

Speaker 1 ([00:00](#)):

I had a very strange childhood, had the worst case any doctor had ever seen my job is to keep healing. So that's the story. We all have remarkable stories within stories of adversity, challenges, trials, and ultimately, this is Your Health, Your Story, the podcast.

Caspar ([00:21](#)):

If you're looking to gain control of your health during a pandemic, the place you may want to start is the immune system. It's incredibly sophisticated and complex, and doesn't get enough credit for what it does on a daily basis. Your immune system is your defense system. It encounters billions of germs. And if optimized, neutralizes and eliminates all of these threats, but if the COVID pandemic has shown us anything, it's that perhaps our immune systems aren't working that well. That's why we're having a best-selling doctor of pharmacy and cardiovascular research scientist on to shed some light on what is the immune system and what we can do right now to strengthen it. You don't have to wait for a vaccine to give yourself a better chance to fight off infections, reverse chronic disease and live a healthier life. And today's guest will prove that with data and science, this is the story of the immunity fix with dr. James DiNicolantonio, Dr. DiNicolantonio thank you so much

Caspar ([01:20](#)):

Much for being with us today.

James ([01:22](#)):

Excited to be here. Thanks for having me.

Caspar ([01:24](#)):

And congrats because this is your fourth book, right?

James ([01:27](#)):

Yes.

Caspar ([01:28](#)):

And this one is a big one. "The immunity Fix" because it's such a hot topic right now, the immune system, what it means, how you could boost it, are there ways to boost it? I think even that is a question that many doctors are struggling with and the public, of course, is struggling with in your book, you go into a lot of what the modern day research and data says, and then you also, and I really appreciate this. You provide actionable steps to use that data to your advantage. What's some of the kind of more interesting data that you saw in this book and what is it really showing us? Do we have control over our immune system? Or is this something we have to kind of wait and see, and let doctors help us with, with things like vaccines and interventions, medical interventions?

James ([02:16](#)):

So we absolutely do have control of our immune health. And I think some of the most interesting data that was coming out is that if you have metabolic syndrome, which is sort of like this constellation of three, at least three to five of criteria, which would be elevated blood glucose, blood pressure, waist, circumference, triglycerides, and low HDL, which is the good cholesterol. If you have three or more of those sort of risk factors, you are at a three and a half fold, higher risk of dying from COVID and the four

and a half fold higher risk of ending up in the ICU compared to someone who is metabolically healthy. And considering only 12% of the us population actually has good metabolic health. We have a, you know, 80% of the population can sort of start fixing that and potentially improve their immune system.

Caspar ([03:05](#)):

Why is it that 88% of this population in such a modernized and basically said to be one of the best healthcare systems in the world, why is it 88% have this metabolic syndrome that obviously is impacting our immunity?

James ([03:21](#)):

There's obviously a lot of contributing factors, but I would say the primary one would be that 60% of the calories in the United States is coming from either refined carbohydrates or sugar or refined Omega six seed oils. And so when the majority of your food is highly processed, that's obviously going to put stress on the pancreas increase insulin levels and then from there you have the increase in triglycerides and all these other sort of metabolic syndrome, risk factors that sort of start popping up. And essentially to our food, how we grow our food is completely different than how we used to grow our food. And so we've sort of switched over from regenerative farming where sort of, we use animals in a smart way to using manure and sort of like this nitrogen and carbon sequestering and, you know, sort of allowing the animals to go to different areas.

James ([04:15](#)):

It's called adaptive multipaddock grazing, essentially where animals, they don't just graze and destroy one plot of land they go in slowly and they don't decimate multiple plots of land. And so that keeps the plant life very healthy and it keeps the soil then healthy. So you don't have runoff and it keeps the nutrients in the soil. And essentially, if you look at the nutrient content in our food just 50 years ago, there's been on average, a reduction of about 30% in many minerals in our vegetables and about 15% in animal foods. So we're now consuming this like nutrient poor diet, even if we're consuming quote, unquote, whole foods, if you're not getting it from like a regenerative farm.

Caspar ([05:01](#)):

Right. And I feel that a big issue here also is that we're using more and more and we're moving more towards that, correct. We're going away a little bit from the way it was, we're depleting the soil and the trends are going that it's going to continue this way. If we don't do something correct, we're at 30%, you're saying with most vegetables, we could be a 50%, very shortly too. So what can we do about this? Because obviously it's impacting our immune systems, our overall health, what are some of the nutritional pieces here? And I know you wrote this in a book, that's what I want you to recap this, how should we be eating then if we are seeing this depletion of nutrients in our general food, uh, that we're buying at grocery stores?

James ([05:41](#)):

I try to source my food from what's called pastured sources pastured eggs, pastured meats, and make sure I include liver and hearts as well, because liver is super high in minerals that are low in muscle meat, like copper foliate and vitamin A and eggs, especially pastured eggs have about three to four times as much vitamin D compared to your conventional egg. So really animal foods are a great nutrient dense way. And then I pair them with certain plant foods like spinach or tubers or onions or garlic, and some of the more immuno boosting properties in those types of foods.

