



Episode 373: Why Sunlight Is As Important As  
Nutrition and Exercise for Health & Lifespan  
With Ari Whitten

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They don't use any GMOs or harmful chemicals. And it's NSF certified. So they really are careful about their sourcing and what goes into it. When you try Athletic Greens through my podcast, they're also going to send you a year supply of their vitamin D3 and K2 for free. I've talked about vitamin D before. We know we get it from the sun, but it can also be important to supplement, especially in the winter months. And this is something I test my own blood levels of and supplement when necessary. And it combines these nutrients to help support the heart, immune system, and respiratory system, which is especially helpful at this time of year. So whether you're looking to boost energy levels, support your immune system, or address gut health, it's a great time to try Athletic Greens for yourself. Simply visit [athleticgreens.com/wellnessmama](https://athleticgreens.com/wellnessmama) to claim my special offer today. You'll get a free vitamin D3/K2 wellness bundle with your first purchase. That's up to a one year supply of vitamin D as an added value for free when you try Athletic Greens. You'd be hard-pressed to find a more comprehensive nutritional bundle anywhere else. So, again, that's [athleticgreens.com/wellnessmama](https://athleticgreens.com/wellnessmama).

This podcast is brought to you by Cacao Bliss, a delicious superfood drink created by previous podcast guest, Danette May. Many of us like chocolate, and certainly nothing feels better than being able to enjoy rich creamy chocolate and knowing that you're doing something good for your body. But that isn't the case with every type of chocolate. When it's sourced well, chocolate and especially cacao can have many health benefits. It's a great source of magnesium, can be very anti-inflammatory and even help balance hormones. In fact, some experts speculate that this is why we crave chocolate at certain times of the month. Cacao Bliss is one of the best sources of this that I have found. They start with 100% organic cacao beans that are naturally dried in the sun, maintaining their miraculous health benefits. And then they blend this with turmeric, MCT oil, coconut, sea salt, cinnamon, and black pepper. So not only does it taste delicious, but it makes you feel

incredible as well. The result is this truly decadent healthy, but guilt-free chocolate that helps with cravings, it can be great for weight loss, for boosting energy, reducing inflammation, all in one simple drink that has become a relatively regular part of my life. And for those who are wondering it is paleo, gluten-free, keto, vegan and vegetarian safe. They have been making this for eight years. I'm a big fan. And as a listener of this podcast, you get an automatic 15% discount by going to [earthechofoods.com/wellnessmama](http://earthechofoods.com/wellnessmama) and you will have an automatic 15% discount.

Katie: Hello, and welcome to the Wellness Mama Podcast. I'm Katie from [wellnessmama.com](http://wellnessmama.com) and [wellnesse.com](http://wellnesse.com), my new line of personal care products including hair care, toothpaste, and hand sanitizer. You can find that at [wellnesse.com](http://wellnesse.com). That's wellness with an E on the end.

This episode brings back one of my favorite guests, and one of your favorites as well, because he is one of the most requested repeat guests I have. I'm here with Ari Whitten. He is a best selling author, a nutrition and lifestyle expert, and founder of the Energy Blueprint. He's also one of my most trusted health resources personally and someone whose research I have a tremendous amount of respect for. He has been studying and teaching health science for over 20 years. He has a Bachelor of Science in kinesiology and has completed the course work for his PhD in clinical psychology. But for the last 10 years, he's teamed up with world-renowned scientists from all over the world and physicians to develop his Energy Blueprint System which you can find at [theenergyblueprint.com](http://theenergyblueprint.com).

In this episode, we tackle, what should not be, but often is a very controversial topic, which is sun exposure. And he makes an incredibly compelling case for why sunlight is as important as nutrition or exercise when it comes to health and lifespan. And we tackle things like why sunlight is actually important for reduction of all cause mortality, why it's not as simple as a link between sun exposure and cancer, and a whole lot more. It's an incredibly fascinating episode. I know that you will learn as much as I did from this, and so without further ado, let's join Ari Whitten. Ari, welcome back.

Ari: Thank you so much for having me, my friend. Always a pleasure.

Katie: I am excited to chat with you again. You have been one of the most requested return guests. People love our other episodes. And I'm glad to have you back again. I know we have a lot of topics we can jump into today.

But I think one that is top of my mind for both of us and that you have expertise on, I'd love to start with is the science behind sunlight. Certainly, it's not a secret that this is a semi-controversial topic especially when it comes to things like skin cancer. But I know from what we've talked about before we went live, there's a lot more to it than just that. And I'd love to kind of just start broad and then I'll delve with some specifics from there. But kind of give us the overview of the benefits of sunlight beyond just...a lot of people maybe have a passing understanding of vitamin D, but above and beyond that.

Ari: Yeah. That's a great segue, the vitamin D aspect of things. And also, let me say thank you for having me on. And I'm really glad to hear that I was so requested. That makes me feel warm and fuzzy inside.

So sunlight. I mean, this is a topic we can talk about for hours, but I'll hopefully, won't take hours of your time to do it. I'll give you a more succinct version. So the vitamin D segue is a good point because outside of that, outside of sunlight vitamin D, most people really have no idea about why sunlight is important to their health. And what I hope to explain in this podcast in great depth with a lot of evidence to back it up is that the benefits of sunlight are extremely profound, that sunlight is as important to your health as good nutrition and exercise and good sleep and avoiding lots of psychological stress. It is one of those key fundamental movers and shakers of whether we end up healthy or whether we end up diseased.

And at the same time, it is one of the most neglected, one of the least well-understood and, not only that but to go beyond just poorly understood, it is misunderstood. It is understood by most people as something that is actually, in many cases, harmful to their health. It's something that we need to avoid and be careful of.

Yes, we get vitamin D, but you know, in general, we should try to avoid the sun because, you know, the sun has this potential to harm us and instead we should just take our vitamin D pills and that really gives us all the benefits of sun anyway and, once we do that, then we can avoid the harms of the sun, still get the benefits with vitamin D and everything is great when you do it that way.

And this just could not be further from the truth. The reality is the sun is vital for our health in many, many different ways. Its benefits extend way beyond the vitamin D story. There are many layers of mechanisms of how sun benefits our health and impacts our body beyond just vitamin D. And vitamin D is certainly important, but there's many other layers that are also very important.

And most people just are missing out on this huge host of benefits that we get from the sun. If I were to cite one study in particular that could make this point pretty emphatically, and actually, let me present just a context for understanding the sun appropriately. And that is we need to look at the relationship of not sunlight and one specific disease or two specific diseases or sunlight and, you know, the function of skin health or the function of brain health or the function of this or that aspect of the body, but sunlight and all-cause mortality.

What is the relationship of sunlight with your risk of dying from any cause? Okay. Now, if it were the case that there was a clear relationship that people who get more sun exposure have increased risk of dying earlier compared to people who get less sun exposure, then really nothing else in this whole discussion matters because, you know, I could tell you, I could give all these fancy explanations for all these different mechanisms of how sun is beneficial, but if at the end of the day the research is conclusive that more sunlight leads to increased risk of dying earlier, then that's the thing that really matters. Okay?

