah, the best place is to go to theenergyblueprint.com. Perfect. Ari Whitten, thank you so much for spending time with everyone involved in the Parkinson's Solutions Summit.

I want to say how much gratitude I have for that. For all of the research you've done in helping folks really find energy in their life, this is such a huge topic.

I look forward to possibly interviewing you again in in the future. I hope we get to do that. Yeah, I hope so as well. And I hope to have you on my podcast as well talking about Parkinson's.

Excellent. Thanks so much.