Caspar (06:18):

So you're not pertaining, you're not really going for any one type of diet. Let's say, you know, significant putting a label to it. You're going mostly for quality I'm hearing, right? You want high quality foods that are going to be the most nutrient dense and give you a variety of different nutrients in a variety of different flavors as well. Correct?

James (06:36):

Essentially. So what I try to do is I first try to stack my animal foods to hit the RDAs for protein, B12, zinc, and iron. And once you do that, then you can sort of start broadening out and getting all the other little nutrients that are missing and animal foods like manganese, magnesium, calcium, those tend to be a little bit lower. So I, I sort of position my foods. Like you said, I first go for nutrient dense pastured animal foods. And then I start trying to build an optimal intake of nutrients that are missing from those foods. In addition to those.

Caspar (07:08):

Got it. Now, you know, a big part, I can understand why this book came out this time is because we are in a pandemic. We are having this issue. Basically. I think it is an issue of immune system and immunity and also co-morbidity metabolic syndrome. All of these things that exacerbate what we're going through right now, but we've been in this pandemic about eight or so months now. And it seems to be really, haven't done too much to be proactive aside from masks and social distancing, and basically a lockdown in your book. There are a number of actions you can take to boost immune system, of course, at least lower the severity of coronavirus in this pandemic. So if you were placed on a task force right now, COVID task force, what would be the first actions that you would recommend we all start to do? Because so far it hasn't been much except where your mask stay in doors, lots of hand sanitizer, which again, could be controversial, cause that could weaken the immune system too. We won't get into that right now, but what are some of the actions you would say, Hey, this is what I would start out right now. If I were on a COVID task force?

James (08:13):

I think we have to make quality foods affordable for the population and stops basically stopped subsidizing corn, soy, and wheat. And so switching the population over to more nutrient-dense foods and make it affordable for everyone and really our nutrient status and our own immune health comes from the food that we consume. So if we can get people to afford quality food, that would be the first step. In my opinion.

Caspar (08:37):

Do you feel though that people would move to quality food? Even if it wasn't an issue of economy? Basically, if it wasn't a financial issue, if everything were even, I still feel that McDonald's would have long lines, right? I still feel people don't get it until we start treating it a little bit. Like we did cigarettes, these are dangerous things like a McDonald's burger, listen, it's still your choice, but you need to have the knowledge, right? Do you feel that it requires kind of intervention of more so education than just the finances?

James (09:12):

100%. I totally agree with you. And I think of course, people can still occasionally have, you know, those types of foods, but the goal is to, you know, shift and do the sort of 80 20 rule where 80% of your foods

is really being sourced from whole foods that are natural and healthy. I guess if you took price off the table, this pandemic has really shown people that your metabolic health is going to determine how well you handle this virus. And I think people now more than ever are more likely to actually start eating healthier.

Caspar ([09:44](#)):

So let's go back to this idea of metabolic syndrome. Cause I'm a little bit understanding, but some people, you know, when you say those words, metabolic syndrome, what are we actually talking about?

James ([09:53](#)):

Essentially, it's a insulin resistance or elevation of this fat storing hormone insulin. And it causes elevations in blood glucose, blood pressure, waist circumference, triglycerides, and it causes a low, good cholesterol or HDL. And essentially if you have three of those five constituents, you are considered to have metabolic syndrome, which about 40% of Americans currently have,

Caspar ([10:16](#)):

Right. And it's a growing issue, correct? It's something that we're seeing more and more of, you know, at an exponential rate.

James ([10:23](#)):

Well the scary. It absolutely is. And the scary part is, is you can be thin, right? You can look great on the outside and you can have really bad metabolic health. So you can't just look at yourself in the mirror and say, well, I'm a thin person. I'm healthy. In fact, a lot of times, especially people who are sort of like a Asian, Indian descent, they typically are thin on the outside, but are fat on the inside, essentially storing fat in and around their organs.

Caspar ([10:49](#)):

Right. And I remember reading that it isn't one of those things that's so obvious. I feel like anymore that a number of people do have issues that they're not aware of. And this is part of the reason. Also I felt that when a lot of people were saying, well, it's affecting also healthy people. Are we truly saying these people are healthy or not is a question that we need to raise somewhat. But beyond that, there are, of course other actions you put in your book for metabolic beyond the nutrition. One of those things you talked about, which I know you're a big fan of is the sauna. Now you're using an infrared sauna every day. Can you go into that and what heat kind of therapy and, and why that is important to the immune system.