Now, fortunately, it is the case that that's not what's going on, that we have clear research showing that more sun exposure is decidedly linked with better health, with lower risk of numerous different diseases, and longer lifespan. And the best study that's quantified this is one that came out of Sweden. They followed nearly 30,000 Swedish women for several decades and they found that women who got more sun exposure lived longer and had dramatically lower risk of dying from all causes, all-cause mortality. And specifically, that if you were to quantify the magnitude of the effect size, they found that avoidance of sun exposure was on par, as far as the magnitude of harm to your health, with smoking a pack of cigarettes a day. So that is how harmful sun avoidance is. And that gives you, I think, a good insight into how important sun is for our health.

So the last thing I wanna say here, just as a sort of broad intro and then we can dive into specific topics, is coming back to this thing I said a few minutes ago, that sunlight is as important as nutrition. I would like people to consider the concept of mal-illumination as the equivalent of malnutrition. So we need certain types of wavelengths of light, certain parts of the spectrum of light. And we're gonna talk about what those parts of the spectrum are and what they do and the mechanisms behind them.

But we need these different wavelengths of light to interact with our physiology. And these different wavelengths can be thought of like nutrients in the same way we think of, you know, when it comes to food, you need certain amounts of protein and carbs and fats, certain kinds of fats and certain kinds of carbohydrates and you need certain amounts of fiber and you need phytonutrients and, you know, all these different things. We have all these different kinds of nutrients. We have micronutrients, vitamins and minerals, and so on.

Light is basically the same thing. There's different parts of the spectrum of light and they have these different effects. And these parts of the spectrum are like light nutrients and we need all of those light nutrients and we need them in the proper doses in order to have optimal health. In the same exact way that when it comes to nutrition, we need certain amounts, again, of these different nutrients, protein, carbs, fats, vitamins, minerals, fiber and so on, we need adequate amounts of those in order for our physiology to express optimally for us to be healthy.

So mal-illumination is this concept that I want people to understand as equivalent to malnutrition and it is also extremely rampant in the modern world where most people are now living indoor lives disconnected from the sun. Almost everybody, well over 90% of people are deficient in these nutrients or deficient in sunlight. And their health is suffering for it and they have, essentially, mal-illumination. So, that's I think the broad umbrella intro that I want people to understand. And from here, I'll let you decide where we dive into.

Katie: I love that you brought that up. And I love that word mal-illumination because it really frames the importance of light as something vital for the whole body just like nutrition would be. I know there's gonna be people listening, in fact, people who even just see the title of this podcast, and immediately, say that it's

reckless because obviously the sun causes skin cancer and it should be avoided. Like, you made a very strong case for that in the, like, the sun doesn't lead to higher likelihood of death.

I think, probably, when it comes to skin cancer, it's a little bit maybe more nuanced than that, which I want to speak to. But I love that you also tied in the all-cause mortality aspect of this because it's important to look at the second and third order consequences, we might, as a lot of people do, completely avoid the sun to avoid potentially increased risk of certain skin cancers. But in doing so, I think we're not considering all of the other things we're raising our risk of by avoiding the sun. To start with that, can you kind of tackle the sun and skin cancer equation?

Ari: Yes. And your phrasing of the question is perfect. It's nice to be interviewed by somebody who themselves is so knowledgeable. So you're exactly right. And again, this is why the proper context is all-cause mortality.

So immediately, based on what I told you, if we understand that more sun exposure is linked with longer lifespan and lower risk of dying earlier and sun avoidance is linked with higher risk of dying earlier, if that's the bigger picture context, then does it make sense to say sun increases your risk of skin cancer therefore I need to avoid the sun? Okay, so now that that question of the relationship of sun and skin cancer is now grounded in a context that you can immediately see the giant hole in. That, okay, well, if I accept that the relationship of sun to my skin health or my risk of skin cancer is such that sun is bad for me based on my risk of skin cancer, and I avoid it, is that doing a good thing or not?

Well, let's say it does, and this is itself debatable, as I am about to explain. Let's say it does dramatically increase your risk of skin cancer and of dying from skin cancer, even if that were so, if it were also the case that sun exposure was linked with lower risk of dying from all causes, then it still does not make sense to do it. Now, if you're a dermatologist and you're solely an expert in the relationship of sunlight and skin health and you haven't bothered to look at the relationship of sun and health more broadly and many other diseases in all-cause mortality, then you probably think that sun is a really bad thing. More sun exposure causes skin aging, it increases the risk of skin cancer, and so on, and that's all you see as a dermatologist.

So if I were on video and I could show you my hands right now, what I'd like people to visualize is kind of a big pie. So there's a big pie of all of the things that can kill you. And that consists of a little sliver of it is skin cancer and different types of skin cancer, and another big chunk is cardiovascular disease, and another big chunk is obesity and diabetes, and another big chunk is neurodegenerative disease, and another big chunk is cancer, more broadly, dozens of other types of cancers, and another big chunk is this disease and that disease and a hundred other diseases. Okay?

So if you only look at the relationship of sunlight and one little sliver of that pie, it's very possible for there to be a negative relationship where sun increases your risk of that particular thing. At the same time, if sun exposure decreases your risk for all or most of the other 99% of that pie, then you have a net benefit from sun exposure.

And that is exactly the case with sunlight. So we know sunlight decreases your risk of cardiovascular disease, it decreases your risk of obesity and diabetes, decreases your risk of neurodegenerative disease, and it decreases your risk of dozens of other types of cancers that are decidedly more deadly than skin cancer. Okay?

So that's the big picture context that you first need to understand that ties into, you know, the relationship with all-cause mortality. Why is it reducing the risk of all-cause mortality? Because it reduces the risk of dying for most of the major killers. Again, cardiovascular disease, most types of cancers, neurodegenerative disease, obesity, diabetes, and so on.

So having said that, what is the relationship specifically with skin cancer? I've, up to this point, I've kind of conceded to the common ideas that sunlight increases risk of skin cancer just for the sake of argument. Now, I actually want to add another layer to that, specifically on skin cancer and argue that sunlight does not meaningfully increase your risk of dying from skin cancer.

So let's get one little piece out of the way. There's three main types of skin cancer. There's basal cell carcinoma, there's squamous cell carcinoma, and there's melanoma. Now, the two that I mentioned first are what are called non-melanoma skin cancers. The key thing to know about them is they're almost never deadly. They do not kill a significant amount of people. It's like the statistics are something on the order of 1 person in 5 or 10 million will die from those. They're almost never deadly. They are extremely easy to deal with if you have them. First of all, if you have them, they almost never kill you. But if you have them, they're very easy to just simply get removed and then they're gone. And that's it.

Now, melanoma is something that is actually deadly that we need to be seriously concerned about. Now, when it comes to the relationship of sun and non-melanoma skin cancers, there is actually a relationship there that is not a pleasant relationship, meaning sunlight does increase your risks significantly, sun exposure increases your risk for those non-melanoma skin cancers. But again, they're almost never a significant concern as far as something that's actually going to kill you. So going back to that big pie that I was presenting before, if sun exposure does increase your risk for this tiny sliver of the pie that kills almost nobody, but it simultaneously decreases your risk for things that kill almost everybody, again, sun exposure is a very good thing.

