

Basic Tips for Optimal Health: Sun Exposure Strengthens Your Immune System

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Sun exposure is necessary for endogenous vitamin D production, which radically upregulates your immune system and improves your ability to fight infections, including COVID

The near-infrared rays in sunlight also create structured water, which is important for cellular integrity and energy distribution, and trigger the production of melatonin — a powerful antioxidant — in your mitochondria

Linoleic acid (LA), an omega-6 fat found in vegetable oils and seed oils, massively increases oxidative stress and lowers your metabolic rate, which in turn prematurely ages and degrades your body

One of the foundational concepts of health that I've radically revised my thinking on is the idea that a low-carb diet is the best way to optimize your metabolic health. That was misguided, because when glucose is absent, your body releases cortisol to produce endogenous glucose. Cortisol sacrifices lean muscle mass, bone and your brain to make glucose, which triggers inflammation and impairs your immune function

Most people can likely benefit from aspirin, as it's anti-lipolytic, lowers cortisol, regulates an inflammatory pathway called NF kappa B (NF-kB), helps increase testosterone and progesterone, increases metabolism and helps normalize blood pressure by lowering aldosterone

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[Click here to view the video](#)

May 8, 2023, I was interviewed by Polly Tommey on the Children's Health Defense Tea Time program. In it, I reviewed several of my top diet and lifestyle strategies that will help optimize your health, with a focus on my latest revisions and updates.

As most of you know, health is my passion. I've been involved in health education for over five decades. Health is also a journey, because as you learn new information, your views on even the most fundamental aspects evolve. I've recently evolved my thoughts on the dangers and importance of healthy carbohydrates in your diet, which I will share here.

As I mention in this program, we're currently in a lull with respect to global tyranny, as lockdowns and other mandates have been lifted in the U.S., so this is a great opportunity to regroup and commit to strategies that can radically improve your health so that you're better prepared for whatever comes next.

Sun Exposure Strengthens Your Immune System

One foundational basic that has not changed is the importance of regular sun exposure. For the last century, we've known that sun exposure is necessary for endogenous vitamin D production, which in turn radically upregulates your immune system and improves your ability to fight infections, including COVID.

In October 2020, I published a scientific review¹ detailing how vitamin D reduced the risk of COVID-19 infection and its severity. Since then, that evidence has only grown stronger. I also published a vitamin D guide, available for download on [StopCOVIDcold.com](https://stopCOVIDcold.com).

Optimizing your vitamin D to a level between 50 nanograms per milliliter and 80 ng/mL is probably one of the simplest, least expensive and most foundational strategies to sustain your health. In Europe and Canada, the blood level you're looking for is 150 to 200 nanomoles per liter.

If for whatever reason you can't get enough sun exposure to reach that ideal level, consider taking an oral vitamin D3 supplement. As a rule, adults who don't get sun exposure will need about 8,000 IUs a day. If you're obese, you'll want to increase that a little bit, because vitamin D is a fat-soluble vitamin, so it's easily stored in your fat.

Other Health Benefits of Sun Exposure

That said, sun exposure also has several other health benefits that are unrelated to vitamin D production — and which cannot be obtained by swallowing a vitamin D supplement.

For example, the near-infrared rays in sunlight create structured water,² also known as EZ water, which acts a bit like a battery, in that it gets charged with energy. This structured gel-like water is important for cellular integrity. It also enhances the ability of red blood cells to flow through your capillaries. It also plays an important role in the energy distribution within your body.

Another major health benefit of sun exposure is the production of melatonin in your mitochondria. This too is produced by the near-infrared in sunlight. Melatonin is a profoundly effective antioxidant, but it also causes your body to produce other endogenous antioxidants, such as glutathione.

It's important to have high quantities of subcellular mitochondrial melatonin to help regulate your body's oxidative stress. You can learn more about this from my [interview with Dr. Russel Reiter](#).