James ([11:34](#)):

So essentially over the past five, 600 million years, mammals have evolved a first-line defense against infection, which is essentially a fever. And we've evolved this way to secrete these sort of proteins to help us out during infections. When we raise our core body temperature, these are essentially heat shock proteins. So you can sort of mimic the benefits of a fever by sort of prophylactically going into the sauna, you know, four to five times a week and stimulate those heat shock proteins. That way, if you do have an infection, right, the heat shock proteins can act right away. And so how this works is in order for a virus to replicate, it has to first infect yourself, take over the machinery and export itself out. So inside the cell, there's something called the viral ribonucleoprotein complex and a protein called M one protein has to dock onto that complex in order for it to be exported out heat shock protein, 70 combined to that

complex and prevent M one protein from binding preventing viral exports. So we have good mechanistic data on how sauna works. And if you heat shock animals before you give lethal influenza, like H5N1 bird flu, which was the cause of the 1918 Spanish flu, you can dramatically reduce mortality, lung pathology and viral replication. And we've seen even in a clinical study in humans, that people who get sauna sessions multiple times a week are at about a 50% lower risk of getting the common cold compared to people who weren't getting saunas sessions.

Caspar ([13:09](#)):

That's really interesting. And I know a lot of discussion right now is also about cold therapy. And I think in your book, you said the research isn't as strong as it is with heat therapy. So, you know, you have a lot of these people, Wim, Hoff, and others doing these ice plunges, what is the data and research show about that as it is directly correlated to immunity and, uh, you know, infections.

James ([13:33](#)):

So essentially if you are sick or you're sick and you don't even realize it, the last thing you want to be as cold cause it's the heat that many viruses, particularly RNA viruses are sort of susceptible to. So it's interesting that RNA viruses have very little weakness, but one of their weaknesses is heat. And so if you can raise your core body temperature just to the level of a fever at about 102, which can easily be hit in a sauna, um, that's going to significantly release those heat shock proteins, which have antiviral effects. And not only that viruses simply don't even replicate as well at an elevated temperature above your core body temperature. Now, if you are healthy and you're not infected, doing cold plunges can release cold shock proteins. And that may sort of make your own cells more resistant to other stressors through hormesis. So I'm not saying that cold plunges or cold therapy doesn't have benefit, but definitely things like sauna and heat shock proteins have more evidence than cold shock proteins when it comes to the immune system.

Caspar ([14:38](#)):

Right. And I think it's really important to note, to understand where you are. Correct. I understand if your feelings, if you're feeling run down, just like you mentioned, I think in the exercise that exercise can help up to a certain point. If you're going beyond that, you're actually straining the immune system. And definitely if you're already feeling a little bit, run down feeling a sickness coming on, pushing yourself, whether it's cold therapy, whether it's high intensity training will actually deplete the immune system and you can become sick or correct.

James ([15:07](#)):

You got it.

Caspar ([15:08](#)):

Now one of the things that came up that when I was reading, I wanted a little bit more clarity on is this idea of how we're looking at and even tracing the body's reaction to certain viruses, such as coronavirus and T-cells versus antibodies. And I did look in the, you know, there's been a lot of talk about this, of how we're looking at it. Research in Sweden showed for every one person that was testing positive for antibodies to were found to have specific T cells, which identifying destroy the infect itself. Is there a more accurate way when we look at something like COVID or any infection when we're looking at T-cells versus antibodies, can you go into that just a little bit and clarify that

James ([15:48](#)):

We think that the antibody response to the coronavirus only lasts a few months. Whereas if we look at past SARS exposure, we can see that T's T-cell immunity can last decades, even from other viruses as well. It can last much longer. Now, is there a better test in regards to, instead of looking at antibodies, looking at like T-cell cross-reactivity possibly, we don't know though if T cells sort of cross reacting to other types of, or to this virus means that you have immunity against it. So for example, there are many studies that have recently come out that if you've been exposed to other Coronaviruses like the common cold that you have T cell cross-reactivity to SARS cov-2. Now we don't know if that means you have immunity to it though, but it's very likely that you have some type of immunity, meaning you probably will, are more likely to have a better response with prior exposures to Coronaviruses because they're very similar in structure. Yes, they are different. But if you already have been exposed to a Coronavirus, even if it's not this novel one, your T cells still have recognition to some of the structure of the current coronavirus.

Caspar ([17:01](#)):

And that brings me to the next point here. Cause you're, you're talking about that exposure can be helpful from the T-cell analysis of everything and you bring up hygiene hypothesis in the book and you know, how being exposed can absolutely improve your immune system and basically train it like weightlifting sort of 10 for the muscles. How do you feel that antibiotics hand sanitizers this lockdown masks has affected the immune system. And do you agree with the hygiene hypothesis that exposure can boost the immune system and then living in a bubble of course, and being incredibly sanitized will lower the immune system.

James ([17:42](#)):

If anyone doesn't believe that we have essentially pathogen receptors in our immune system. And so if you're not exposed to a pathogen, then you're not stimulating and boosting the immune system. So for example, how yeast beta glucan works is you're consuming the cell membrane of yeast and you are sort of telling your body that there's a foreign substance and our body mounts an immune response. So that's sort of how we know things boost the immune system is if you give it a substance that the immune system thinks is a pathogen, then it will absolutely upregulate its number and the cyto toxicity of the immune cell. So we need to be exposed to things in order to prime our immune system. That's how it works.

