

Caspar (00:00):

Again, congrats on this book because the last time I had you on, we were talking about the minerals, I'm sorry, the immune fix. Right. And I had asked you at the end, were you planning on a new book? And you said, yeah, I think I got one on minerals and it feels like almost overnight, it was out. So I was like, man, Dr. Dinic moves quick, but I know you were really interested in this when we spoke and it's such a large subject. That's why it's such a big book with over 500 pages of great information, but, you know, remind the audience. What led you to write about minerals and mineral deficiencies?

Dr. DiNicolantonio (00:34):

It's something actually I've been working on for a long time. I had been publishing on particularly magnesium deficiency several years ago. I wrote a paper on subclinical magnesium deficiency, which essentially means you don't see it. It doesn't represent itself as anything visible. You can't look at someone and see that they have magnesium deficiency per se, but it was this subclinical disease that is very prevalent. And so we, we published this review paper. And from there, it sort of, that was sort of the launching point for the book, because that was sort of this culmination of probably five decades worth of magnesium information. And it just, it really opened my eyes to how many things can absolutely lead to magnesium deficiency.

Caspar (01:21):

Yeah. And I mean, one of the things you realize when you read this, I knew this actually working in a clinic, being around doctors, how many people are actually deficient of not just magnesium, but all really minerals. And I'll just read this off quickly from your own book here, alright? In the beginning, chromium 50%, 60, 56% deficient, magnesium 49% deficient zinc, 47% calcium 46 manganese 40. And the list goes on. We're talking about basically all of these essential minerals. Can you go into, what is it about minerals that makes them so important and why are we often overlooking them and finding ourselves so deficient?

Dr. DiNicolantonio (02:01):

Well, we tend to focus on macro nutrients, right? Protein fats, carbohydrates. We forget that it's the micronutrients, particularly the minerals that controls our ability to utilize those three substances for energy, right? Because humans are essentially biological computers. Our tech runs on micronutrients, minerals, vitamins. So if you want to have good energy, right? Most people just think, well, carbs protein, fat, but how you utilize that, right. Take glycolysis, for example, just to break down glucose into, turn it into ATP requires magnesium. And so as your levels fall, of minerals, synchrony, magnesium, your ability to go through glycolysis, to go through the Krebs cycle and to even go through the electron transport chain to create ATP goes down. So we need to sort of think of our mineral status as what type of engine we're running with. You can either be running with a V6, right. Depleted in minerals. Like most of us are, or you can have a V 10 engine where you're supercharged because you're getting optimal amounts of all your minerals.

Caspar (03:07):

Yeah. And I think so many of us and to put it bluntly, the reason why we're deficient is we're eating like shit. And I mean, you put it in much more eloquent terms in this book. But, but can you go into about that? Not even that we're eating poorly in heavily refined you know, foods refined sugars, carbs, just junk food in general, but even the soil is depleted. Is that one of the main reasons that we are finding ourselves then depleted?

Dr. DiNicolantonio ([03:37](#)):

There's pretty much three main reasons why we're depleted in minerals. The first would be that our food is actually basically less nutrient dense compared to just 50 to 70 years ago. And that has to do with many factors, not only how we grow our food faster for quicker yield. So if you grow plants and crops quicker, they're going to naturally be more diluted in the nutrient because they just don't have as much time to take it up. Same thing with animals. We actually kill them faster. Right? We grow them very quickly that we get them to slaughter at 14 months. Whereas if you were to hunt an animal out in nature and they had been living for a couple of years, they would have had longer to extract more nutrients. So it's sort of how we grow our food. Number one is completely different.

Dr. DiNicolantonio ([04:23](#)):

It's all about speed and quantity and not quality. So that's one and that does have to do with soil acidity as well. But also fertilizers too, actually reduces the uptake in glyphosate of minerals, into the plants and then into the animals themselves. The second factor would be the refinement of the foods, which will dramatically reduce magnesium in processed grains, by 80 to 90% refined sugars will essentially completely eliminate magnesium from that food. And the third would be our chronic disease state: inflammation, diabetes, kidney disease, gastrointestinal damage, all deplete us of minerals. Those are the three primary factors.

Caspar ([05:02](#)):

And you actually bring up in the book that mineral deficiencies drive most chronic illnesses as well. So right there you were saying chronic illnesses can lead to a depletion, but they're also driving a lot of these conditions we're seeing that are becoming really commonplace. Can you go into that a little bit?