Now, with melanoma, this is the type of skin cancer that is actually quite deadly. And what is the relationship of sun exposure to that? And the data are actually very interesting on this. So one thing to consider, one layer to consider is over the last 70 years, melanoma rates have increased by over 17-fold in men and 9-fold in women. So melanoma rates have exploded. Now, over the last 70 years, have people been getting more sun exposure or less sun exposure, right? What's actually happened is people have shift from previously much more outdoor ways of life. It was much more common for people to have outdoor jobs and spend much more time outdoors to increasingly indoor ways of life, desk jobs in offices, indoors most of the time, where a majority of the population gets little to no sun exposure on a daily basis.

So during that span of time where that shift has occurred, melanoma has become an epidemic. So that's your first big red flag as to question this narrative of the relationship of sunlight and melanoma. Now, in addition to that, there is also data, and this is probably the most important data in my mind, comparing outdoor workers to indoor workers. So this is very obvious way to test the theory if more sun exposure leads to higher risk of melanoma.

Okay. If you take people who work outdoor jobs where they're in the sun, you know, 500%, 1000% more than indoor office workers, obviously, their risk of getting melanoma should be much higher if sunlight exposure is the cause of melanoma. So what do you actually find in those studies? Well, there's been many of them and what they find over and over and over again is that outdoor workers do not have a higher risk of melanoma and, in fact, they have, in many studies, a lower risk of melanoma than indoor workers.

So what the heck could possibly explain that? Well, it turns out, to summarize a large body of evidence, it turns out that sunburns, getting sun burnt, and intermittent sun exposure, which means irregular sun exposure, so let's say, someone who works an office job most of the time and then once every two weeks they go out and bake in the sun all day, or they go on a vacation once every few months where they, you know, live in Seattle most of the winter and then they go to Hawaii and they spend a week in the sun, you know. That kind of sun exposure habit is actually linked with increased risk of melanoma. Irregular, infrequent, rare sun exposure, and specifically getting sun burnt. One the other hand, regular, frequent, in other words, like daily sun exposure below the threshold of sun burning is not linked with increased risk of melanoma. And if anything, it's linked with decreased risk of melanoma.

Okay. So, to tie in all of the sort of pieces of the data that I've explained so far and kinda going back to this, this big picture of all-cause mortality and that pie that I presented of all this little slivers of different diseases, what this ultimately amounts to is if everything that I'm saying is true and you now have this data saying, "Okay. Well, sunlight exposure increases my risk for non-melanoma skin cancers and, you know, that's a data point to consider. And also getting sun burnt and infrequent sun exposure where the sun exposure is beyond my skin's ability to tolerate it and therefore it gets damaged and sun burnt, that is also linked with increased risk for melanoma."

Well, there's basically two options that you have in order to sort of respond to this. One would be, "Well, I guess, I should just stay out of the sun entirely." Or the other one is, "I guess, I should get regular frequent sun exposure below the threshold of sun burning." So you have those two options. Now, again going back to that big picture of all-cause mortality and looking at the context of all the relationship of sun exposure and all different diseases, option number one, of complete sun avoidance, dramatically increases your risk for dozens of different diseases, including over 15 different types of very deadly cancers, much deadlier than skin cancer. Option number two, of regular frequent sun exposure, not only does not increase your risk of melanoma and, if anything, decreases it, but simultaneously also decreases your risk for dozens of other types of diseases, including the diseases that are the major killers that kill the vast majority of people.

So anyway, hopefully, that decision is obvious at this point. And that is the right context to understand the relationship of sunlight and skin cancer is in that bigger...not only understand the relationship of intermittent versus frequent regular sun exposure and how those things differ in their relationship to melanoma, but again this bigger picture of all-cause mortality. And then once you understand that, the decision is pretty obvious that regular frequent sun exposure is a way, way smarter decision than trying to avoid the sun all together.

Katie: That was such a comprehensive explanation. Love it. And I think the next step is to delve into potentially some of the reasons and the mechanisms by which those outcomes happen. Because I think sunlight often gets simplified to the very simple UV light-vitamin D-skin-cancer debate. And it's so much more than that. So there's so much more to sunlight than just UV light. And it has so many more mechanisms and reactions in the body than just creating vitamin D.

So can you breakdown kind of all that comes from the sunlight, besides just UV and then how those things impact the body in different ways?

Ari: Yes, absolutely. So first of all, I would say, yes, there's many different wavelengths beyond UV. But even the ultraviolet part of the story has been not fully understood. So yes, there is vitamin D. And vitamin D is really important. Let me not neglect that because that vitamin D influences over and regulates over 2,000 genes in your body. And has the profound impact not only on, you know, the skeletal system, the musculoskeletal system, but basically on all of the systems of the body: immune health, chronic inflammation, brain health, the health of many, many different organs in the body, different hormonal systems, obviously immune health in the context of COVID-19, and respiratory infections. And there's really remarkable data that's come out on vitamin D deficiency and insufficiency and how that links with increased risk of COVID.

So again, I just don't wanna neglect vitamin D in this story. And let me just emphasize, vitamin D is genuinely very important. In addition to that, just still staying with the UV part of the story, UV light also has several other mechanisms of how it affects us. So, one mechanism is it affects something called the melanocortin system and a compound called melanocyte-stimulating hormone. And this is a hormone that is secreted in response to sun exposure that sends a signal to the skin to basically increase melanin production to darken the skin, to create a tan.

Interestingly, that system of...this melanocortin system is also intimately tied to body weight regulation and appetite regulation. And this is one piece of the body weight regulation and body fatness, whether you're overweight or lean, that almost no one talks about. And almost nobody seems to be aware of. And yet, we have very clear data linking regular sun exposure with decreased weight and with weight loss. So we know that this melanocortin part of the system is at least part of the mechanism behind body weight regulation and appetite regulation that's really important in addition to what's going with the skin and melanin. It also regulates genes in relationship to inflammation and immune function as well.

In addition to that, there's another compound called nitric oxide that is secreted in response to UV exposure of the skin. Nitric oxide has many, many different roles in the body. One is in immune health, one is in blood pressure regulation. So that nitric oxide actually helps in dilation of blood vessels and in optimizing cardiovascular function and blood vessel function.

In addition to that, there's another layer, really fascinating, called heme oxygenase. And heme oxygenase is a compound that is produced in response to UV exposure and it breaks down into a couple really interesting byproducts or metabolites. And one of those is actually, believe it or not, is carbon monoxide. So like the carbon monoxide that can poison you and kill you, well, it turns out that our bodies actually produce small amounts of carbon monoxide. And believe it or not, there's actually research showing that this, in very small amounts, like the amounts that your body produces, it actually serves an important beneficial health-promoting role.

So that's one interesting layer of the story. But the even more interesting side of what heme oxygenase breaks down into is a compound called bilirubin. And this is a compound most people are familiar with in the context of, like, babies and jaundice. But bilirubin is also produced in adults. And it has really important effects in regards to combating inflammation and specifically in terms of blood vessel health and combating cardiovascular disease and atherosclerosis, combating oxidative stress and oxidative damage to blood vessels, in particular.