Caspar ([18:25](#)):

Right. And it makes total sense, right? Isn't that how vaccines work in a sense you're exposing it to, right? So this idea that just sitting inside and not doing anything until that comes about, well, I think you can be somewhat exposing yourself, just like playing in the dirt, getting your hands, you know, can build a skin. Microbiome can help. They say children that are outdoors and exposed to other things and get those acute infections in early stages of life, have a stronger immune system later in life. Right?

James ([18:54](#)):

Right. You can even see this with natural birth versus C-section when you're first inoculated, right. With the mother's microbiome.

Caspar ([19:01](#)):

Right. And that that's a, a large issue that I think gets overlooked in doctors going straight to C-section when not completely necessary. Is that yeah. A child's immune system. And part of that is through the vaginal microbiome. You get some of that beneficial bacteria. So, you know, we talked about the depletion of our nutrition, our food in general, and some of the ways we can improve on that. But of course, there's this idea and necessity in some ways for supplementation and lots of studies coming out right now, again, lots of differing opinions on things like magnesium, vitamin D other vitamins as well. But what are some of the top nutritional supplements or just any types of supplements that you would say we should be taking almost on a daily basis for immunity?

James ([19:50](#)):

Well, if we take a step back away from just coronavirus and we look at some of the meta-analyses on just upper respiratory tract infections from randomized clinical studies in humans, we know that if you are severely vitamin D deficient, that you only need to treat for people with vitamin D supplementation to prevent one upper respiratory tract infection. Now that's from a meta analysis of over 11,000 participants in over 25 randomized clinical studies. So absolutely if someone is deficient in a vitamin or a mineral, giving them a supplement can be dramatically beneficial. And that goes obviously across the board to any vitamin or any mineral

Caspar ([20:30](#)):

That leads me, I guess, to the next question is why aren't we then giving more? And you're seeing a little bit of this. You see these kinds of, you know, I'm looking at social media and research and the United Kingdom now is trying to get vitamin D into more people and others. Why, why are we though so hesitant, do you think to do these things, to give vitamin C vitamin D magnesium? Why is it that, you know, more medical institutions aren't saying, listen, before we even get a vaccine, start doing these things, start giving vitamin D start doing this, uh, other, uh, and start eating well. I haven't heard really any, and most people haven't heard any of that.

James ([21:06](#)):

The primary issue in my opinion, is that you have pharma, right, essentially integrated into the medical schools. Most clinicians only get four hours of nutrition. The rest is here's how to prescribe my drug to treat this condition, not the underlying cause could be vitamin D deficiency and maybe simply giving testing for that. And maybe giving someone a vitamin D supplement might actually help clinicians aren't even trained to do this. So there's a lot of money involved at stake, and that's probably why most doctors don't necessarily even understand nutrition, nor do they think of supplementation over prescribing a medication.

Caspar ([21:46](#)):

Do you also think that there's an over-reliance from the public too? I'm not going to say trust, but go along with what doctors and top experts are saying. I know I, you know, I work at a clinic here in New York and am a managing director and see lots of patients who come in. And of course we're giving a different perspective from an integrative holistic side of things, but still the cardiologist, the expert at the hospital supersedes usually what we say here, even though most of the doctors I work with started at that place. And we're the top people there and just moved over. Do you think that's part of the issue that we are still as a general society? The majority of us go along with what Dr. FDA Big Pharma has to say and has that level of trust that hasn't really felt broken yet.



James ([22:34](#)):

Pharma likes to target those big doctors and get them on their payroll. 100%. There was no question about it, and they have to disclose that in their publications. And typically when you see these clinicians publishing in New England Journal of Medicine, sometimes their conflicts of interest are longer than the paper they submitted and published. And so it absolutely is controlling how these doctors think prescribe and treat them.

Caspar ([22:58](#)):

And if there's one thing I wish more people would do, just have that open mind to look because listen, I understand some of this isn't backed in research in it. And a lot of integrative medicine is still catching up, you know? And there, there is a lot. That's still, hasn't been scientifically proven, but you as a researcher and this book I have to say has what, 170 something pages of references. When I picked it up, I said, damn this is a big book. It's going to take me a while. And I got one weekend to read it, but I went through it like that because I realized so much of it were the references, which really gives it the validity. So it's not that you're coming out with this stuff and just posing hypotheses. You're looking at the data. You're looking to see if there are conflicts of interest, of course, and you're putting it out there.

Caspar ([23:41](#)):

So I guess my question is with all this data out now, and, and you doing good in many others, pushing it out, do you feel there will be a movement of people to start embracing this a little bit more to start taking? And I guess you could say already has, because you go to Amazon, anything with immune system core, you know, next to it is sold out. Do you think we'll continue that trend or you think after a vaccine comes out and people start to calm down, will we go back to the old ways, eating poorly, not caring about immune supplements, everything else?