Dr. DiNicolantonio ([05:19](#)):

Sure. So minerals actually make up your first line of defense against oxidative stress. They literally make up your antioxidant enzymes. One of them being superoxide dismutase, which there's actually three different isoforms of that. And that essentially protects your blood, the cells. And actually there's a superoxide dismutase in the mitochondria that needs manganese to actually work. So if you want to protect the health of your cell and mitochondria, you literally need optimal intakes of mineral or your shields go down. So your minerals are essentially your antioxidant shields. And part of this where this actually stems from it actually starts about 3 billion years ago in blue-green algae. They started producing oxygen in the atmosphere and it is thought that they use selenium and iodine, which are two different minerals is an actual defense against oxidative stress. So our first anti-oxidants may have actually been minerals and we see this in the human body as well, because not just minerals, making up antioxidant enzymes, but take for example iodine, which helps us create thyroid hormones. Thyroid hormones actually have a tremendous amount of antioxidant ability as well. So it's not just making up the antioxidant enzymes, but also through thyroid hormone function as well. They help to give us antioxidant defenses.

Caspar ([06:36](#)):

Yeah. I mean, it just goes back to that critical component of what minerals really play in our bodies. And I feel like so many people just overlook that, right? We want to look at vitamin D vitamin C. These are the heroes that we supplement with. And we all always, almost always overlook mineral supplementation. And one of the things I saw in your book that came up a few times was looking at these mineral deficiencies, such as zinc, let's say associating with what we're going through right now.

And you're you said it's, you know, associated with the worst COVID outcomes or worsening COVID outcomes. Why is it that a deficiency like a mineral zinc can exacerbate a viral infection like COVID?

Dr. DiNicolantonio ([07:16](#)):

Well, there's, there's many factors, right? So our, our immune cells themselves, the production of them how well they can actually kill viruses, depend on the micronutrient status of the body. They help drive the ability of these cells to even kill viruses. And then on the flip side, you have this inflammatory cytokine storm that can sort of lead to tremendous lung damage. And if you don't have good mineral status, which would give you the antioxidant enzymes to suppress the inflammation that comes with killing virally infected cells, then you can cascade into this inflammatory cytokine storm. So it's this balance of minerals help you fight and kill viruses, and then they help you suppress the inflammation that occurs when they're killing viruses.

Caspar ([08:00](#)):

Yeah. So I mean, a lot of what goes into, you know, the minerals and how they work in the body is outlined in there. And we know we're deficient, I want to go into, how do we not become deficient? How do we become the proper range of minerals for us? And it always, you look to probably die at first, right? So one of the, what are some of those foods that your looking at for specific deficiencies that you could share with the audience?

Dr. DiNicolantonio ([08:24](#)):

Sure. I think so most people are lacking in things like copper, minerals like manganese chromium as you would sort of read off this list. And so a lot of people, they sort of know the importance of getting calcium or even magnesium, but there's these other trace minerals that are found in organs that a lot of us are not getting. And I think probably the main issue is people just aren't selecting the right combinations of foods because as we go in the book, the minerals have to be balanced. So if you get not enough magnesium that can lead to calcium overload, if you don't get enough copper that can lead to iron overload. So it's like, if you, if you're not selecting for foods that are going to give you copper, that are going to give you magnesium, you can get overloads in other minerals.

Dr. DiNicolantonio ([09:17](#)):

And so essentially that's the problem. So how I like to do as I always start with about 12 ounces of red muscle meat for protein, iron zinc, and B12, and then I build the diet off of that base, cause that's such a strong base. And that allows you to sort of now get the trace minerals that a lot of people are lacking. So once I've covered that 12 ounces of red meat, I like to add in about a half ounce of liver per day. So the liver is going to boost your vitamin A, your folate, your copper, which a lot of people are lacking. We got to understand too, that the bioavailability of nutrients in animal foods are better than plant foods as well. So I don't like to just solely rely on my 100% RDA. Let's say just from plants, you should really have some animal foods backing it up.

