

TED TALK

Can you boost your immune system?

Dr. Jen Gunter

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Jen Gunter:

The idea that you can boost your immune system is EVERYWHERE, and it seemed to multiply exponentially during the pandemic. I'm sure you or someone you know tried to stock up on things like zinc, vitamin D, or Vitamin C when the pandemic started.

Maybe you even looked for other products that say they'll boost your immune system. There are tons of them out there -- "wellness" shots and herbal supplements and teas and such.

One of the reasons why this is so pervasive is most of us haven't been taught how our immune systems really work. And the truth is... you can't boost your immune system...The Immune Boosting myth preys on our fear of getting sick and completely misrepresents how the immune system works...and how incredibly complex it is...

Dr. Katherine Gundling is an immunologist, a doctor who is an expert on this intricate, complex, and elegant system that's constantly operating in our bodies.

Dr. Katherine Gundling:

I like to joke with my colleagues that the purpose of all the other organs in

the body is really only to support the immune system's work. I mean, why else do you need a heart than to circulate some of the most important parts of the cells of the immune system and really everything involves the immune system.

Jen Gunter:

It's so funny. I think in medicine, every one of us thinks like, wait a minute. No, it's our organ system. That's the most important.

Dr. Katherine Gundling:

Really, now that I think about it being an OBGYN, you rule, because nothing at all will happen if that baby is not born.

Jen Gunter:

So what does the immune system do? It helps your body fight infections and other diseases.

Dr. Katherine Gundling:

Whenever we take a breath in, we're also inhaling organisms that might be dangerous to us. So the cells in the immune system right within the respiratory tract are processing those immediately. Another example might be when we eat food, of course, it has a variety of airborne bacteria, viruses, fungi on it. Why don't you have a big reaction every morning when you eat your bagel, why does your bagel not kill you? We don't sterilize our breakfast before we eat it. Right? But our gastrointestinal tract is processing that every time we put something in our mouths.

Jen Gunter:

Our immune system is fighting for us on so many fronts! But if I asked you to picture your immune system, you'd probably have a lot of trouble doing that. It's not like your heart or your kidneys.

Dr. Katherine Gundling:

In fact, it's located virtually everywhere in the body. So there's immune system and function in the bone marrow, in a gland in the neck called the thymus, in an organ in the belly called the spleen.

Jen Gunter:

People are always surprised when I tell them there are even immune cells in the vagina! The immune system is truly everywhere. We even have something called the lymphatic system which circulates immune cells throughout our body, sending them wherever they're needed.

Dr. Gundling says you can think of your immune system as an orchestra... Like an orchestra, our immune system strives for harmony or BALANCE -- all the complex parts working together to play a beautiful symphony of health...

Dr. Katherine Gundling:

All of the individual players are important. So, for example, in the middle of singing a sweet lullaby by the chorus, you don't want loud horns blaring just as you don't want strong parts of the immune system to be super active when you want other parts of the immune system that are more subtle to be the ones taking the action.

Jen Gunter:

That's why the idea of helping your immune system by boosting it doesn't make sense...

Dr. Katherine Gundling:

If you boost the wrong part of the immune system, you can cause great harm. And the perfect example of that is with this present coronavirus from which we're suffering. One of the causes of death in people who have COVID-19 is that part of the immune system might become overactive.

And that overactivity creates tremendous inflammation all over the body that leads to a variety of problems and ultimately death. So the immune system is not about boosting. The immune system is about balance.

Jen Gunter:

But that's not what advertisers want us to believe! The message so many of us have received is that our immune systems NEED a boost. Especially through supplements...

Dr. Katherine Gundling:

Vitamins are necessary and important, but there's nothing that says we have to take those vitamins in mega doses by supplements. In fact, that's not natural to take extra large doses and can be harmful.

Jen Gunter:

I like to compare our need for vitamins to a tank of gas. You want a full tank but overfilling it doesn't help your car drive better or help you get from A to B. So taking way more Vitamin C, Vitamin D, or Zinc than you need is not going to make your immune system work better.