James ([24:12](#)):

Well, I like to think I'm a positive person, but I'm also a realist too. And I know these things take a long time and will we ever get to the point where I would love us to be at? I don't think so. I mean, we still don't even have vitamin and mineral tests covered by insurance companies. And yet now over 90% of Americans are deficient in at least one vitamin or mineral, and yet they can't even get a test for these things that are typically covered by insurance that are typically not covered by insurance companies. So it's, it's a, it's a real issue.

Caspar ([24:43](#)):

No It is. And, and I, I understand that, you know, we, as a medical center, a lot of the doctors ideal within our network are completely out of pocket now because otherwise your hands are tied. You can't really do too much for the patient when you're in the insurance model. And it's, it's not then about, you know, money or insurance. It's about how do I best help the patient and to do that, I have to go in a different direction than where everyone else is sort of going, which is really unfortunate because suddenly it becomes a matter of money and can I afford to have treatment even with healthcare insurance. So I'm totally on board with you on that, that that's so much of, this is just overlooked, neglected, not covered by insurance. And it's just staying that way. Unfortunately now empowering your yourself means going outside sometimes the medical model and looking at those things like supplements, like nutrition, like sleep and saunas and so forth. If you were to say, you know, what are the top three or so supplements that someone should be taking for their nutrition, not knowing a



personalized stance, which I understand is a little bit difficult. What would those three things be? Would it be magnesium, vitamin D and vitamin C? What, what would you do say?

James ([25:52](#)):

For, yeah, for me personally, those three definitely are top 10. Um, zinc and copper are also extremely important. East beta glucan is very important. Selenium. Selenium gets a huge underrating, but I kind kinda like to tell this story, to get people to understand how important selenium is for viral infections. There's a RNA virus called Coxsackie virus, and it can sometimes call, uh, co uh, cause hand, foot and mouth in some children. Other times it doesn't cause anything, but if you are deficient in selenium, it causes something called Keyshawn disease, which leads to cardiomyopathy. So essentially being deficient in just one nutrient selenium can take a non virulent virus. Let's say like the coronavirus too, and make it a virulent, potentially fatal virus. And how you treat people with Keyshawn diseases. You simply just give them a selenium supplement. And so it's interesting that data's starting to come out out on selenium and coronavirus. So for example, people that are deficient in selenium are at a threefold higher risk of being hospitalized from coronavirus and are at a five times higher. So 500% higher risk of dying from coronavirus. And this is because selenium is a part of a lot of our antioxidant systems it's actually needed for things like glutathione peroxidase to work Thile redox reductase. And basically, I don't want to get too technical, but a lot of these minerals are co-factors for our own endogenous antioxidant enzymes.

Caspar ([27:18](#)):

I've noticed that a lot of the patients that I come through here incredibly deficient in minerals, you know, completely stripped. And that's the big one. It's not even sometimes the vitamins or anything. It's really the minerals that are, and as these are built, and these are incredibly essential, selenium, magnesium being two top, but of course, zinc all, all of them. What about NAD? I saw that being mentioned a few times in your book and nicotinamide adenine dinucleotide, something we deal a lot with. We have supplement, we've done IVs for a long time, uh, with patients, what is NAD's role in immunity? Cause I know mitochondrial function, most people know it anti-aging and you know, but what is its role in immunity?

James ([27:56](#)):

So how I sort of look at NAD and I am by no means an expert, it is a way to boost something called N A D P H, which is a universal electron donor. So if you want your antioxidant enzymes to work, let's say like bio redoxin reductase, if you want that, to be able to reduce oxidized dial redoxin, it needs to take an electron from NAD pH in order to sort of recycle oxidized antioxidants. So essentially if you are depleted in NAD, you are depleted in the precursor for the universal electron donation for all your antioxidant enzyme systems. So if you're depleted in NAD, you are essentially at a much higher risk of oxidative stress and damage from things like RNA viruses,

Caspar ([28:46](#)):

Right. And it links back to this holistic view. It's not that direct correlation to let's say T cell function or in case, but it is down the path. And that's how we have to look at things, right? Not a direct one to one. That's not always how the body works. It's all interrelated. So if your cells function better, therefore everything can fall. If you're detoxing better, your immune systems. So all of these things work and, you know, you stated a, the PNI system there's even PNEI systems and how these cascades work down. And one of those things that, that absolutely isn't sometimes a direct correlation that we think about is

stress and sleep. And, you know, I, I really did appreciate that chapter on the circadian rhythm and how that's really important because I feel like too many of us are still not paying enough attention to how we sleep. Of course, we have the minority that were there Oura rings get to sleep cycles, but what is the recommendation on sleep and immunity? How many hours, what type of sleep, what are some of the recommended, you know, recommended actions we could take to improve sleep because so many people are stressed and not sleeping well, right now, taking sleeping pills, what can we do? And, and what is that correlation to immunity?

James ([30:00](#)):

So it's almost not even about how long you sleep. It's about how well you sleep. And we're sort of have this evolutionary mismatch between how we evolved with this 24 hour light, dark cycle based on the axial rotation of the earth and where we sit today. So we used to have very bright days because we were out in sunlight and we used to have very dark nights. And that's how our circadian clocks evolved and how, which controls our peripheral clocks and hormones, how those are released and things like that. Now our retina and the, you know, the center in the brain and the hypothalamus that controls these clocks is used to very, very bright light throughout the entire day and very, very dark nights. And now we are basically only having dim days and dim nights and exposing ourselves to light at night. And that completely affects melatonin, secretion, and melatonin.