Dr. DiNicolantonio ([10:06](#)):

Once, once the liver has been added, now you're sort of lacking, you're still lacking manganese calcium magnesium. So you've covered the copper or the folate to vitamin a, how do you get manganese? How do you get magnesium calcium? Well, mineral waters are really important for, for the magnesium and the calcium, because it's very difficult to get those nutrients in a bioavailable form if you're not consuming mineral waters. So I'd like to add that to my sort of animal-based diet, which also offsets the

acidity of consuming animal foods. So I drink bicarbonate waters as well. And then on top of that, I do like to add a little bit of dark greens for potassium and magnesium. And then the other piece of this pie here is manganese. And so you can either get that from muscles or you can do something like Ezekial bread, which is just organic sprouted grains. So that's sort of how I like to build most of my diet.

Caspar ([11:04](#)):

And that's a well-rounded diverse diet which, which you really want to see. You want to see, you know, different colors, different elements all over the food chain. But one of the things you mentioned there are mineral water. And I know you, you, you brought this up is gerolsteiner your favorite there?

Dr. DiNicolantonio ([11:19](#)):

It is. It's Gerolsteiner is my favorite because, because of several reasons when you're looking for a mineral water, if you're on an animal-based diet like myself, you have to make sure that the bicarbonate is higher than the sulfate, because the sulfate is technically acidic. It'll pull minerals out of the body. And so gerolsteiner has this high bicarbonates to sulfate ratio, and it has good amounts of magnesium, a hundred milligrams per liter, and good amounts of calcium as well.

Caspar ([11:48](#)):

And I have to say, it tastes delicious. It's by far my favorite, I put so many people onto it. So I feel like I should hold stock and gerolsteiner at this time. And maybe you should too. Now another food I saw in there that you listed that I appreciate myself so much and, and have come to learn. It really is somewhat of a mineral superfood, but I want to get your take on it if it actually is or not are oysters. You know, fresh oysters are high in zinc, iodine, other things as well. Would you consider that a mineral superfood?

Dr. DiNicolantonio ([12:19](#)):

Yeah. Oysters are great because they're very high. They give a lot of copper and, and again, that's a very big missing nutrient, not just from the standpoint of, we actually lose minerals when we sweat and particularly copper and we can discuss why that's a problem. But they are, if you tolerate them, they are really a huge nutrient powerhouse. The only other, probably food that's higher in nutrients than oysters would be muscles.

Caspar ([12:45](#)):

So both coming from the sea, both these a shellfish in a sense, but highly, highly bioavailable in those minerals. Let's go to copper. It does seem like something most people overlook. You hear about zinc and magnesium usually are the superstars. And so what is it about copper and deficiencies we need to worry about?

Dr. DiNicolantonio ([13:06](#)):

Part of the problem is that we no longer really eat the same meat that we used to. So we used to typically eat deer meat, venison, elk, bison, and now we're sort of switching over to just, you know, cattle. And there is a difference in the copper concentration of even, let's say the muscle meat. So typically if you're consuming muscle meat from a cow about three ounces, only going to give you 0.1 milligrams, and you need 0.9 just to hit the RDA. So you'd have to eat about a pound and a half of muscle meat just to get the RDA of copper in which we cover in the mineral fix that that is barely sufficient, if not even sufficient for most people. Whereas if you're consuming things like deer meat, elk, bison, that has at least twice the amount of copper, and that may not sound like a lot, but that will

reduce the amount to instead of a pound and a half, you know, three quarters of a pound, which is more sustainable for most people. And so copper is missing in the diet because we're literally not eating the same animals that we used to.

Caspar ([14:06](#)):

And that's something I've really been vibing on recently, based off your work, other people's work, Carnivore MD, and these is getting into the variety of animals there are there, and of course, organ meats as well. I enjoyed bison heart made a chili out of that recently, and it does have those, those micronutrients and the macronutrients that you're looking for in a bioavailable range. Now, I know you've seen this and, and others have kind of going on, it's all about calories versus it's all about, you know, the quality of calories. And I know you've had these sort of arguments in some ways about that. How against, are you at all looking at calorie intake as, as some kind of a factor in your diet, something you should be looking at, or are you completely on the side of, it's really all about the quality of what you're getting and looking at those micronutrients?

Dr. DiNicolantonio ([14:54](#)):

I think it's mostly about the quality. And for example, again, if you're eating quality foods, your engine is going to be more powerful, and it's going to be able to utilize that, that nutrition differently. If you're eating junk food, then it's going to mess up your hormones, increase fat storing hormones. You're going to literally do different things with the same amount of calories that you're eating. Now, of course, there's a certain point where if you do over-consume, then you're going to start gaining weight. But, but the point of eating real foods is, is that it provides you with the new nourishment that will help reduce the cravings. So it's sort of like quality food drives less food intake.