And there is an interesting genetic condition called Gilbert Syndrome and, you know, when we think of genetic conditions or disorders, normally we're used to thinking about them as something that increases your risk of dying from, you know, whatever cause. Usually it's something that harms your health and leads to some increased likelihood of dying from something or dying earlier.

In the case of Gilbert Syndrome, this is a genetic disorder where people actually have a decreased risk of, actually in terms of all-cause mortality, they have a decreased risk of a huge array of different diseases and cardiovascular disease, in particular. And one of the interesting things or the main interesting thing about Gilbert Syndrome is this genetic disorder leads to the very high levels of bilirubin. And this bilirubin is a very powerful internal antioxidant that combats oxidative stress.

So the connection here, if you're following everything I just said, is that sunlight increases levels of bilirubin in your body through this pathway of something called heme oxygenase which breaks down into bilirubin. So through getting more sun exposure, you have increased levels of bilirubin, ultimately decreasing your risk of oxidative stress and oxidative damage, like what is seen in Gilbert Syndrome. And this is very likely, along with probably vitamin D and nitric oxide and maybe other mechanisms, this is probably a likely reason why sun exposure is linked with decreased risk of cardiovascular disease.

In addition to that, there's still many other layers of the story of how sunlight improves our health. One is through neurotransmitter levels in the brain. And there's many different pathways that this takes place

through. One is through circadian rhythm mediated pathways. One is through even skin mediated pathways. So in response to UV exposure on the skin, our skin releases endogenous opiates, basically endorphins that impact on neurotransmitter levels in the brain.

In addition, we know that regular sun exposure is linked with improved levels of both serotonin and dopamine, which impact heavily on things like mood and motivation and whether you're depressed and whether you're anxious and whether you have strong drive and motivation and so on. So, serotonin and dopamine profoundly linked with sun exposure.

And there's many, many other layers that we could talk about here. One is cholesterol sulfate, which is also linked to the UV pathway where regular sun exposure builds up levels of cholesterol sulfate and this is a compound that builds up on red blood cells and creates kind of negative charge on them to make them repel one another such that...you can think of it like instead of the red blood cells clumping together, they spread out more and they flow better. And in the process of flowing better through the blood vessels and through the capillary network, they therefore deliver oxygen to the cells more efficiently that way.

I alluded a minute ago to the circadian rhythm part of the partway. And there is a whole set that in itself could be an hour or two of discussions. But we get light through the eyes and note that light through the eyes then feeds back into the circadian clock in the brain and that in turn regulates all kinds of neurotransmitters and hormones that impact on energy and mood and cognitive function and sleep and the function of different hormone networks in our body. And many, many other aspects of our health, our risk of many diseases is also impacted by the function of that circadian rhythm from obesity and diabetes, cardiovascular disease, neurodegenerative disease, many different types of cancers as well.

And then, maybe the last one I'll mention here, as far as mechanism is of course what I wrote my last book on, which is red and near-infrared light. And this, as I kind of just pointed out, is itself a topic that a whole book could be written about as I did, in fact, do exactly that. And this has profound impact on our health. There's over 5,000 studies on red and near-infrared light therapy and all of the myriad benefits that it has from things like skin anti-aging to wound healing to improving the function of different glands and organs in the body.

For example, the thyroid gland, it's been used in the context of treating people with autoimmune thyroiditis or Hashimoto's and for things like weight loss, for things like improving exercise performance, improving exercise recovery, strength, endurance, muscle gain, what else? The list goes on. It's far too numerous to mention for brain health, for mood optimization, for the treatment of neurological diseases, I'm sure I'm forgetting a whole bunch of things that I could mention. But again, over 5,000 studies on red and near-infrared light and how that affects our health. And that's a really interesting one as far as how it affects us.

Unlike UV light, which stops really at the level of the skin, so UV light doesn't really penetrate beneath our skin, in contrast, red and near-infrared light actually penetrate through the skin and they penetrate inches deep into the body where they interact directly with the cell in a way that it does a few different things. It

enhances mitochondrial energy production by interacting the photons of light interact directly with the mitochondria in your cells. It also influences inflammation at that level. It basically, it functions like kind of exercise as a hormetic stressor, like exercise, like sauna, which are topics that we covered in previous podcast.

And in the process, a functioning like a hormetic stressor, it actually conditions the cells and the mitochondria to be more resilient to a broad range of other stressors subsequent to that. And perhaps, most importantly, what it's really doing is it's ramping up the production of growth factors. Okay. And ultimately, that means that it speeds the regeneration and healing and growth of tissues. So and it does so in a tissue-specific way. So, depending on the specific tissues that we're talking about.

For example, in the brain, it ramps up levels of things like BDNF and NGF. That's brain-derived neurotrophic factor and nerve growth factor. Things that enhance brain cell regeneration and growth and neuroplasticity. As well as in the muscles we have things, the various muscle growth factors, IGF-1 for example.

In the skin, we have collagen production. So red light impacts on the production of collagen at the skin level that's why it can have skin anti-aging effects and so on. At the thyroid level, it enhances the regeneration of thyroid gland that's why it combats the autoimmune destruction of the thyroid gland and so on. So whatever tissue it interacts with, basically, it's red and near-infrared light act as a growth and regeneration and healing signal for those specific cells.

So that's kind of a broad overview of many of the specific mechanisms and pathways of how sunlight is impacting our health. But the one last thing I wanna say to tie things up with your original question is I hope from my answer there, people can understand that the story of how sunlight benefits our health goes way beyond the vitamin D story. And you cannot just pop a vitamin D pill and, you know, think that you're getting the benefits of sun exposure. You're absolutely not. You're getting some of the benefits of vitamin D, certainly. But you're missing out on a dozen other layers of benefits that we're getting from sun exposure that are extremely important and have profound and powerful impacts on our health.

Katie: You've brought up so many great points during that explanation. And one that I really want to hone in on is that relationship with melatonin and how important that is because I think this another area people often discount. This is also the reason I make sure to get outside every morning as soon as possible after waking up and also again during the brightest part of the day, if not more.

But walk us through kind of that relationship with melatonin and sunlight and mitochondrial function. And then also, maybe through ways we can increase that naturally or things that decrease melatonin. Because people may be familiar with that as sleep aid or a supplement they would take at night, but is that an option we actually wanna pursue or, if not, how do we do that naturally?

Ari: Well, there's so much here. Okay. So, first thing I wanna do is connect the dots between melatonin and mitochondrial function. So most people know of melatonin as a sleep...most people know of it as a sleep supplement, first of all, as something that they can buy in pill form that is good for sleep. Most people, I think, don't realize that melatonin is actually a hormone. In addition to being a supplement you can buy, it's actually a hormone produced by your body and it's supposed to be produced in adequate amounts every night before bed and during sleep, in particular.

And melatonin has extremely important effects on the body. But again, what most people know it as is like, "Oh, melatonin, it's a sleep substance. It's a sleep hormone." Well, I would argue melatonin is even more important to understand as a mitochondrial hormone. First of all, it's produced by mitochondria. But it is extremely important for mitochondrial health. And mitochondria are basically our cellular energy generators there, we have between hundreds to thousands in every...almost every one of our cells in the body with the exception of red blood cells and I think maybe one other type of cell.