James ([30:56](#)):

Isn't just a sleep hormone and it's not just secreted at night, red light throughout the day in the morning, activates and secretes melatonin and melatonin compassed into any cell. And it is a master antioxidant. Not only can it scavenge free radicals, but there are melatonin receptors on the body and that can upregulate our own indogenous antioxidant systems. And melatonin will even concentrate in our bone marrow to protect the STEM cells and the immature immune cells when they're first sort of coming out of the bone marrow. So this whole sleep circadian cycle is intricately linked with the immune system.

Caspar ([31:33](#)):

Yeah. And melatonin was a big one that you brought up, uh, you know, especially for those having trouble to supplement melatonin. And you stated there isn't any issue with supplement melatonin and having any kind of a reaction or response with your own melatonin production. Is that correct? Cause I know some people are always a little bit fearful that they're going to get hooked on that. It's going to stop something like a steroid, correct. If you use steroids, let's say, you know, that your body stops producing its own testosterone. You have serious effects from that, but that's not true for melatonin.

James ([32:06](#)):

Here's the two primary things that's going to stop you from producing melatonin. One, basically breaking your normal circadian cycles, right? Not getting light in the morning, not getting light throughout the day, activating light at night, that's going to suppress your melatonin and then a lack of nutrients. So in order to synthesize melatonin, we, we there's these enzymes from 5-HTP to serotonin, to melatonin and the enzymes in-between require magnesium zinc, vitamin C, B vitamins. If you're deficient in those, that's going to prevent you from even being able to synthesize melatonin. Now, most of us are deficient in melatonin. So if someone's taking small doses of melatonin, is that going to suppress or sort of, you're going to get hooked on melatonin, where if you go off of it, you're no longer going to be able to produce it. No, because we produce it through, you know, the retina and the light cycles and through our own nutrition, I will say too about what's so great about melatonin is there's

Meta analyses of randomized studies using high doses of melatonin at night. I need a 30 milligram. So about 10 times what you typically take to sleep. And those studies have shown significant reductions in death, in cancer patients. So melatonin has a very good sort of safety and dose range, even up to 20 to 50 milligrams at night.

Caspar ([33:28](#)):

And that's really a positive to hear because a lot of people are relying of course, on sleeping pills and other things that have serious impact, I believe, and you're not getting that quality of sleep. So, you know, for those that are struggling with sleep, a high quality melatonin supplement is something we've advised patients before. And as you're hearing here, the research kind of shows there is the safety level there in a sense. Now, a lot of what you, you talk about in the book especially, with sleep and others. And you wrote this book with SIM land, a well-known biohacker in the biohacking community. And, and a lot of what you talk about the blue blockers, you know, earth thing, all these things are really popular in the biohacking world. And I've always said that there is a little bit of a gap, but it's being bridged between medicine and biohacking and what the data and research is showing to show what a lot of what the biohackers are using can be applied in the medical world. Do you find that there is more research and there is more kind of, uh, factual studies and data being applied to what biohackers are using that can be used in medicine. And can we bridge that gap a little bit more?

James ([34:37](#)):

I think we're going to absolutely bridge the gap. And we were more and more getting clinical studies testing these things like grounding or sauna or, you know, cold, cold shock therapies, things like that. And so there is, we're still in the inf you know, in its infancy, but it's growing. And I think essentially biohacking is almost like just doing what we used to do for millions of years, getting out in the sun grounding, right, breathing, fresh air, changing our environment and what we're exposed to in regards to temperatures like this, isn't like novel things. We're not like, you know, talking about something that's voodoo or something that we didn't expose ourselves to for the for millions of years. And essentially biohacking is sort of like trying to bridge the gap between how we evolved and sort of like now the advanced technology that we can use to sort of boost that evolutionary practice that gave us good health.

Caspar ([35:30](#)):

Yeah, absolutely. I've always said that it's kind of funny because a lot of the devices that biohackers use we've used in our office for a long time, maybe there's slightly different everything, whether it is the different light therapies and NAD and all these things, but when you're applying something to optimize the body, whether you're healthy or unhealthy, the outcome is generally the same. So why wouldn't you use what top athlete top, you know, uh, performers are using and apply that to the sick as well, to get them to a level of at least self healing and health, and then they continue on to the optimization level. So I've always said that, that it's a little bit strange that you look at it as medicine and biohacking. It's so separate and there's so, you know, they're one in the same really. And I really wish that gap would kind of, you know, go down. I do love what you and other people are doing to help with that. Now let me ask you, what is your daily health regimen look like? Cause I know your, your, the research, you got all the facts and everything, and I know you're applying it with the sun and other, but what are some other things that you're doing on a daily basis? Not just for immunity, but also just for your general wellbeing and longevity.