Caspar ([15:34](#)):

And it's, to me, it's just kind of axiomatic that whatever you put in your body, the quality of it is going to dictate the quality you get out of it, right? And the calories are just numbers to it. So for me, I always gave this example when a patient or somebody is just talking about, well, what is quality really in a food or a supplement? We have a really good understanding of quality when it comes to a TV, let's say a 56 inch old tube TV, one of those big, heavy ones where it's like all staticky and no HD, the old school. And then you put a 56 ultra high Def you know, led next to it. They're both 56 inches. You can't deny that you can measure it across many times. You could say exact same size, right? Exact same calories, but the, what you're getting out, the experience, everything completely different. You'd always go with the 56 inch ultra high, you know, def one, put it up against the wall, flat, beautiful, crisp everything. And somehow we don't do that so much with food. We only look at the packaging and we read it, we see some numbers on it, and we base it off of that. What is it about our relationship with food that we can't quite get into the quality that we see is leading to the deficiencies of minerals? Do you have any thoughts on that?

Dr. DiNicolantonio ([16:50](#)):

Well, it's definitely like everything. A combination of factors, you had the food industry pushing the fact that every calorie is the same. And also there's a huge belief that you have to be in a calorie deficit in order to lose weight. And that depends on your baseline. So if you are someone who is already somewhat overweight, you do not have to be in a calorie deficit to lose weight. If I take you and you're 15 pounds overweight, and you're, let's say consuming 3000 calories of junk food, I can still give you 3000 calories, but of fresh, real food, you will lose fat and you will lose weight despite not being in a

calorie deficit. So that's the key. So there's this huge misconception that it really is all about calories and you have to be in a calorie deficit and that's just simply not true.

Caspar ([17:37](#)):

Yeah. And again I, I think, you know, you are seeing it yourself with these ideas of how much mineral to micronutrient, really bringing that out. And I think people see it as well because so many people just count calories, that's it. And they don't lose weight. They're not taking the other actions that are required to lose weight, even things like reducing your toxic burden, eating the correct foods for who they are. So it's never a one size fits all. You do have to take a look at these things. Now let's talk about how you can come to the realization that you're mineral deficient are there telltale signs, number one, that you'd be deficient in minerals. And are there any tests you'd recommend for people to find out for sure if they are deficient?

Dr. DiNicolantonio ([18:19](#)):

Well, for some, for a lot of athletes, they'll start getting like muscle cramps or spasms. And that's usually a deficiency of either salt or magnesium, potentially even calcium or potassium So there can be some signs that are induced. But but like my paper, when we published on subclinical mineral deficiencies, the majority are not seen, they're not visible and they may not even have any symptoms now. Yes. Can you have, you know, headaches or migraines from magnesium deficiency? Of course. Can you have photophobia where you, you know, you literally don't tolerate light because of magnesium deficiency? Absolutely. So there are some times signs even eyelid movements and rapid movements like that muscle twitches, but the tests are also needed for the majority of people. Because again, they don't present as frank deficiencies, for example, vitamin C deficiency. You know, that doesn't really appear until you're near death, where you're having bleeding gums and things like that.

Dr. DiNicolantonio ([19:17](#)):

And you don't want to even be close to that point. So there are, you know, probably the easiest test is actually blood tests. You just have to know what end to look at. So you're typically never going to go below normal if you're deficient, but you will go to the lower end of the threshold. So if you're anyone and you get a magnesium blood test and you're on the lower end of normal, that's highly indicative of actual deficiency. And so we need to sort of start thinking of blood as, yes, this is a great biomarker because the body tries to keep it in perfect range. But if it ships just a little bit lower than normal than the mid range, that is a great indication that you're actually probably deficient.

Caspar ([20:00](#)):

Mm. Yeah, no. I mean, we see it so much in, in some of the analysis we take blood analysis. We also have some, I don't know if you've ever heard of Oligoscan, it's a scanning using a special, spectrometry basically into the tissue to kind of get, you know, a bounce back and get a normal reading of connective tissue almost in certain areas to see. And it kind of corresponds to a lot of what you see in the blood, which is nice. And it gives patients a little bit of understanding quickly of where they are and if they are deficient. And unfortunately so many are they come in, they, they think they're leading a healthy lifestyle and eating this way and, and end up being deficient. Now, what are your thoughts on supplementation versus diet? If someone is deficient, if they are, you know, already having symptoms or even in chronic disease, would you say, let's get you on a supplement, magnesium supplement. If you're deficient there, would you do both a diet and supplementation?