But mitochondria are, there's an increasing body of literature linking mitochondrial function, mitochondrial health to many different diseases and that the process of aging itself. So there's something called the mitochondrial theory of aging and the quick summary of it is, basically, the more you damage your mitochondria, the faster you age. The more you damage your mitochondria, the higher your risk of numerous different diseases. We know mitochondrial function is linked...over the last 10 years, it's become linked with almost every major chronic disease.

So mitochondria are, needless to say, really, really important. Here's the connection with melatonin. In addition to being this sleep hormone, melatonin is actually pretty much the most powerful mitochondrial antioxidant in existence, bar none. And it's one of very few compounds that can even penetrate into the cell and into the mitochondria where it can exert those effects. So in addition to acting as a direct antioxidant at the mitochondrial level, which again few things can do, it also acts to recharge the internal mitochondrial antioxidant and anti-inflammatory and detoxification system, something called the ARE, the antioxidant response element. And specifically, it basically recharges the internal levels of glutathione and superoxide dismutase and catalase. These powerful, again, antioxidant and detoxification compounds inside of the cell.

So you can think of melatonin as this hormone that basically works to protect your mitochondria from damage and to recharge their built-in system to protect themselves. And that is supposed to happen in abundance to a high degree every single night. Now, the important thing to understand about that is the ability for that to happen is heavily dependent on the quality of your circadian rhythm. And the quality of your circadian rhythm is in turn mostly dependent on light and on your light exposure habits.

So there's two parts of that. People listening to this, I'm sure, are familiar with the artificial light at night, blue light at night aspect of the story. And the reason to wear blue blockers at night and that is indeed extremely important. Just to emphasize this point, if you're not already blocking blue light at night, there's research showing that just standard indoor room lighting, so not even any sort of abnormal bright light in the eyes, but

just being in your home under LED or fluorescent lights in your living room, in your kitchen, whatever, suppresses melatonin production by upwards of 50% and in many people upwards of 70%.

So you're suppressing levels of this hormone that is not only a sleep hormone, but is an anti-disease hormone. Melatonin is extremely important in combating cancer, by the way, through its role in protecting mitochondria primarily, but through other roles, other mechanisms as well. You are suppressing levels of this hormone that protects your mitochondria from damage.

And in the process of that, what happens when you are suppressing by 50%, you're producing only 50% or 30% of the amount of melatonin that you should be producing every single night, night after night, for years or for decades? Well, given that melatonin has this powerful role in protecting your cellular energy generators which are, again, influencing your rate of aging, influencing your risk of numerous different diseases and of course your energy levels. Well, what happens when you're chronically suppressing that hormone is you are dramatically increasing your risk of all of those diseases and accelerating the aging process and causing fatigue as well. So mitochondria are extremely important and they require adequate amounts of melatonin to be produced every single night. Again, melatonin, not just a sleep hormone but a mitochondrial hormone.

Now, the one other layer I wanna add to this to connect it with sun exposure is we have to also understand that the circadian rhythm is not only dependent on blocking blue light exposure at night before bed, but it's also dependent on having adequate bright light exposure and sunlight exposure during the day time. And that consists of morning bright light exposure, ideally sun exposure within the first half an hour of the day. And in addition to that, there's research also showing that the differential between the amount of bright light, the intensity and the amount and duration of bright light exposure you're getting during the day and the intensity of bright light exposure you are getting at night before bed, also matters. And what I mean by that is...Basically, it can be reduced down to this. The more bright sunlight you get and time you spend outdoors during the day time, the more resistant your brain becomes to the melatonin-suppressing effects of indoor artificial light at night.

In other words, if you take somebody who has been in an office all day in indoor environments not in the sun, at night time that person is going to be...their brain and their circadian rhythm is going to be really sensitive to the melatonin-suppressing effects of indoor light from their house, from their computer screen, from their phone, from their TV and so on. On the other hand, if you take somebody who spends lots and lots of time outdoors and gets lots of sun exposure and gets morning sun exposure to set their circadian rhythm, that person's brain and their circadian rhythm is going to be much less sensitive, much more resistant to the melatonin-suppressing effects of artificial light at night.

And that bright light that we get during the day also helps bolster the pathways, the biochemical pathways that are actually involved in melatonin synthesis and production. So basically, what it amounts to, if you connect all those dots that I just explained, is mitochondria are really important. Melatonin is really, really important to mitochondrial health and adequate bright light exposure and sunlight exposure is really important to melatonin production.

Katie: That's so fascinating. And I wanna circle back a little bit more on the practical aspects of this before we wrap up. But before we do, you also mentioned the hormone implications a couple of times including the relationship to things like weight loss and brain health and other aspects of that. Can you just go a little bit deeper on how sunlight triggers that hormone cascade that can be beneficial for things like weight loss or for, like, mood and cognitive function?

Ari: Yeah, there's a lot of different mechanisms that are going on right with that. So for example, with mood, it impacts under transmitters largely through circadian-rhythm-mediated pathways, eye-mediated pathways, but also some skin-mediated pathways as well. In addition, there also seems to be from red and near-infrared light exposure, red and near-infrared light can actually penetrate through the skull bone and direct into the brain. And there does seem to be some neurotransmitter-modulating effect from that as well.

With regards to hormones, there's a lot of different layers to that story. So, it depends what specific hormone that you're talking about. But there is research that there is a direct effect in some case in terms of modulating hormones. For example, sun exposure has been linked with higher levels of testosterone. So even like sun exposure on your back, for example. There's also research that's looked at sun exposure on the scrotum itself, on the testicles, and how that can impact on testosterone production. And there's research specifically on red and near-infrared light in that context as well.

So there's a UV-mediated mechanism and there's probably a red and near-infrared light mediated mechanism also in far as how it impacts testosterone. In addition, when you talk about things like thyroid hormone, cortisol, testosterone, and this also applies to many others, they're hormones that follow a diurnal curve and what that means is they go up and down at different parts of the day. Melatonin as well. I shouldn't leave that out since I just explained that one.

Again, melatonin is low during the day time and then it goes up during the night. Cortisol basically follows the opposite pattern. Testosterone is high in the morning, goes down in the evening, and so on. So there's many hormones that follow that pattern. Any time you have a hormone that is following that sort of pattern of a diurnal curve, that means that it is inherently circadian-rhythm dependent and regulated by the circadian rhythm. So what I just explained a minute ago is how light and sun exposure ties into regulating the circadian rhythm. So the rhythms and the production of all of those hormones and the timing of release of those hormones therefore depends on optimizing circadian rhythm and that depends on optimal bright light and sun exposure.

So all of that together is basically the fundamental reason why many different hormones are going to be impacted by sun exposure. There's likely also other mechanisms. So for example, vitamin D can impact on the function of different hormones. There's probably nitric-oxide-mediated effects. There's probably heme-oxygenase-mediated effects and bilirubin. There's red and near-infrared light mediated effects.