James ([36:43](#)):

So typically I'd like to lift weights three times a week, I try to do some type of high interval intensity training, or just playing basketball and doing some sprints in between. So it doesn't have to be anything crazy, but we do need to stimulate good blood flow three times a week, whether it be through high intensity interval training or sauna sessions, which I do probably four to five times per week, I have an infrared clear light sauna. And I typically do that in the morning and I also have the red light tower as well. And I'll do that probably twice a week. I'll get some red light to sort of stimulate the promotion and production of melatonin throughout the day. As you know, we covered sort of the pastured meats and plant foods that I consume. I also take Camou cammo for vitamin C. I always try to get nutrients as close to a whole food source as possible. Um, so I do Camou Camou and a little bit of like a, like a plant-based yogurt once a day. I do take Cod liver oil. That's high in vitamin A and D and omega3s, if I'm not eating wild salmon and I do, I try to get outside, even if it's cold and I try to get sun on my skin and sun into my eyes right away, first thing in the morning and throughout the day. So those are just some of the things that I typically try to do.

Caspar ([37:56](#)):

It was funny when I listened to you say all this, I would think you're like a holistic out there in nature guy. Like not looking at any studies or research, but here you are. You're a cardiovascular research scientist, a doctor of pharmacy like a real scientific guy, and you're stating these simplistic, but absolutely, uh, you know, essential pieces to help. And that's what you're doing to keep healthy. And that's what the data is showing you to stay healthy, to boost your immune system. So it's really cool to hear all of that. Let me ask you as a cardiovascular research scientist, what are your thoughts on caffeine? Cause you brought it up a little as it related to circadian rhythm, even saying you shouldn't have caffeine first thing in the morning, let those cortisol levels raise up. Right. But what are your general thoughts? What's the data, because again, the data kind of shows it's all over the place. One day coffee is the greatest thing for you the next day it'll, you know, give you a stroke or something. So what have you found with caffeine? And especially as it relates to the heart,

James ([38:58](#)):

Right. I think it does depend on the person. And I think there are fast metabolizers and there are slow metabolizers for caffeine. So I think people kind of inherently know if they tolerate coffee or not. Some people can only have one. And if they go above that, they feel very jittery or someone like me, I can have six cups of coffee and it doesn't really affect me that much. And so I think the dose should be definitely individualized, but I do think there are a lot of benefits when it comes to coffee. Because if you look at the observational studies and that can not prove causation, but you know, drinking coffee two to four cups per day is associated with lower risks of cardiovascular disease, mortality, neuro degenerative diseases. And how we think this works is coffee is high in something called chlorogenic acid and the body can convert that to cafeic acid. And then the body converts that to for Ferulic acid and Ferulic, acid is sort of how most anthocyanins and most plant compounds actually work is that eventually gets converted to for ruler acid, which is a master antioxidant. It can stimulate NRF two, but it's also in itself an anti-oxidant. And so coffee is a great way of boosting Ferulic acid levels.

Caspar ([40:08](#)):

That's really interesting. And how do you feel about, uh, cycling of coffee or caffeine? It's something I've tried just based off of a hypothesis. So I was never a coffee drinker until the last year. Never liked caffeine. If you gave me like a Coke, I'd be bouncing off the walls, anxious. Like people like you're like a little kid with, you know, candy when you have a little caffeine, nevertheless, you know, I've had a dy, where I needed a little bit of a boost. I started drinking. Wow. It's like, all right, that cognitive it's like a

new, a nootropic and everything. But I noticed of course after some time it wasn't as effective. It started to just be like, I could have it in the afternoon, nothing would happen. I'd sleep fine. And many people say they could have coffee at night and it doesn't do anything. And I, I questioned that a little bit. Cause I still think it's doing something in your body. You may not know it. Do you think there's something to it in this idea of cycling? Let's say two weeks on two weeks off or anything. I don't know. Is there any data or any thoughts on that?

James ([41:06](#)):

That's a good question. I mean, I've been an avid coffee drinker for a long, long time. And I will say that I can't really recall cause it's been so long when I first started drinking if I was even more activated, but I do still feel that it kicks in within 15 minutes. I feel that I'm so much more sharp. And so I, I continuously drink it throughout the day until about maybe one o'clock is when I kind of shut, shut it off.

Caspar ([41:33](#)):

Right. And you don't want to have it any later, correct? For the circadian rhythm. So you do want to start to wind down and that half-life is about what five, six hours of coffee.

James ([41:42](#)):

Exactly. And the thing is what we don't know. And what I try to tell people is, is half-life is indicative of sort of how long it takes you to excrete out of the body. But it doesn't tell you if it's still binding to receptors or doing anything. And so if you go based on the half-life, then you would think it would last a lot longer that you should stop maybe at 11:00 AM, because the half-life is about six hours. So it would take you basically 24 hours to even get it down to what 25% or 12 and a half percent. But you know, I think if you shut it off at about one o'clock for at least for me, I'm pretty good to go for sleep. It's never affected my sleep.