Dr. DiNicolantonio ([20:58](#)):

Probably both actually in a disease state, because the first thing is you got to fix the root cause of why you're mineral deficient. And if you have, let's say diabetes and you have elevated insulin levels, you're not getting the magnesium into the cell and you're kicking more out in the urine. And so you're already very depleted in magnesium. So while you're trying to fix the insulin resistance, sure. You can boost the magnesium to prevent the extra losses that are occurring. But if you don't fix the insulin resistance, you're not going to be able to drive it into the cell that well, so you have to do both.

Caspar ([21:29](#)):

Right now. You say a lot that you shouldn't be drinking plain water to hydrate. What should we be drinking and why?

Dr. DiNicolantonio ([21:38](#)):

Well, I think so plain, think of, if you think about it from an evolutionary perspective, we just didn't have like leaders of bottled water that we could drink, whatever we wanted to, right. You would actually probably persistent hunt and consume a lot of the salty blood and fluids. Once we finally got a kill and we didn't just have constant access to water. Even the water that we did consume wasn't softened, and wasn't just neutralized into this, just lack of mineral water. And so I think it does certainly depend on the diet, but most people will need added sources of magnesium and calcium, and it's a non caloric way to get bioavailable minerals already in their ionic charged form, which gives them, it gives you the ability to slowly consume magnesium and calcium throughout the day, which gives it a better bioavailability than just taking a large dose. So I think mineral waters are a great way to sort of supplement the diet for those two minerals.

Caspar ([22:32](#)):

And do you find any fault in people really focusing in on filtration systems at home and not doing that mineralization either as part of the filtration system or drinking mineral waters? Cause I get this all the time. What is the best, you know, filtration system? And I will say filtration is just a part of it. Sure. You don't want bad things in it, but you do want some things in it. You do want minerals. And I always recommend something that either remineralizes is, or of course getting it straight from the source spring water that you have extra. So you have some hydration that isn't polluted. Yes. But you really do want something that is a little bit more hydrating with the mineralization in it. Do you have any recommendations for that for people that are looking for water filtration or just looking at different sources of water they could consume?

Dr. DiNicolantonio ([23:19](#)):

That's it that's exactly sort of what I internally was, was struggling with. Should I just get a better filtration system? Is that good enough? And then as I started doing more research, well, my diet really isn't giving me optimal intakes of magnesium and calcium, so, okay. I can make this water a little bit cleaner, but it's not giving me back the minerals that are missing in my diet. The other, the other key piece we have to understand too, is we do need and should be consuming some animal foods for, for nourishment. And those animal foods will provide acid. And you have to, you have to inhibit that acid somehow, otherwise it will deplete your bicarbonates stores, which can lead to bone loss and other issues, kidney issues, and things like that. So most mineral waters, natural mineral waters will bring that methyl bicarbonate.

Dr. DiNicolantonio ([24:07](#)):

And it's a slow infusion. So you're not really suppressing stomach acid like taking large 20 gram doses of sodium bicarbonate. This is 1.8 grams per liter in the slow infusion that gets quickly absorbed because it's already contained within the water itself. So for me, I was looking for something that I, you know, filtration is great, but I need something that provides this bicarbonate and provides minerals as well. And you kind of add trace mineral drops to the water as well, if you want. And you could add potentially sodium bicarbon. I mean, I can't give advice, but there are other ways to get by carbonate and minerals without just drinking let's say gerolsteiner water.

Caspar ([24:46](#)):

Right. I mean, there are so many options out there, but it really comes down to, if someone to ask me, what's the absolute best water I could have. It has nothing to do with filtration has to do. What's the most natural water you can have in nature. That's running through getting sunlight, that's already detoxifying it and kind of purifying it running through different minerals and rocks naturally and going straight to the source. So it's like if you have, you know, if you live on a big piece of land where you have that, that's your best source of water. Otherwise you're going to have to take different steps, either purchasing it like gerolsteiner and others at, you know, adding things to it. Like you said, I've done the drops in there as well, which is kind of seawater or something, or you could use even, what are your thoughts on Quintin sea minerals, you know, where you have in those and you take in basically deep ocean kind of mineralization that way?