Sunlight also allows vitamin A to be converted into retinoids, which is the active form, and vitamin A is almost as important as vitamin D. Another hormone that's important is testosterone. If you get sufficient sun exposure it will increase your testosterone levels. Men obviously have and need more testosterone, but it's also an important sex hormone for women.

The Hazards of Omega-6 LA

The importance of avoiding LA — an omega-6 fat — is one of the foundational health components that I've come to realize in more recent years. LA, which is found in vegetable oils and seed oils, massively increases oxidative stress and lowers your metabolic rate, which in turn prematurely ages and degrades your body.

I'm convinced excessive LA intake is one of the most important drivers of chronic disease today — far more so than sugar. The main reason why excess LA causes disease is because it prevents your mitochondria from working well. Mitochondria are subcellular organelles responsible for producing most of your cellular energy in the form of ATP, and without ATP, your cells cannot function and repair themselves normally. Processed seed oils can also:

Damage the cells lining your blood vessels
Cause memory impairment and increase your risk of Alzheimer's disease (canola oil has been linked to Alzheimer's)
Strip your liver of glutathione, thereby lowering your antioxidant defenses
Inhibit delta-6 desaturase (delta-6), an enzyme involved in the conversion of short-chained omega-3s to longer chained omega-3s in your liver
Impair your immune function and increase mortality
Make your fat cells more insulin sensitive, thereby causing insulin resistance
Inhibit cardiolipin, an important fat in the inner membrane of your mitochondria

Last month I submitted a narrative review article on linoleic acid (LA) to the journal *Nutrients*. It's currently under peer review. I've also published an extensive [article on LA, with a comprehensive video, on my Substack](#), which is quite comprehensive. The video took many months to create to help you understand this complex topic. The article is free to read for everyone.

Beware: Most Fish Oil Supplements Are Garbage

There are two basic types of fatty acids, based on how many of their carbon bonds are paired with hydrogen: saturated fats and unsaturated fats. Unsaturated fats are further subdivided into monounsaturated fats and PUFAs, depending on how many pairs of hydrogen atoms they are missing.

Because your tissues are made up mostly of saturated and monounsaturated fats, your body requires more of them than PUFAs. The main dietary PUFAs are omega-3 and omega-6 fats, and while your body does need these, it needs them in relatively small quantities.

Again, LA is an omega-6 fat that should be avoided as much as possible. It's found naturally in most foods, so it's nearly impossible to become deficient if you eat real food. Processed food, of course, is loaded with it, so you're guaranteed to get excessive amounts in those. Most Americans get 50 grams a day or more of LA, and the daily requirement is only 2 grams.

Omega-3, on the other hand, is not readily available in a wide variety of food. It's only found in fatty cold-water fish. Most probably know that omega-3 is important for heart health and more, and fish oil is one of the most popular supplements on the market.

The problem is most of these supplements are worse than garbage. In addition to the problem of most being rancid, they're also not in the form of triglycerides, which is what you find in the fish itself. They're distilled synthetics in an ethyl ester form that never appears in nature. So, I don't recommend taking most fish oil supplements. Instead, get your omega-3 from small fatty fish, like wild-caught Alaskan salmon, sardines and mackerel.

Another alternative is cod liver oil. The fatty acids in cod liver oil are in the natural

triglyceride form, so as far as omega-3 supplements go, I think it's one of the best. Another good one is krill oil. Both are excellent

You do need to be careful, though, because like fish oil supplements, many of cod liver oil supplements are rancid by the time you open the bottle. The taste of the cod liver oil should be completely neutral. You shouldn't have to hold your nose and swallow it. If it tastes or smells bad, it's rancid and should not be used.

Why I Changed My Mind About Low-Carb Diets

One of the foundational concepts of health that I've had to radically revise my thinking on, based on the work of the late Ray Peat and his student Georgi Dinkov, is the idea that eating a low-carb diet long-term is the best way to optimize your metabolic and mitochondrial health.

I now realize that this was misguided, and the reason for that has to do with the fact that your body requires glucose and if you aren't eating it you will go into a hypoglycemic coma and die. Obviously, your body has safeguards to prevent that and the major one is the hormone cortisol.