Caspar ([42:21](#)):

Are you a Bulletproof coffee drinker? I've

James ([42:23](#)):

Tried butter once and it is not for me. It's not nearly as good as like pastured heavy cream.

Caspar ([42:31](#)):

No, no. And, and each person is different. That's the way if you realize, right. And of course we're, we're providing data that are the patterns of everything, but you got to understand who you are. So it's, it's not for everyone. It doesn't work that way. And again, how you even metabolize caffeine is going to be different for everyone. You got four best-selling books now out, you got salt, fixed, super fuel longevity solution. Now the immunity fixed what's next for you?

James ([42:56](#)):

Well, I think we, we got to cover minerals and vitamins and people, my followers have been begging me to write something about particularly magnesium because I've been publishing a lot on that. And so I think if I were to do another book, it would have to focus on probably magnesium and minerals. In general

James ([43:16](#)):

Another thing, I know you got two kids, a wife, where do you find time to write these books? I don't even have any kids. I don't even have a wife yet, but I could barely find time for anything. And you're writing these books. You're putting out this research, is it because you have a passion? What is it?

James ([43:30](#)):

A hundred percent. So yeah, no, I'll wake up some days at four in the morning and I'll, and I'll write, you know, from four to eight in the morning or on the weekends or at night. And so you can find the time. I typically don't have a ton of hobbies besides watching football with my son or playing with my kids basketball or whatever. So if I'm not doing that, I'm not necessarily on Netflix or, you know, doing other things. It's really just digging into the research.

Caspar ([43:56](#)):

Is there a research into how passion affects the immune system and body? I mean, I'm a huge, huge guy. I mean, if you're not passionate about something, you know, you shouldn't really do it. You got to feel just with your heart, right. And what you're doing should be your calling, not even your career or your work or your nine to five or anything. So I'm all about that bull. Is there any data into this?

James ([44:17](#)):

I think, you know, that's probably the biggest thing that most people are suffering from is a lack of passion in their career. And that totally determines your stress levels and your immune function. And I wish more people would know that you don't have to be stuck at a nine to five job in a cubicle. Even if you have to for a little bit, maybe build a side job or try to find something that you can make money on that you're passionate about. And if I can tell people one thing it would be that is don't feel like you're stuck, that you have to be in the job that you absolutely hate. You have a ton of power. And if you have that passion, you can figure it out and that's going to help your whole mood, your whole life and your immune system

Caspar ([44:57](#)):

And everything, right. It trickles down into your whole psychology into your soul, a whole, a physiology of everything. So I agree with you. I could not be more on board with this idea. If you truly want to be happy and healthy, you want to find passion and purpose as well. I've always said that's the X factor in medical treatments is show me two people, the exact same disease, exact same biochemistry, lab results and everything. And show me the one that has the purpose to get better. That wants to see their grandchildren grow up. That wants to go travel the world that has these goals, purpose, passion, to do that. Show me another one that's dejected that is skeptical of everything that isn't sure about life or what they're doing. And I guarantee you, they can get the same treatments. One's going to have really positive results and one's going to maybe have some movement, but ultimately probably not get healthy.

Caspar ([45:52](#)):

And that's such a difference maker, right? Absolutely. Yeah. So, I mean, I'm really glad we got into this because again, you're, you're coming from this research kind of data-driven background that I know so many, just want to hold on to that and just show the data. But you're also going a little bit deeper with the actions you could take with that deeper sense of understanding why that data is driven and how it goes beyond that as well. So I really appreciate that. And I do recommend everyone read your books,

especially this last one, because it is such a timely one. And I do think one of the biggest deficiencies we're seeing right now is of the immune system. And I feel so many people don't even, you don't know it really, right? It's something that just going on in the background, you're getting a little acute and you're feeling lethargic and that's really all mostly due to a poor immune system. So really important. Where can people learn more about you, about the book, everything you're doing?

James ([46:50](#)):

So the book is on Amazon. Um, it's called the immunity fix and my website is dr.James Dinic, D I N I c.com. And they can follow me on Twitter or Instagram @dr.jamesdinnic

Caspar ([47:03](#)):

Doc. I really love everything. You're putting out, keep doing it. I love your Instagram feed as well. All is positive too. It's like research positivity, the perfect combination of like sides, nature, all of it. So keep doing what you're doing. Thank you so much for being on. I hope we can stay in touch.

James ([47:19](#)):

Thanks Caspar for having me on.

Caspar ([47:21](#)):

Dr. DiNicolantonio is precisely what medicine needs right now, an unbiased source of information that proves what we all kind of know deep down

Caspar ([47:30](#)):

Inside. We have everything we need to be healthy and build a strong immune system. While immunity can be a complex subject. The actions based on the research he lists in the immunity fix are actually quite simple. Whether it's your diet, how you exercise, how you sleep, or even how you think there are ways backed by science. That brings us closer to nature and common sense, which have an incredible impact on our immune system and overall wellbeing. I hope you all read this book and continue to write your own healing story. [inaudible].