Dr. DiNicolantonio ([25:34](#)):

Yeah, there's good. There's actually some decent studies on deep ocean minerals and taking that for athletic performance specifically. And anytime you can get minerals in an ionic already dissolved form, it's sort of like reducing your body's burden to get them into that form in the first place, because really the body has to solubilize those minerals first to get them to absorb well, or you have to put them on an amino acid, like a chelated supplement to sort of trick the body into, into getting it into the system. And so getting minerals through a liquid form is your most bioavailable way to do it.

Caspar ([26:10](#)):

Mm yeah, no, I I've noted that that patients really do respond well and you see those levels go up after they do something like the deep, but everyone's of course unique and different. It's just one of the options probably you should know about. Now. I know you're a big fan of saunas. You know, I've seen this before. You, you love your saunas at the same time. Is there a line that you'll say too much sauna can deplete you? Cause I learned that I got into a apartment one and it had a steam and I just was doing all the time. And it's like, you know, every day, twice a day, you're just sweating it out. It felt good. But after a while I was very fatigued. I was finding myself kind of craving things like salt and other things. And I realized that all that sweat, you're carrying a ton of minerals in that sweat as well. Right? So are you looking at all as if you're doing anything like a sauna or even heavy workouts, you need to be very cognizant and aware that you'll be stripping yourself a minerals too.

Dr. DiNicolantonio ([27:08](#)):

Absolutely. So yes, our, our sweat carries probably five main minerals that we lose that being salt, selenium, iodine, chromium, and copper. Those are the five minerals. Technically it's six because salt is made up of two. Sodium and chloride, those are the five main ones though. And the reason why salt is lost and why that's consequential is because of the amount that's lost. So typically you're going to lose a

half a teaspoon of salt per hour of exercise. And, and the American heart association is telling everyone to eat less than that every single day. So, so that's how you can become quickly depleted. What was shocking when I was doing my research for the book is the fact that there are certain minerals that their bioavailability is so low through diet and supplement that if you lose even just a little bit, that is a huge problem.

Dr. DiNicolantonio ([27:58](#)):

So take chromium. For example, the study showed that on average, we may lose about seven and a half micrograms. Now that may not sound like a lot, but if we're only consuming 30 to 40 micrograms per day, that's already a decent amount of our intake. And then when you realize that we only absorb 1% of the chromium you get, if you lose seven and a half micrograms, you have to consume 750 micrograms to get that loss back. So chromium is a really big issue when it comes to loss through sweat because its bioavailability is so low.

Caspar ([28:31](#)):

Yeah. That's something a lot of people don't realize then, and they kind of overdo a lot of these detoxes, sweat regimens and everything. And don't properly hydrate with those minerals back. And that can become a dangerous thing over time. And definitely an unhealthy one. If you're losing so many minerals. Now you brought up salt there and sodium, and I know you wrote the salt, fix it. And there is a big difference because people have to understand there's many different qualities of salt. You have your kind of ultra refined, you know, salt that most people find in table salt. And then you have things like pink Himalayan, or French, sea salt, Celtic, salt, all these different types. Have you find there's a best one or better versions of salt for getting sodium into the body, but in a bioavailable form?

Dr. DiNicolantonio ([29:17](#)):

I liked the pink salts, whether it's Redmond, whether it's Himalayan, because like you said, it's, it's not refined. It's not it doesn't have added dexteros to it. It's not highly treated with harsh chemicals. If you can find a certain one that doesn't use explosives like Redmond or the original Himalayan salt company, they, they sort of quote unquote, hand harvest. There's no explosion in that process. And then you're also getting other minerals, particularly iodine from pink salts. So as, as we had discussed before, yes, we do lose salt through sweat, but we also do lose iodine. And if you slowly, athletes are consistently depleting themselves of iodine through sweat and that can lead to hypothyroidism and all of a sudden you start gaining weight and you're even exercising more and you're kind of wondering what's going on. And it literally could be, you're just flushing yourself out of minerals.

Caspar ([30:09](#)):

Speaking of exercise, I know you post on this a little bit more. How do you feel about cardio versus heavy lifting? Is there a way you lean more towards? Cause I feel like we're a very cardio dominant kind of society where we push for that and really long spurts almost of on the bike or something like that versus others. You know, X3 type people that are doing, you know, just bursts of, of just kind of, you know, more heavy, intense lifting. Where do you fall? Where, where do you see the research?