In medical school, we learned that cortisol is a glucocorticoid. Gluco means glucose (sugar) and cortico means it comes from the adrenal cortex. It's also another word for steroid. We were told that cortisol is responsible for maintaining glucose homeostasis, but led to believe its primary purpose was for inflammation.

Well, that's just not true. While cortisol certainly contributes to glucose balance, its primary purpose is to raise your blood sugar when it is too low and you don't have enough glycogen reserves in your liver.

How Does Cortisol Work?

But just how does cortisol increase your blood sugar? It does it by breaking down your muscles, bones and brain. It sacrifices your lean muscle mass to release amino acids that your liver converts to glucose in a process called gluconeogenesis.

So, ultimately, cortisol also is going to cause inflammation and impair your immune function. And it increases food cravings. So, you do not want your cortisol to be elevated. For a long time, I was a proponent of a low-carb diet, but now I realize that chronic low-carb is not a good idea.

As a fuel, glucose is vastly superior to fat, and this was something I simply got wrong. The same thing goes for fasting. Both low-carb and fasting are great interventions in the short-term for those who are overweight and metabolically inflexible.

However, once you've regained your metabolic flexibility, it is important to revise your strategy and add healthy carbs back in, or else these strategies will backfire and lead to decreased metabolic health, compromised mitochondrial function and impaired metabolism.

Cortisol happens to be the primary aging hormone. If it is chronically elevated, you simply will die prematurely as it is highly catabolic, meaning it will break down your body tissues. To stay healthy as you age you need to be anabolic and build healthy tissues like muscle and mitochondria. Elevated cortisol will seriously impair those efforts.

Important Cautions Before You Increase Carbs

So, it is clear that you need to be doing everything you can to keep your cortisol levels and chronic inflammation low. But it would also be a major mistake to increase your carb intake if you are still on a high-fat diet. I did this experiment in the mid-'80s after I read the book by Harvey and Marilyn Diamond called "Fit for Life."

They suggested having fruit only for breakfast, which I tried. Then I did my lab work and found my fasting triglycerides and lipoprotein profiles had exploded for the worse. I prematurely concluded that a high-fruit diet was nonsense and remained relatively low-carb for nearly four decades.

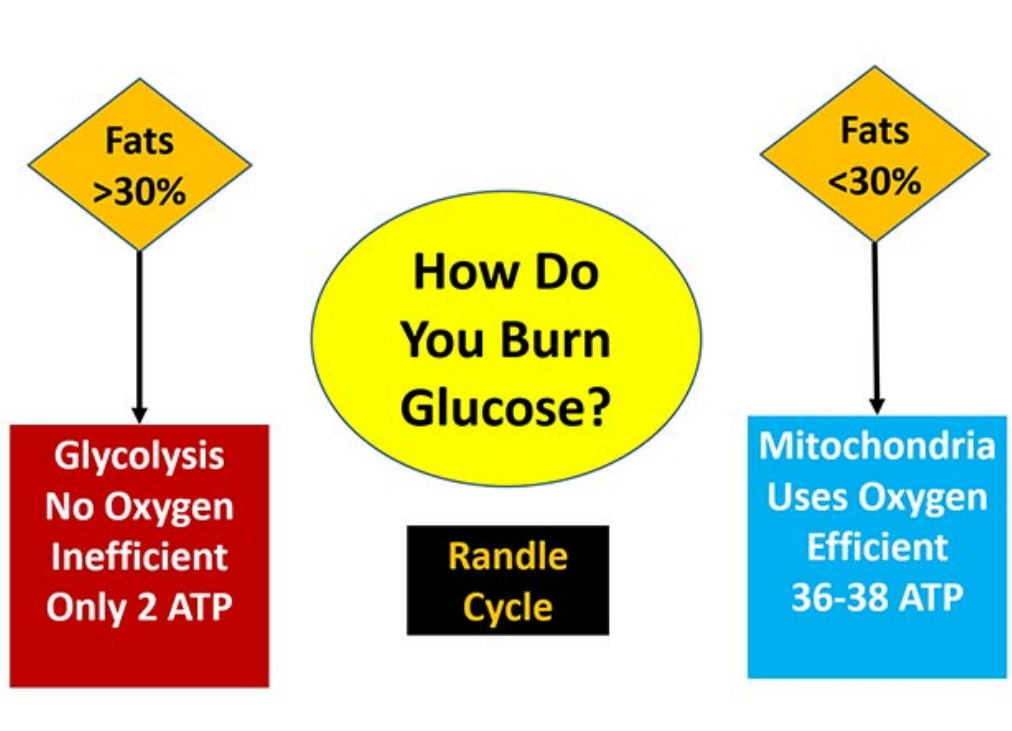
This was until I encountered Ray Peat's work and reevaluated my initial impression. I now understand that I was missing important parts of the strategy. And now I eat 3 to 4 pounds of watermelon virtually every morning at 5:30 as my first meal, followed by three eggs and 8 ounces of white rice and 2 ounces of maple syrup one to two hours later.

