

COOL FACTS FRIDAY #23

Dave Asprey:

Welcome to another edition of cool facts on the Human Upgrade. If you like these short hits of cool facts, go to daveasprey.com and tell me what I should include next time.

Cool Fact #1

This cool fact is about an article published in the journal *Frontiers of Aging*, that trumpeted that a combination of drugs can cut down cancer risk by 61%. Guess what the drugs were? Vitamin D and omega-3 fats. Those are not drugs. And every time a pharmaceutical company tries to label a supplement as a drug, it's because they're trying to 10X the price and mean you have to have a permission slip to get it. So no, my friends, vitamin D and omega-3s are supplements, and you may not prescribe them. You can only recommend them. You're not allowed to put them behind a pay wall.

Now, the study, though, showed 61% in reduction of cancer from a very basic exercise program, plus vitamin D and omega-3. This was a study conducted in Zurich. It was a three-year trial to figure out if the combination of those could have an impact on cancer risk. What they found was that if they tested each one of these things separately, there was a very small individual benefit. Little bit from vitamin D, little bit from omega-3, little bit from exercise, not that remarkable. But when you did these together in a system, I mean, your body is a system. Magically, a 61% reduction in cancer. What's that mean for you? Well, vitamin D is quite affordable. By the way, ticket with vitamins A and K and E. You need those together, but omega-3s, they're not terribly expensive either. And we know vitamin D inhibits the growth of cancer cells. We know omega-3s at least the fish base or animal base, not plant omega-3s, can impede the transformation of your normal cells into cancer cells. And we believe that exercise helps because it improves immune function and it probably decreases inflammation, which probably help cancer.

Anyway, you ought to be doing those things because it's not very expensive. And right now, cancer is one of the big four killers I write about in my book, *Super Human*, about how to live way longer than you're supposed to. Step one, don't die. So there you have it, very affordable supplements and basic exercise means you're not likely to get cancer, at least not nearly as likely as before, which wasn't that likely anyway.

Source: <https://www.medindia.net/news/combo-of-three-drugs-to-down-cancer-risk-by-61-among-adults-206779-1.htm>

Cool Fact #2

Our next cool fact. Well, it's also about vitamin D, since it's on topic. And this cool fact is about how important it is to take the right kind of vitamin D. We know that there's a global deficiency in vitamin D mostly because people everywhere spend a lot of time indoors or covered up when they're outdoors and wearing sunglasses more, which can have a negative effect. So you're missing out on the sunlight that your body would need to make vitamin D naturally. And many people supplement with vitamin D because they know this, but a lot more people don't, and we can fix that over time.

But new research shows that not all vitamin D is created equal. This is a collaborative study from the Universities of Surrey and Brighton in the UK. And researchers looked at the difference of vitamin D3 versus vitamin D2, which is in vitamin D milk. That's what big industry uses. And they took it for 12 weeks, which is enough time to show a difference. Vitamin D3 had a modifying effect on the immune

system, but vitamin D2 supplements showed no benefit. Researchers said that vitamin D3 simulated a part of the immune system that inhibits bacteria and viruses from taking foot in the body. Vitamin D2, though, remains inert with no effect on your likelihood of getting an infection.

So what does this mean for you? It means if you're going to take vitamin D3, which you should, make sure it's D3, because just when you see vitamin D on something you don't know until you turn it over and look at the label. And if you are in charge of a big company, looking for what's next in industry, stop using vitamin D2 in food. It's not useful.

Source: <https://www.sciencedaily.com/releases/2022/02/220225085906.htm>

Cool Fact #3

This cool fact is about why heat and specifically saunas probably work. It's new science, and it's something that we didn't expect for years we've been tracking what happens when you get heat exposure? Is it heat shock proteins? Is it increases in blood flow? Is it antiviral things that happen from raising body temperature? Is it the fact that sauna's mimic exercise in the body that they raise your heart rate? Well, all those probably help, but we just had a big breakthrough. This came out of the University of Cambridge, and they're looking at protein aggregates, these misfolded proteins that create senescent cells. And they make protein aggregates that are not senescent cells, but they can cause them. And you find a lot of them in Alzheimer's and Parkinson's and things like that. Eventually you get damage to nerve cells and you get neurological issues. So the researchers were saying, "Well, what can we do to these misfolded protein aggregates to fix them, or more importantly, to get rid of them?"