Dr. DiNicolantonio ([30:38](#)):

I think if you were only going to do one, you're going to get so much more benefits through, through weightlifting and because you're basically your muscles are your best glucose storage system, so to speak, it'll soak up a lot of the glucose. You become so much more carb tolerant and insulin sensitive

when you have more muscle and you're also building bone. And so we have sarcopenia that happens as we age, we have a decrease in bone mass, a decrease in muscle mass and just as we age. So everybody should start lifting weights if you can, and you start low and you build your slowly, build yourself up, if you can then add on more, more shorter, medium burst activity and work your way into higher intensities, that's going to be better than just, let's say running three, four miles every single day.

Caspar ([31:25](#)):

Hmm, no, that's good to know because so many people really, we do live in this cardio dominant place and that's where people go to, especially for things like weight loss and others. But I think they're missing that, that piece also in this goes, I think back to nature and how we we've lived for a thousand years with these bursts of trying to either catch food or very big excursions and then resting and allowing the body to go quickly, sympathetic, burst, rip the muscles, open them up again, rebuild them and then rest rather than just long periods of sort of intensity without really the rest or without true, true intensity to it so good to know. Now you've been posting a lot also I see on things like fasting, sunlight, these natural kind of positions for us and how that contributes to health. We also touched last time, a little bit on purpose and mission. Where do you find spirituality in all of this? Because I see so many people posting on the kind of biochemical stuff and the sunlight, which is absolutely essential, cause that's even connecting you to nature more so, but spirituality in general, how has that contribute to your health or to others? And even what you know, research may be diving into in this idea of spirituality, whether it's meditation, prayer, other things like.

Dr. DiNicolantonio ([32:40](#)):

So if, if so that sort of falls on the spectrum of stress, right meditation. We all live in this stress dominated world and there's, there's true physiological things that happen when you're actually stressed out that will lead to mineral losses. So when you, when you are stressed at this fight-or-flight moment happens and you get this releasing cortisol, you get increases in epinephrin and noradrenaline. And those stress hormones will actually cause you to lose push magnesium out of the cell and then you lose it in the urine. So having some type of ability to decrease your stress throughout the day, whether it is meditation or, you know, spiritual connection or whatever it is will help you maintain mineral status.

Caspar ([33:24](#)):

Yeah. It's funny because it's these things that seem like they're esoteric and seem like there's some sometimes not going to contribute to things like your mineral, you know supply in your body that actually do have such an impact on it. And you're right. I think so many of us live in a high stress world. Listen right now, how could you get away from it? If you turned on the news for five minutes, if you're not stressed, that's crazy. You're like a Buddhist monk in my mind. So it is, and it does strip us all the way, you know, in so many different variations of our body and our biochemistry that we don't even realize when we try and fix it on the biochemical side with diet when we don't address the root cause again, which is sometimes in that mental, spiritual component, sticking to that whole idea of how to uplift mindset. Do you have any recommendations or methods that you've seen to combat the gloom of news, the depressive state we're in the kind of always something wrong going on? And, and to keep us balanced, is it more of those tools? You're saying like, Hey, don't even pay attention to that. Just, you know, go out in the sunlight, do the fasting, do those saunas, like that's where you put your focus on. Would that be a recommendation for getting over what has been last year as kind of gloomy pandemic?

Dr. DiNicolantonio ([34:42](#)):

That's definitely one way to do it right. Get out in nature. It, nature has a calming effect as sunlight does as well, breathing fresh air does as well. And then it's sort of like getting control of your own mindset. Like get like your mind can be a good thing or a bad thing, right? And it's sort of like a lot of people internally struggle with sort of these negative thoughts that keep surfacing. And if you can get in control of your mindset and tell yourself you are worth it, you are worth this promotion or you, you aren't too old to get this degree or start this business that, that in of itself will help reduce stress. Right? Having that better mindset.