So for example, we know, again, that if you shine red and near-infrared light directly on the neck on the thyroid gland, you are actually bolstering the healing and regeneration of those tissues. So in the context of, for example, people with autoimmune destruction of the thyroid gland, when you use red and near-infrared light therapy, many of those studies have actually shown that a huge proportion of the treated patients are able to either reduce their doses of thyroid hormones or wean off of their thyroid hormones entirely.

What that means is you've now stimulated the regeneration and healing of those thyroid gland tissues such that it can now produce optimal levels of thyroid hormones on its own. So anyway, the big picture here is as you can hopefully tell from my answer is there's potentially many, many different layers of how sunlight can impact on hormones from literally interacting with the hormone-producing-gland tissues itself and helping to regenerate those tissues and decrease, modulate the immune system so that it's not destroying those tissues so much in a context of like an autoimmune condition, to modulating the circadian rhythm and therefore helping to optimize all of these different hormones that follow these sorts of diurnal curves.

For example, people with cortisol abnormalities, like low cortisol in the morning, it is almost never actually caused by any actual deficit of the adrenal glands to produce enough cortisol, which would be like true Addison's disease, which is extremely rare. But the vast majority of people who are getting diagnosed with "adrenal fatigue," most of the time, all of that is simply circadian rhythm disruption and poor sleep.

If you correct the poor circadian rhythm and poor sleep, cortisol corrects. Why? Because you are affecting the master regulator of the diurnal curve, of the release of that cortisol, of the whole process of that, the cortisol timing and release by optimizing circadian rhythm. So cortisol again follows that diurnal curve. So when you optimize circadian rhythm, you are now giving the proper inputs into that circadian rhythm, which regulates the release of cortisol from the adrenal gland.

So simple things like that can have a huge impact. For example, there's studies looking specifically at chronotype and cortisol levels. And even in the context of people with no symptoms, no fatigue, no burnout, no stress, no nothing but normal healthy people simply being a night owl chronotype, somebody who goes to bed later and wakes up later, as opposed to an early person, the night owl chronotypes have typically about half of the levels of morning cortisol. They have low enough cortisol that a person who believes in adrenal fatigue would literally see those levels of cortisol and say, "Oh, my gosh. You've got chronic stress that's burned out your adrenal glands and has made it...You know, your adrenals can't produce enough cortisol. That's what's causing these levels of cortisol." When in fact, the research just shows that all that's really going on is that person is a night owl chronotype. And that is the primary reason that somebody would have that scenario.

So just as a one more layer to that, there's a great study that was done a few years ago where they basically took a bunch of self-proclaimed night owls and, this is one of my favorite studies, they basically just sent them on a camping trip. They said, go out in the wilderness and sleep in a tent, no artificial light sources. And guess what happened? All of these people that normally go to bed at 12:30, 1:30, 2:30 a.m., all of the sudden, started going to bed at 10 p.m. and waking up at 6 a.m. without an alarm clock, without anybody compelling

them to change their wake time and their sleep time. They did it all on their own and they did it...In many cases, these are people that were convinced that they were night owls and that 2 a.m. was their natural bed time. They've always done that. That's how they've been for their whole life ever since they were a kid.

Well, all of a sudden, you eliminate artificial light from it and you will give them access to the outdoors, where they have to spend out the outdoors outside in sunlight and in bright light, and all of the sudden, literally within days, they shift their bed time, you know, two to three hours earlier and their wake time two to three hours earlier. So if you connect the dots with that and what I just explained about how chronotype relates to the cortisol curve, you can immediately see that those night owl chronotypes likely had what's called a very flat diurnal curve previously, which means they had low levels of morning cortisol level of morning cortisol, and probably high or elevated levels of cortisol in the evening.

Well, that whole shift in their cortisol levels, what would probably get them diagnosed as having adrenal fatigue was purely just a function of their night owl rhythm, which is in most people, as even in people who swear they are a night owl, that's how they've always been, for the majority of people, they're not actually true night owls and their more optimal bedtime is probably two to three hours earlier than they think it is. And by making a shift like that, you can have a profound influence on all of the different hormones that are regulated and influenced by the circadian rhythm.

So you can start to see how all of these different systems connect. And how sunlight connects to circadian rhythm and how sunlight connects to the healing and regeneration of tissues and how sunlight connects to vitamin D and the regulation of all these different genes and how sunlight connects to neurotransmitters and how sunlight connects to melatonin and mitochondrial function. And you know, once you piece these together, you realize that sunlight is having widespread effects on almost every system of the whole body. And it can absolutely influence all of those systems, you know, from your brain function, to your energy levels, to your sleep, to your levels of hormones, to your mood, and neurotransmitter levels and on and on and on to your immune function and your risk of respiratory infections and dying from respiratory infections.

Sunlight is just an amazing magical thing. And I say magical as someone who's very much a science-based and evidence-based guy because it really is magical when you start to understand all of these layers that I have just explained here. You have photons of light that are hitting the surface of your skin and that are then as a result of those chemical exchanges that happen as a result of photons of light hitting your skin, you now have thousands of genes in your body that are being regulated that have widespread consequences from your brain health to your bone health to your muscles to your body fat regulation to inflammation and immune function to your levels of hormones to, you know, your mood and your energy levels and on and on and on, you have red and near-infrared light, photons of light that are penetrating through the skin and interacting directly with your mitochondria in a way that stimulates the production of energy.

So photons of light are hitting your cells and are causing your cells to produce more energy. You know, this is kind of something that we would think about how plants work, right? Like plants interact with photons of light. Most humans don't realize that their cells also interact with photons of light. That light is bioactive in

humans and is modulating the production of energy in their cells and is modulating the production of growth factors that literally help heal and regenerate those cells. So it really is magical when you understand, you know, how all of these different parts of the spectrum of sunlight are interacting with different parts of your body through your skin, through your eyes, penetrating through your skin directly into the cells and into the mitochondria.

If you can visualize that and kind of see all of those trillions of photons of light from the sun, hitting all of your body and stimulating all of these different pathways, it really is a pretty magical phenomenon, the relationship of humans with the sun. And the bottom line of it, you know, I think the big take away for everybody to understand is not only is it magical when you explore all of these different, you know, the specifics of these different biochemical pathways and mechanisms, physiological mechanisms, but probably most importantly, the end of the day, sunlight is really darn good for you and decreases your risk of dying from a whole lot of different diseases.

Katie: Definitely in agreement with you. That was actually a factor we considered in moving to where we currently live was the number of days of sunlight and the type of sunlight here.

Today's episode is brought to you by Athletic Greens, the all-in-one daily drink to support better health and peak performance. Even with a balanced diet, it can be difficult to cover all of your nutritional bases and this is where Athletic Greens can help. Their daily drink is essentially nutritional insurance for your body and it's delivered straight to your door every month. It's developed from a complex blend of 75 minerals, vitamins, and whole-food ingredients. It's a greens powder that's engineered to fill the nutritional gaps in your diet. Their daily drink improves your everyday performance by addressing the four pillars of health, energy, recovery, gut health, and immune support. It's packed with adaptogens for recovery, probiotics and digestive enzymes for gut health, and vitamin C and zinc for immune support. It's basically an all-in-one solution to help your body meet its nutritional needs. And it's highly absorbable and diet-friendly, whether you are keto, vegan, paleo, dairy-free, gluten-free, etc. It has less than one gram of sugar and it tastes great. And here's how I used it and still use it. When I started losing weight, I was eating a lot more protein, and it became hard to get enough greens and vegetables in because it was hard to actually eat enough volume of food. I was full. So I was able to use Athletic Greens to meet my veggie and nutritional needs, even if I was full and just didn't feel like eating extra. It's basically like a multivitamin, but it's actually head and shoulders above a lot of multivitamins.