And what these investigators did was they intentionally stressed cells to cause misfolding of the cells. What they found was that when they stressed a particular part of the cell called the endoplasmic reticulum, it actually reversed the misfolding of proteins, which was the opposite of what they expected. Get this. They were trying to cause protein aggregates, and they discovered that heat shock proteins, which we know about from sauna, actually cause these zombie cells or these misfolded proteins to reverse their state. So instead of getting rid of them, which is a big focus of saunas and detoxing and anti-aging therapies, what if you could just repair them and take the misfold, undo it, redo it, and then have a functioning protein again. Well, it appears that that's what saunas do. And this is probably why studies show that people do a sauna three or four times a day like they do in a lot of Scandinavia, parts of Russia, they tend to live a lot longer with massively lower risk. Well, it's because over time they're unfolding bad folds and refolding them instead of just throwing away the bad folds.

In fact, it's kind of a particularly American way of doing things, oh, didn't work. Kick it out, build a new one. Versus maybe a more European way of saying, didn't work, fix it, and keep using it. Well, it turns out biology loves efficiency. In fact, that strategic laziness that's built into your cells that says don't use more energy than necessary. Turns out that repairing that damage to a protein is easier than rebuilding it and sauna and specifically heat shock proteins appear to be the mechanism. What does this mean? Get in the sauna. There you go.

Source: <https://neurosciencenews.com/stressed-cells-dementia-protein-folding-20532/>

Cool Fact #4

Our next cool fact is about the brain. And it's also about a big breakthrough finding that really should shake the foundations of what we think we know about the brain. We like to tell ourselves we know a lot about the brain, but keep in mind. It was only 25, 30 years ago that a lot of doctors were saying, "Your brain can't change. You're born with the same number of cells you die with. And there isn't

even neuroplasticity." That was in a lot of people's lifetimes. What else do we think we know now that we're going to find out is wrong? Well, researchers at Tufts University recently discovered that astrocytes, there are a type of cell found widely in your brain. Well, they have electro activity and they interact with neurons in a way that we didn't know about your neurons are the rock stars. They're the Elon Musks of your brain.

Everyone talks about neuron function, neuron function, including me, because well you can see them. They're big. They have lots of mitochondria. They're like the powerful, sexy cells in the brain. Astrocytes are more kind of like the janitors, the facilities maintenance part of the brain. And so we just don't pay that much attention to them. Their job is to make sure that everything runs smoothly. And if something goes wrong, like an injury or an infection, those are the cells that respond to protect your brain from whatever the injury or the attack is. And what researchers at Tufts just figured out is that neurons and astrocytes communicate bi-directionally. They actually talk to each other and they do it with the electrical impulses that allow the cells to influence each other in various ways. What that means is that neuroscientists have to rethink everything they thought they knew about astrocytes, and that can reveal how neurological disease happens.

If you were to take this and think of it like a corporate environment, and you're an alien looking at how these corporations work, you'd say, "Well, we have these people who take care of the building, the facilities maintenance people, and they only report to the head of facilities maintenance, and no one else ever talks to them." But in the real world, you talk to the people in the workplace with you, right? So there is communication and you say, "You know what? It works better if we do this." So it turns out there's always this crosstalk, and there's probably a lot more of that in our brains than the researchers that Tufts even discovered. This, however, is going to unlock a bunch of different potential therapies for neurological diseases, for brain injuries, for toxic mold, even for long COVID. What we want is people with abundantly healthy and powerful brains.

If you're into that, by the way, check out my book, *Headstrong*, which is on the New York Times science bestseller list sandwich between *Homo Juice* and *Sapiens*, which was a huge honor. That is a book that tells you everything I know about making your brain work better. But even then I talk about neurons. I talk about even astrocytes, but I didn't know they talked to your neurons, and your neurons talk back to them. Well, we're going to use that to hack your brain even more.

Source: <https://neurosciencenews.com/astrocyte-function-20490/>

Cool Fact #5

Our next cool fact is about having skin that stays young for a very long period of time. And the ability to reprogram your stem cells has been one of the most important and biggest fields of regenerative medicine. And in that process, what scientists are looking to do is take stem cells or any cells that they could revert into stem cells and then stripping them of their specific types.

So if you have a neural stem cell, it can only go to be a neuron. You'd rather reverse it all the way, so it could be whatever it wants to be like you thought you could when you were three years old or something. You want those stem cells that can be reprogrammed by your body, instead of that are already programmed. Problem is that when we strip cells of their specific identities, it's hard to tell them what we want them to do, so they might not do what we want. The process of growing stem cells in a lab takes about 50 days. And after that, some cells that are previously specified are fully reborn into stem cells. And the question is, how do you turn back the clock on cells while maintaining their specific function? Does that make sense? We're trying to make cells that are young and also are programmed to do exactly what we want them to do. For instance, give you young skin.