Caspar ([35:24](#)):

I mean, something as simple for me and what I always recommend to, to anybody going through this kind of depressing, even patients, it's just affirmation. It's just writing it down. At first you don't have to believe it that I am worthy. I met peace. I am healthy. All the, you know, you write it enough, you'll trick your mind. It's the same thing the news does to get you in a fear place. If you say it enough, you're in a fearful state. Like I truly believe people watch the news enough and they said it was raining and storming outside yet. It was actually sunny. People would believe it and bring their umbrellas outside, you know, because that's what we could do. We could actually trick their own mind, but why not trick it to the positive and not even trick it, just move it into that state because I think so many of us are in this kind of sympathetic fearful state that absolutely doesn't contribute and can actually lead to mineral deficiency. So, you know another question now that we're still in this whole idea of pandemic and everything, do you take any stock in the CDCs report? The COVID was the third leading cause of death in 2020? Or do you feel that that is maybe not such a truthful analysis of the numbers?

Dr. DiNicolantonio ([36:31](#)):

Well, I think we have to be careful with the numbers because it all depends on how they're being reported. So for example, right. If you, if you're older and let's say you get pneumonia, you're, you're marked as dying from pneumonia, but you probably died of an inadequate diet and your shields weren't up essentially. Right? And so it's not the pneumonia that killed you because we all get pneumonia. It's do you have a good resilience? Do you have a good immunity? And that's from good diet, good nutrient intake. So maybe it was, they didn't have zinc and copper. And really, we don't put that on a death certificate. We don't test them for mineral deficiencies. So again, with this virus, what's killing, killing us. Is it the virus itself or is it our poor diet and lack of minerals that are leading to deaths from, from, you know, viruses? And it's probably that what's driving most of it.

Caspar ([37:25](#)):

I think if anything, this is exposed how poorly nourished we are as a society. All in, all in our food supply is, is in complete disarray. You know, we're, we're eating really poor nutrient dense foods that then lead to us being incredibly susceptible, not just to let's say any viral, but anything at all, even a, you know, bad news suddenly becomes something that stresses you out and you find yourself in a chronic condition because you're already depleted of things you need that become further depleted. So I do, I do wish people kind of, you know, listened to your advice of really look at what you're putting inside your body, really look at where you may be deficient in certain things and address those. And then you're in a much better state to handle anything that comes your way. Now, Dr. DiNic, I feel like you're going to have a book coming out in the next four to eight weeks probably or something like that, with your turnaround time, but now are you looking at anything now or are you just kind of taking a break after mineral fix? Is there another fix coming up for you that you see is necessary? Because I know most of your books come out of necessity. You see a problem, you provide actual research and data that says, no, this is how we should look at it. Is there anything else that you're looking at in the near future?

Dr. DiNicolantonio ([38:40](#)):

So there isn't an active book that I'm working on right now. I do have some ideas for maybe, maybe just a magnesium book or potentially focusing on the dietary acid load or just doing research on those topics. Because I think I like to find things that not a lot of people are focusing on that I do think is a problem. And so those two areas definitely are some, some interest of mine and it's just fun to do research and learn. So I think I'll always be doing something like that.

Caspar ([39:11](#)):

That sounds amazing. And I, I feel like that that topic of acidity in all these that's that's environment, that's of course your terrain and what leads to so much, also it could lead to a mineral demineralization. It could lead to a host of other chronic conditions. Cause we see a lot of acidic patients come in here and most of the time it starts with diet, but it goes in all others. So I'll put my vote in for that one, alright. So where can we learn more about, of course yourself, where can we purchase the mineral fix? Give us a little bit more info on that.

Dr. DiNicolantonio ([39:41](#)):

Sure. So the mineral fixes on Amazon and my website is Dr. Jamesdinnic.com and I'm on Instagram and Twitter at Dr. James Dinnic D I N I C

Caspar ([39:52](#)):

Doc, always a pleasure, always loved connecting with you, keep posting amazing stuff for anyone listening. If you don't follow Dr. DiNicolantonio, please go on Instagram follow because you drop gems on a daily basis. I mean, you're probably the most reshared person I know, but it's rightfully so because these are things we just need to keep telling ourselves over and over, because we've forgotten, we've forgotten that health doesn't have to be so complex and you could break down the complexity into the simplicity of it. But at the end of the day, these are things that are relatively easy to fix if we just know how to do it, and you're doing that. So thank you so much, really looking forward to the next book, which I'll, I'll be looking at, you know, to see when it comes out probably sooner rather than later, and, and best of luck and fortune with everything you're doing.

Dr. DiNicolantonio ([40:41](#)):

Thanks for having me on.