If you have a vitamin deficiency, meaning your gas light is on for that vitamin, then you may need a specific replacement for that vitamin or possibly a change in diet. And that's something to discuss with your healthcare provider. But generally, if you have a balanced diet and you don't have any issues absorbing nutrients, you can get the vitamins you need without supplements.

I want to take a moment to explain the products you might see on the shelves. Some are just one vitamin or mineral -- like Vitamin C or calcium. But others have multiple ingredients, which could be vitamins or a wide range of herbs, plant products, hormones, and other substances. These are what we're talking about when we say "supplements."

Dr. Katherine Gundling:

And we always should be asking the question. Okay. You're saying it boosts my immunity, please specify what part of my immune system is this supplement going to boost. And is that going to give me what I need to be healthier? And that's the big question that many of the supplements, especially those that have a lot of different ingredients in them, can't really help with.

Jen Gunter:

Supplements are regulated as “food” which means they are not subject to the same testing and scrutiny that prescription medications go through. Most people don't know this but just because something is on the label of a supplement, that isn't a guarantee the ingredient is actually in the product.

I saw a very disturbing study on a supplement called black cohosh, a plant marketed as a treatment for hot flashes. This study tested a bunch of commercially available black cohosh supplements and found ONE QUARTER, 25 PERCENT didn't even have black cohosh at all!

Could you imagine if you bought garbanzo beans and there was a 1 in 4 chance you'd open up the can and there'd be kidney beans or TUNA inside instead???

You wouldn't accept that.

So the best case scenario is supplements contain what they claim. But even so many of these supplements have no robust studies backing up their use or their safety. Some of these supplements are adulterated. The worst case scenario is they're adulterated with something dangerous to you.

Dr. Katherine Gundling:

There was a study done in the city of San Francisco a number of years ago where a variety of supplements that were advertised for inflammatory

joint conditions, some of which were advertised to be healing Chinese herbs, were purchased and then studied to see what was actually in them.

Jen Gunter:

Some of them contained undeclared prescription pharmaceuticals, meaning medications that weren't on the label...This is really important to stress -- you could be taking a medication and be unaware of it.

Dr. Katherine Gundling:

So yes, you might feel better with some of these, but not be actually taking what you're thinking you're taking or what's on the label and that can just be downright dangerous.

Jen Gunter:

Supplements are given the benefit of the doubt that they're safe unless proven otherwise...this isn't just how many people think about supplements. This is also government policy. We don't have a government agency that's watching out for us here. As far as the government is concerned, it's really buyer beware!

And that can mean people are in the dark about the risks of what they're putting in their bodies.

Dr. Katherine Gundling:

I had a patient who presented with blood pressure out of control. She had always had normal blood pressure. And I could not figure out why this was happening. But I also sat down with her. And said, let's take a better history. What do you do when you get out of bed in the morning and then what do you do? And she said, well, I take my supplements and then I, and I said, stop, what supplements do you take? And it turned out that she was taking a supplement, from a plant, all natural called Ma Huang. And, um, it is related to ephedrine, which can cause blood vessels to constrict, so I

learned about it and discovered that it has these properties that can actually raise blood pressure. And I thought, Oh my goodness, what else are my patients taking that might actually be causing problems?

Jen Gunter:

I see more and more complications like this in my own practice. For example, I see patients taking products with green tea leaf extract, which can cause liver failure and over-the-counter products with hormones, which could cause cancer. Patients assume these supplements are safe because they're on the shelves and in stores.

Supplements actually cause TWENTY percent of medication-related liver injury in the U.S. And one study found that adverse effects from supplements contribute to 23,000 emergency room visits every year!

So be careful with those supplements! If you are taking them or wonder if you should, talk with your healthcare provider. And if they recommend one of these products with multiple ingredients, get a second opinion. If your provider has their own branded line of supplements, remember you can't get unbiased health advice from someone selling you a product.

Jen Gunter:

Tim Caulfield is a health law and policy researcher, a longtime debunker of medical misinformation, and an expert in how misinformation spreads online.

Tim has spent a lot of time researching the immune-boosting myth. And he says a couple trends have really amplified it over the last decade. First, there's widespread promotion on social media.