That sounds like a lot of carbs, and it is. I have additional fruits later in the day and now my carb intake is about 475 grams a day. You might wonder what has happened to my weight and blood sugar with all these extra carbs.

Well, I thought my weight was good at 192 as I increased my muscle mass, but it has decreased by 10 pounds to 182 with no change in muscle mass. My fasting blood sugar has dropped 10 points. So far it seems to be working for me.

The Vital Metabolic Switch You Need to Understand

This is one of the most important principles in food science that I never learned or understood until recently. My strong guess is that this is also true for most natural medicine clinicians. That is why I created the figure below to help you visualize so you can better understand this vital concept.



Low-carb diets have helped at least tens of millions of people improve their health for a very good reason and that is there is a stealth switch that controls what fuel your mitochondria can burn as they can only burn one fuel at a time: either fat or glucose.

The switch has been given the name the Randle Cycle, but it is more helpful to visualize it as a railroad switch that changes the tracks of the train, and the train can only travel down one track, not both. This is because only one type of fuel can be burned at a time.

The best-case scenario is you metabolize, or burn, glucose in your mitochondria without any reductive stress (a term I will explain in my upcoming interview with Georgi Dinkov). When you do this, you will generate only 0.1% reactive oxygen species (ROS).

Not only does this route generate less ROS but it is also incredibly efficient at energy production by creating 36 to 38 adenosine triphosphate (ATP) for every molecule of glucose that is metabolized. It will also generate metabolic water and carbon dioxide, which are also important for your health.

For this to occur, as indicated in the figure above, you will need to consume less than 30% of your calories as fat. When you consume significantly more than that amount the switch changes to burn fat in your mitochondria and you will not be able to burn glucose until your fat decreases to less than 30% of calories.

Since glucose is unable to be shuttled into the mitochondria to burn, it winds up backing up into your blood stream, raising your blood sugar. This is a major contributor to diabetes. What little glucose is burned for fuel is done by using glycolysis which is a primitive pathway that bacteria and cancer cells use.

It is great we have this pathway as you absolutely need it for quick fuel when you are activating your Type II muscle fibers. But if this is the primary way you burn glucose you are in a catastrophic metabolic state as you are creating loads of lactic acid as a waste product instead of healthy CO₂, and you are only generating two ATP for every molecule of glucose, which is 95% less energy.

Lactic acid increases reductive stress, which causes reverse electron flow in the mitochondria and causes reductive stress, which increases the ROS to 3 to 4%, which is 30 to 40 times more than when glucose is burned efficiently in the mitochondria. You likely don't yet understand reductive stress, the opposite of oxidative stress, but will have done an interview with Georgi on this and will be posting it later this month.

Why Lactic Acid and CO₂ Are so Important

Remember when you are burning glucose efficiently in your mitochondria, the glucose is converted not only to 36 to 38 ATP, but when the electrons from the glucose are ultimately handed off to oxygen, metabolic water (deuterium-free) is made and, very importantly, carbon dioxide.