They don't use any GMOs or harmful chemicals. And it's NSF certified. So they really are careful about their sourcing and what goes into it. When you try Athletic Greens through my podcast, they're also going to send you a year supply of their vitamin D3 and K2 for free. I've talked about vitamin D before. We know we get it from the sun, but it can also be important to supplement, especially in the winter months. And this is something I test my own blood levels of and supplement when necessary. And it combines these nutrients to help support the heart, immune system, and respiratory system, which is especially helpful at this time of year. So whether you're looking to boost energy levels, support your immune system, or address gut health, it's a great time to try Athletic Greens for yourself. Simply visit [athleticgreens.com/wellnessmama](https://athleticgreens.com/wellnessmama) to claim my special offer today. You'll get a free vitamin D3/K2 wellness bundle with your first purchase. That's up to a one

year supply of vitamin D as an added value for free when you try Athletic Greens. You'd be hard-pressed to find a more comprehensive nutritional bundle anywhere else. So, again, that's [athleticgreens.com/wellnessmama](https://athleticgreens.com/wellnessmama).

This podcast is brought to you by Cacao Bliss, a delicious superfood drink created by previous podcast guest, Danette May. Many of us like chocolate, and certainly nothing feels better than being able to enjoy rich creamy chocolate and knowing that you're doing something good for your body. But that isn't the case with every type of chocolate. When it's sourced well, chocolate and especially cacao can have many health benefits. It's a great source of magnesium, can be very anti-inflammatory and even help balance hormones. In fact, some experts speculate that this is why we crave chocolate at certain times of the month. Cacao Bliss is one of the best sources of this that I have found. They start with 100% organic cacao beans that are naturally dried in the sun, maintaining their miraculous health benefits. And then they blend this with turmeric, MCT oil, coconut, sea salt, cinnamon, and black pepper. So not only does it taste delicious, but it makes you feel incredible as well. The result is this truly decadent healthy, but guilt-free chocolate that helps with cravings, it can be great for weight loss, for boosting energy, reducing inflammation, all in one simple drink that has become a relatively regular part of my life. And for those who are wondering it is paleo, gluten-free, keto, vegan and vegetarian safe. They have been making this for eight years. I'm a big fan. And as a listener of this podcast, you get an automatic 15% discount by going to [earthechofoods.com/wellnessmama](https://earthechofoods.com/wellnessmama) and you will have an automatic 15% discount.

And I think you've made a such strong case for this. I would hope a lot of people listening are understanding that they probably need more sun exposure.

And if that's the case, I'd love to hear you just kind of breakdown on a practical level what are an optimal relationship with light and sun exposure would look like. And then for people who can't do the optimal, what kind of a minimum effect of those we absolutely need to get of light and sun exposure to start hitting these health cascades are?

Ari: Yeah, great question and a somewhat complex answer. So it is very individual as far as what the optimal doses are. And the reason why it's individual is it's heavily dependent on your skin type as a... It's dependent on a few factors, your age, your body fatness, but especially skin type. So the breakdown of that is you can do a Google image search, I don't encourage you to use Google these days. Do a DuckDuckGo image search for Fitzpatrick skin types. And then, you can identify what type of skin you are.

So there's five or six different Fitzpatrick skin types all the way from a number one, which is very pasty white, probably somebody from, like, Irish ancestry and often times red heads, and actually, interestingly, these people have a different type of melanin completely compared to normal Caucasian people or black people. So a normal Caucasian person, for example someone like me, has actually more in common, you know, I have the

same type of melanin as a black person from Africa. My melanin is more similar to them than it is to a Irish person who's a redhead. It's kind of interesting fun fact.

But on a practical level, people with very white, very pale skin types, especially Northern Europeans and people from that ancestry have a way, way, way lower skin tolerance than someone who is Asian with darker skin or somebody of more Mediterranean ancestry or Middle Eastern ancestry. For example, my ancestry is from largely Mediterranean areas, kind of a ring around the Mediterranean area. And I have kind of a mid-tier three, four Fitzpatrick skin type, kind of a more olive skin type.

And then, people who have very dark skin from India, from Africa, in terms of their ancestry, these people have even higher tolerance for ultraviolet light exposure from the sun than someone like me. And these people can, as a result, so it's not just their tolerance for sun exposure, it's also their need for sun exposure. So, because of that ancestry that has programmed your skin to produce that much melanin, you actually require larger amounts of sun exposure in order to synthesize adequate levels of vitamin D and get all of these other benefits of sun exposure.

So your skin type, what you can actually see in the mirror, is actually an excellent guide to how much sun you need and how much sun is optimal for you. Now, I will say that my personal thoughts on this are, as a general rule, I think most people should do two things. They should get the most sun exposure that they can below the threshold of sun burning. Now, for somebody who's a Fitzpatrick skin type 1 who's got a very pale skin, their threshold for sun burning at first, might literally be three minutes of like sun bathing before their skin is at the limit.

Whereas, somebody with extremely dark skin from African ancestry, or very dark-skinned person from India, for example, or Papua New Guinea or you know some place like that, these people might get two hours of sun exposure before they're at their threshold of sun burning. And I'm talking about that as a starting point. Once you build up through regular sun exposure, you start to build up a tan, okay, assuming you are of a Fitzpatrick skin type that actually can tan. The Fitzpatrick skin type 1 basically cannot tan at all, essentially, almost no matter what, you know, level of sun exposure they get. Their requirements for sun exposure again will be very, very low. But most people can at least build up somewhat of increased melanin in their skin and that is your internal sunscreen. That is your internal mechanism for how to build up your sun exposure and your skin's way of preventing damage. Your skin's way of getting all of these amazing benefits of sun exposure without incurring DNA damage and burning.

Okay. So use that to your advantage. So you need to get regular frequent sun exposure below the threshold of burning, build up that internal system to allow you to get all these amazing benefits of sun exposure without the harms from it. And once you do that, someone of a more Fitzpatrick 2, 3-type skin types, they may build up to somewhere between, you know, an optimal daily amount of, I think on the low end, around 20 minutes, and on high end maybe up to an hour-ish or two, depending on how well they condition and how well they can tan. And then, if you're someone like me, like more of a Fitzpatrick skin type 3, 4, and you have, this is a side point we can delve into a bit, and you have an optimal diet and you build up your skin's tolerance for sun

exposure through regular frequent exposure, you can literally tolerate hours of daily sun exposure and not get sunburned. Okay.

So for example, I go surfing. I live in California and I go surfing, and I can be three hours in the sun surfing and not have any sunburn. And someone who obviously has even darker skin, someone with really dark brown skin or more African ancestry, essentially, the sky is the limit, at the high end if things are optimal, if they've done things the right way with ramping up their sun exposure habits and their tan and their diet is good, they're going to be able to tolerate hours of sun exposure, right?