Tim Caulfield:

And then there's also, celebrity brands have moved into this space and celebrity culture helped to make pseudoscience a big business.

Jen Gunter:

Tim recently published 2 studies looking at the online world of immune-boosting. The first one examined some of the most popular Instagram posts with the hashtag “immunebooster.”

One claimed a dinner recipe “helps boost your Microbiome and immunity.” One said apple cider vinegar “provides immunity boosting which I think we could all use a little extra of right now!” Another post featured someone holding a jar of juice that was advertised as “ORGANIC IMMUNE BOOSTING TONIC, a naturally FRESH homemade immune booster.” And one post even promoted a yoga pose that “powers our immunity.”

Tim Caulfield:

And this is going to sound like hyperbole, but it's not, I didn't find a single one, not one that was scientifically accurate.

Jen Gunter:

Another study looked at hundreds of websites.

Tim Caulfield:

We found that 85.5% of the websites portrayed immune boosting as beneficial to battling COVID and less than 10% of the websites had any critique.

Jen Gunter:

The study found that these Instagram marketers and websites use science-ish buzzwords to promote their so-called immune boosting products.

Tim calls this science-ploitation...using real science words and concepts in a completely inaccurate or misleading way. These people are counting on

the fact that you may not know what these words mean to create the illusion that they know more than you do.

Tim Caulfield:

So you have things like the microbiome and genetics and stem cells and people are exploiting the excitement of these interesting areas of research in order to sell bunk. They're saying that this supplement this practice works because it has an impact on your microbiome and then it gives a reference to the microbiome or it helps regenerate your cells. And then it'll give a reference to stem cells and that just creates this legitimacy. So I think we're seeing, increasingly the use of, of tokens of legitimacy. I'll put it that way. And that's making a lot of these things a lot stickier.

Jen Gunter:

When I see patients in the office and I explain, you know, like people say, well, can't, I boost my immune system? I'm like, no, you can't actually. People look at me like like I'm spewing garbage. They're like, like don't, you know, anything like what kind of a doctor are you? Everybody knows you can boost your immune system. And it's just this uphill explanation battle.

Tim Caulfield:

Yeah, I think it's becoming very similar to the word, organic or to the word, natural, and I think that that's one of the reasons that it is such a powerful phrase because it has intuitive appeal too.

Jen Gunter:

In rhetoric, words like natural, organic, and immune-boosting are known as "God words." That means we tend to assign a positive value to them. Someone just has to say one of these words and we think "Oh that must be good for me!" We don't even need to hear something specific about what exactly a "Natural" or "organic" or "immune-boosting" product will do for

us. Because it's a god word our brain automatically finishes the sentence in a positive way.

And marketers know that! So they throw words like immune-boosting around all the time to get our attention....Even nationally known medical organizations like the Mayo Clinic and the Cleveland Clinic use the words immune-boosting. For example, in a 2020 article from the Cleveland Clinic, in big bold font, it says Get ready to boost your immune system.

Tim Caulfield:

So you get these reputable organizations using the phrase because they know it's a hook to bring people in. So they'll talk about immune boosting and then the article will be about exercise and sleep and nutrition. And that's really problematic, I think because it legitimizes that idea of immune boosting. So then the hucksters can use it to sell supplements, to sell, you know, crazy exercise to sell colonics or whatever.

Jen Gunter:

Believing in immune-boosting can become an identity for some people. So when people like me or Tim explain that it's a myth, we get very intense reactions....

Tim Caulfield:

Jen, today I got two long bits of hate mail about supplements and the idea that supplements can boost your immune system. All the hate mail has a similar pattern. Usually the first paragraph is you're an idiot. I hate you. Or, I'm not against science, but And then it's something about big pharma. If you are against supplements or, if you are against immune boosting, somehow you're for big pharma. It's like there are these two camps...you're with us or you're against us.

Jen Gunter:

If someone has really embraced immune-boosting as part of their identity, it can be very hard to convince them that it's a myth. And if someone has a financial stake in selling immune boosting products, they're also probably not going to be receptive to debunking this myth... But not everyone is so entrenched...