Well researchers in Cambridge, in the UK discover that halting the stem cell process at 13 days instead of 50 days allowed them to turn back the clock on stem cells by, get this. 30 years. That's a big deal because holding that process allowed the cells to maintain the right functions, the right identity, and be exceptionally young, which means when you inject them into a human, they'll have much better functioning cells in their skin and ideally everywhere else in the body once we generalize this knowledge.

What does it mean for you right now? Well, we haven't taken this technique and put it out there in labs. What it does mean for you, though, is that you need to immediately start voting and lobbying for your right to have access to stem cells. Right now in the United States, many of the most cutting edge and effective stem cell therapies that are available around the world are not available in the US because the FDA has said that they somehow magically, even if it's your own cells, they are an unapproved drug and they won't let you do it.

So there are now lots of people who leave the US, and they get stem cells done out of the US for cheaper. The problem is the safety things aren't there. What I do now is I do my stem cells here in the U.S. in Salt Lake City at Docere Clinics, which has been really effective for me. Those are my stem cells. And right now, no one Earth is reversing the age of stem cells the way I just described. I can tell you Dr. Harry [Adelson] will be doing that, I'm sure. And very likely, at some point, this will be common practice. But the deal is we just cracked the code. We can make our stem cells younger. This is a big deal.

Source: <https://www.sciencedaily.com/releases/2022/04/220408083901.htm>

Cool Fact #6

Our final cool fact might not make you happy. This is a cool fact about brown fat. You have two primary types of fat in your body. There's white adipose tissue, and there's brown adipose tissue. And white adipose tissue is the stuff that you know and love or don't love that causes muffin top and the other types of subcutaneous fat and the types of fat that's packed around your organs, which is metabolically very dangerous. So even white fat can be not very good for you or really bad for you. And it basically stores excess energy when your mitochondria get a hormonal signal to do that.

And brown adipose tissue has several different really important metabolic functions. And we think only babies had it till we got better at imaging and figured out that adults have some. Brown adipose tissue becomes activated when you get cold, which helps you produce heat, which can warm your body. And brown adipose tissue is interesting because it actually consumes glucose and fatty acids. It's metabolically active, the same way that your muscles are to a certain extent, whereas white fat just stores stuff.

And new research from the Society of Nuclear Medicine and Molecular Imaging shows that active brown adipose tissue could be a marker for pre diabetes. What they did is they looked at a cohort of people and they looked at levels of active brown fat, and they looked at markers of metabolic health. And what they found was that higher active brown adipose tissues were correlated with metabolic dysregulation. What we've been doing with cold therapy and with certain types of fasting is we've been increasing brown adipose tissue. In fact, it gets metabolic active when you're cold. And from the data, these scientists think that the body might be recruiting active brown fat as a first line protective mechanism against very early metabolic or hormonal abnormalities.

What does this mean for you? It doesn't mean that it's time to stop doing cold therapy because what the study talks about is active brown fat versus just brown fat. And like most short-term stressors of the body, if you have short-term active brown fat, there's lots of data that indicates having more brown fat is a sign that your metabolism can actually function better. So what I think is happening in the

study is that when you have higher levels of active brown fat chronically, that's probably because your body's trying to get rid of high blood sugar saying, what do I do with all this? Okay, the brown fat you have is there. If however, you had higher levels of brown fat, you'll have lower average activation of the brown fat for a given metabolic state. At least that's my hypothesis from the data.

So I'm still a fan of increasing the amount of brown fat that I have in my body. But now we know that if your brown fat is chronically active, it might mean something is starting to go awry. It could also just mean that you're doing short-term cold stress, which was of benefit to you for all sorts of reasons. So there you go. You should keep doing your cold therapy. It works exceptionally well for inflammation and for increasing brown adipose tissue, which is probably good in that case.

Source: <https://www.sciencedaily.com/releases/2022/05/220505114712.htm>

So there you have it. Turns out the vitamin D, omega-3s, and exercise could cut your cancer risk by 61%, which is kind of crazy. And taking vitamin D2 isn't worth a crap. Take vitamin D3. And now we know that heat exposure actually causes your body to refold badly folded proteins instead of just get rid of them, which is really, really impactful. So get a sauna. We know that your neurons are talking with astrocytes in your brain in a new way, which means that while we're going to figure out how to fix our brains even faster, we know that we've just had a major breakthrough in stem cell and reversing the ages of stem cells. And now we know that brown fat is good but activated brown fat chronically might not be as good.

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