And there's hunter-gatherer tribes that live an outdoor lifestyle. They spend hours a day in the sun and that is exactly what that pigment of skin has evolved for. It's evolved to express the optimal levels of melatonin for that kind of environment, for a context of living where you're getting hours of oftentimes very intense equatorial sun and to not get sunburned in the process, to be able to soak up all the benefits of that sun without the harm.

So that's the sort of practical guide. Again, it's to get the most sun exposure that you can tolerate for your skin type while also keeping in mind you need to build up your skin's internal system for building a tan, for building up its capacity to tolerate sun exposure, at the same time, understand that your diet plays a big role here as well.

And we know that many different kinds of phytonutrients especially, so things like carotenoids, beta carotene, lutein, zeaxanthin, pomegranate, green tea, cacao, astaxanthin is an amazing one, lycopene from tomatoes. Many of these compounds, this is a little-known fact, but a very important fact, many of these compounds have been shown to, within a matter of weeks, increase our skin's capacity to tolerate ultraviolet light exposure without DNA damage or sunburn by upwards of 50%, 80%, 100% in literally the span of weeks.

So what that means is you now have to understand that there is a diet skin interaction. And specifically, it means that if you have an optimal diet, it dramatically increases your skin's tolerance to sun exposure and your skin's...your ability to get all those benefits of the sun without incurring DNA damage in your skin, without getting sunburn, without increasing your risk of skin cancer. And by the way, many of those compounds have also been shown to combat skin cancer.

So you also have to understand now, now that I'm introducing this other element, the relationship of the sun and skin cancer is also mediated by your diet. So if you take people on the standard American diet and you now add in intermittent sun exposure, and they're getting sun burnt, and now the sun can be a very toxic thing. Okay, in the context of, again, somebody with a very, very poor diet. But if you do sun exposure the right way, and you ramp up your sun exposure to regular frequent sun exposure below the threshold of sun burning and you also optimize your diet to increase your skin's resilience to ultraviolet light exposure, you build up a tan, you have optimal diet, now you're in a position where you can tolerate way, way, way bigger amounts of sun exposure without getting burnt.

And I see this all the time in The Energy Blueprint members, the people in my program, these are people who, I mean, I hear it literally all the time, you know, Fitzpatrick skin types 1, 2 and 3, people who once they implement the dietary changes and they do smart supplementation, for example, with things like astaxanthin, they go from, you know, they say, "Hey, I used to only be able to tolerate five minutes of sun exposure and I would get burned and now I can be out in the sun for an hour and I don't get burned." Okay so that's literally how big of a difference it can make. It can twenty-fold your tolerance for sun exposure without getting burned. And that's a really important aspect of all these.

So hopefully, you know, you understand why my answer wasn't just, "Oh, people need to get 15 minutes of sun exposure a day," like you see in so many articles online. In order to get, you know, 5,000 IUs of vitamin D, make sure to get, you know, 10 minutes of sun exposure at 2:00 pm or 11:00 am or something like that.

I think those kinds of one-size fits all advice is nonsense because there are people who, I would say, that kind of advice applies more to people with Fitzpatrick skin type 1 and 2, if anything. It's very, very conservative, very low-end type of advice for dosing of sun exposure and it's completely inadequate for people with darker skin. So the people with darker skin need way, way more sun exposure in order to have optimal levels of vitamin D and optimal levels of the other different benefits of sun exposure. So base it on your skin type, at the same time you should be trying to maximize the level of sun exposure without getting sun burnt and maximizing your diet to facilitate that process as well.

Katie: I'm so glad you brought up the link with diet. And I can attest to this myself just like your members in your Energy Blueprint in that when I start making dietary changes for my thyroid and for other aspects of health, which ended up being a much like a lower inflammation diet, lots of phytonutrients, my sun tolerance went up drastically and I would be one of those cases with an Irish-Scottish background. In high school, I could spend 5 or 10 minutes in the sun and be burned. And now, I regularly spend several hours outside with my kids and don't burn at all.

And I also love that you kind of dispelled the myth that any type of tan whatsoever is automatically damaged and bad for the skin. Because that's another thing I hear often from skin care professionals is you know, tan is a sign of skin damage and it should be avoided at all cost. And like you explained, it's actually part of the body's natural process and it's really important, actually.

Ari: Yes, exactly. And when people are saying that, that's actually just a total misunderstanding. The people who say that are the people who are basically saying any amount of sun exposure is harmful. You should avoid the sun because sun is bad. And as I've hopefully made the undebatable case for in this podcast, that paradigm is gibberish. It is nonsense that comes only from ignorance of the full body of data around the relationship of sun and human health more broadly.

So to imagine that any...Basically, what they're doing is they're saying sun is bad, you should avoid the sun. And a tan is a sign that you haven't avoided the sun. Therefore, a tan is bad. But actually, what a tan is is your body's internal mechanism for protecting from skin damage from sun exposure. It is your body's internal sunscreen. So to call that a harmful thing, say a tan is itself a harmful thing is just pure ignorance.

Katie: Thank you for that added explanation. You are definitely one of my favorite people to learn from because you're so well researched and this has been fascinating. I feel like I can probably talk to you for another hour and a half easily about this. And I think we're just gonna have to have you on again soon because you're such a wealth of knowledge but, Ari, I've really appreciate your time and everything that you've shared here. Where can people find you and stay in touch and keep learning?

Ari: Yeah, the best way to do that is on [theenergyblueprint.com](http://theenergyblueprint.com) and I have a variety of online programs. I have The Energy Blueprint as my flagship program for increasing human energy levels and helping people with chronic fatigue get back their energy and also people with normal energy levels get to super human energy levels. And I recently released a Fat Loss Blueprint Program as well. And which is sort of it's not the basics of fat loss, it's more like an advanced lifestyle strategies approach to fat loss, really great program for anybody who has the basics already in place.

And I also have three new formulas, supplements that I have come out with over the last year and a half. Mitochondrial formula, a brain formula, and something I call energy essentials, which is a comprehensive multivitamin and mineral and a whole bunch of amazing super foods. So yeah, go check them out, [theenergyblueprint.com](http://theenergyblueprint.com).

And if I can offer just one sort of wrap up to this podcast, stop being afraid of the sun. Go get your sun exposure. It is literally as important as good nutrition and exercise to your health, so don't neglect it. It is vital to disease prevention and to your mood and to your energy levels and to your sleep and so much more. So get the sun, don't neglect it.

Katie: I love it and I'll make sure all of those resources you mentioned are linked in the show notes of [wellnessmama.fm](http://wellnessmama.fm). So if you guys are exercising or driving, you can find all of those links there. Ari, it's always such a pleasure, like I said, we'll have to have you on again. This has been an awesome enlightening conversation and I'm really appreciative of your time.

Ari: Yeah, thank you so much for having me and thank you for inviting me on again. It's always a pleasure to connect.

Katie: And thank you as always for listening, for sharing your most valuable resource, your time, with both of us today. We're so grateful that you did and I hope that you will join me again on the next episode of the "Wellness Mama Podcast"

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.