Tim Caulfield:

You really want to aim your debunking or your battling of misinformation to the general public. You want your message to be constructive and you don't want your message to have a shaming element to it.

Jen Gunter:

That's right. Shaming people is never a good strategy! We want science to be welcoming. And the truth is, we can all be swayed by clever marketing that preys on our fears.

I have a friend who was struggling with COVID-19 and was inundated with ads from immune-boosting supplements that were passed along by well-meaning friends and family. There is so much pressure to believe in this myth! It comes from everywhere. Even some doctors tell their patients they can boost their immune systems.

OK so what can you do when it's so hard to separate the medicine from the marketing? It turns out, there are also real strategies to help protect you from this misinformation and its lure.

When you see medical or health information online, keep a few things in mind. First, just because a post or ad uses science-ish words, doesn't mean it's actually based on science.

Second, always ask yourself if someone is trying to sell you something! You can't trust health information from someone selling you a product.

Third, be skeptical of anecdotes and testimonials. They are not evidence. Instead, look for information from reliable sources like the National Institute of Health, the Centers for Disease Control and Prevention, and the World Health Organization.

And finally, stop and think before you share something. Misinformation is like a virus. If you stop sharing it, you stop the spread.

As we discussed earlier, the immune system is constantly working to protect us from harmful invaders...every breath we take, every bagel we eat....

And there are 2 major parts of this defense system. First, the innate immune system.

Dr. Katherine Gundling:

This innate immune system is kind of like a well-organized military it's as if you might have marines or soldiers, right at the front lines that are responsible to make an initial attack, but also responsible to communicate to the back lines so that the leaders can make decisions about how to coordinate the best response.

Jen Gunter:

You're probably familiar with some of the many weapons in the innate immune system's arsenal like your skin and the mucus in our nose and throat!

Dr. Katherine Gundling:

We produce probably a liter of mucus per day, that is constantly enabling

us to clear our throats, blow our nose, and even cough. Coughing helps us to blow things out that don't belong there.

Jen Gunter:

There are also molecules called defensins in our mouth, throat, and gastrointestinal tract that act right away to get rid of intruders. And we have our stomach acid!

Dr. Katherine Gundling:

Oh my goodness...the stomach acid. I mean, there's so much acid in the stomach. It's amazing anything can survive.

Jen Gunter:

But sometimes intruders do get through these defenses. Luckily, the innate immune system is there to do its other job.

It communicates with the second part of the immune system, the adaptive immune system, and sounds the alarm, "The hull has been breached. Decompression is imminent. The hull has been breached."

Dr. Katherine Gundling:

The response is coordinated by cells that we call lymphocytes. And these are like conductors of a magnificent orchestra, if you will. The lymphocytes instruct the many complex parts of the immune system when to turn on, when to turn off, where to go, what to do. So we think of the innate and the adaptive immune system as being prepared initially and following up with a strong, coordinated response that ultimately has good memory.

Jen Gunter:

When we say the immune system has a "good memory," we mean that it's

going to recognize a particular invader the next time it shows up. It's like having your homework done in advance. A big part of this prepared response is something I bet you've heard about a lot lately...antibodies.

Antibodies are proteins that are designed to fight a specific invader... like a virus, for example, chickenpox or the bacteria that causes strep throat.

Dr. Katherine Gundling:

So with the example of coronavirus, the innate immune system sees it, it talks with the adaptive immune system and some of the cells in the adaptive immune system provide specific instructions about how to then go about creating antibodies that are capable of neutralizing that specific virus.

Jen Gunter:

The first time you're exposed to an infection, it usually takes 2 to 4 weeks for the adaptive immune system to really get into FULL gear and produce those antibodies.

But the next time your body meets that invader, it's got the plans to make those antibodies, so it can start churning them out almost immediately. It can basically say, right away, "Hey, you talking to me? You talking to me? I know how to destroy you."

Dr. Katherine Gundling:

And it's just incredible that all this happens with our not even knowing about it. If a little bell did go off every time we have successfully mounted recognition and response, we would be hearing bells all day long.

Jen Gunter:

So getting infected with a virus is one way you can end up with antibodies. But there's another, much safer way...GETTING VACCINATED.

Vaccines basically trick your immune system. They make it think you've been exposed to a specific pathogen, meaning a virus or bacteria. What you've really been exposed to is a killed or weakened pathogen or just part of it. Your immune system doesn't know this isn't a real infection, so it triggers a response and makes antibodies.

That way, the immune system is prepared if you're exposed to that pathogen later on.

Dr. Katherine Gundling:

It allows the immune system to respond very quickly, rather than taking a long time during which that bug, can actually wreak havoc and kill us.

Jen Gunter:

Some of the COVID-19 vaccines are mRNA or messenger RNA vaccines, which are really cool. MRNA vaccines take a step back and give our cells the instructions to make a protein found on the surface of the virus. Once our cells make that protein, the immune system recognizes it as foreign and produces antibodies to fight it.

But don't worry, that mRNA isn't going to be used for anything else or damage your DNA. It's good for one thing, and then it's thrown away when you're done. Now, here's the thing about antibodies -- they don't always protect forever.

Dr. Katherine Gundling:

Every organism is different. So for example, pneumococcus, which is the most common cause of pneumonia, those people who've gotten the pneumonia vaccine, can have protection for years but because our exposure to this coronavirus is pretty new, we don't yet know how long our protection will be -- either to natural infection, if we're able to fight it off or to the vaccine. We need more time to tell us that.

Jen Gunter:

We're not sure why antibodies to some infections are long-lasting and others are not. There's a lot of complexity to the immune system. What that means for vaccines is that you can get some vaccines once and you're protected for life. For other vaccines you may need a booster shot. And because strains of infections like influenza can change, we need a different vaccine every year.

Though you can't "boost" your immune system, there are some things you can do to help keep it in good health.

Dr. Katherine Gundling:

It's good to get a good night's sleep. Exercise is good for the immune system. There's no television show called prevention, right? Because it's, it's not exciting. No bell goes off when your immune system improves and balances because you've gotten moderate exercise, you do feel better. And that's the benefit that you gain. Another thing that we can do is to make sure that chronic medical conditions are treated. An stop smoking and stop vaping.

Jen Gunter:

I wanted Dr. Gundling to clear up an immune system myth about the common cold. Does being cold make it more likely you'll catch a cold?

Dr. Katherine Gundling:

Everyone has wondered about that for so long. So I think it's very difficult to say any one thing can make you sick. That said I saw the most recent interesting study that showed that in very cold weather there may be changes to some of the cells that line our respiratory tract. So, if you're in cold enough weather for long enough, you may become a little bit more susceptible to becoming infected. So it doesn't cause us to be infected, but it may change our susceptibility to infection.

Jen Gunter:

Is there anything people can do to fight a cold or virus faster, or do you just have to eat healthy, exercise, get sleep and let the body do its bit?

Dr. Katherine Gundling:

Most of us tend to work right through when we're sick and that's not good. There is benefit to rest. It gives our immune systems the opportunity to focus on really being able to battle this infection.

Jen Gunter:

I understand why so many of us are drawn to the idea of boosting our immune systems. When we're worried about our health, we want to do something big and boosting our immune system feels big. And we want to do something that feels concrete and also makes us feel in control. That's how our editor, Sara, felt at the start of the pandemic...

SARA:

So I got all these supplements, a full drawer, literally a drawer full of supplements and I wrote up actually a schedule for myself. For taking the supplements, and I really think that it was some attempt to try to feel safe. It was like a security blanket.

Jen Gunter:

I can absolutely understand that. It would feel like something that was protecting you.

Magicians say there's no better magic than the magic that happens in your hand. When you're buying a supplement or immune-boosting product, you feel like you're part of the magic. You have something in your hand that makes you feel like you're doing something for your health. But really, the big things you can do for your immune system are the basics -- exercising, getting enough sleep, eating a balanced diet, not smoking, washing your

hands, getting vaccinated. I know that might not feel totally satisfying -- it doesn't give us any instant gratification like taking a supplement might.

But it's what your immune system -- that amazing, complex orchestra -- needs to create beautiful music. Not boosting...BALANCE...