This is vital to understand as carbon dioxide is a potent stimulator of mitochondrial biogenesis, which will increase the number of mitochondria that you have so you can make even more energy.

Conversely, when you are burning glucose far less efficiently in glycolysis, you are only

generating two ATP and, rather than creating life-sustaining carbon dioxide, you are generating life-damaging lactic acid, which will degrade your mitochondria and make them die sooner.

Updated Time-Restricted Eating Recommendations

I now believe that for most people, fasting is not a good idea, and the reason for that has to do with the fact that most people have large stores of LA in their body fat. When you have excess harmful fat in your body, the last thing you want to do is start burning it, because once you do, it's going to liberate proinflammatory molecules and increase cortisol, which also causes inflammation.

For a long time, I've taught that one of the strategies that will get many people healthy is time-restricted eating (TRE), where you compress your eating window and eat all your meals within a set number of hours, typically six to eight hours each day.

This is still a useful strategy because most people, especially those who are overweight, eat for more than 12 hours a day. That can be a recipe for metabolic disaster, but you also don't want to restrict your eating to just one or two hours a day, because then you're fasting too much.

As a rule, you want your eating window to be anywhere from eight to 12 hours and regularly vary the length of the fast. Maybe go a little shorter in the winter and a little longer in the summer when the days are longer, as your metabolism is also keyed or synchronized to the light-dark cycle.

The key rule is to stop eating three or four hours before you go to bed. You need seven to eight hours of sleep every night, and you need 10 to 11 hours of not eating. That's what you get automatically when you stop eating three to four hours before bed. So that's my revised TRE recommendation, based on how it impacts cortisol.

Updated Carb Recommendations

For the reasons I just reviewed above, I've revised my own macronutrient intake. In the past, I would restrict my carb intake to 100 grams, and sometimes to less than 50 grams. Now, I'm eating 450 grams of carbs a day, so the majority of my calories come from carbohydrates — but not just any carbohydrates.

Simple carbs — sugars — have long been considered to prematurely age you, while complex carbs were believed to be preferred since they feed your microbiome. However, that notion seems to be turned on its head with the new understanding of how endotoxin is a major problem sabotaging your metabolic health. The best carbs to eat are ripe fruits.

The complex carbs that aren't digested in your stomach travel down to the intestine where they indeed do feed your bacteria, but after the bacteria grow and multiply and die, the gram-negative bacteria release endotoxin, or LPS (lipopolysaccharide), which increases allergic reactions, organ dysfunction and even sepsis.

Endotoxin also catalyzes a series of metabolic reactions that converts tryptophan in your gut to serotonin. This is another shocker because most people think serotonin is good, but mostly, especially higher levels are not good for your health. You do not want high levels of serotonin, because it's an antimetabolite.

This means it suppresses your body's ability to create energy in your mitochondria, in the electron transport chain, so you become tired and fatigued, your metabolic rate slows and you gain weight.

The bioenergetic model is based on the concept that your body craves energy, and if you can get the fuel into the subcellular spaces like the mitochondria, burn it properly and create ATP, then you're off to the races. Your body will self-repair automatically.

Four Ways to Improve Your Metabolic Health

With that background, you can now understand why longer fasts can backfire. If you're not eating, you're not feeding the bacteria in your gut. Hence there's no endotoxin being produced. As a result, your inflammation goes down, your cortisol level comes way down and you start feeling better.

But after a day or two, you've exhausted your body stores of glycogen (sugar) in your liver. And because you don't have any, your cortisol will rise, activating lipolysis that releases the fatty acids from your fat cells. PUFAs like LA are not burned for energy but stored in your cells, and if your fat cells are loaded with LA, then lipolysis can really wreak havoc. The LA needs to be released slowly and carefully, over time. To do that, I recommend the following four strategies:

1. Increase your NAD⁺ level by taking 50 milligrams of niacinamide, three times a day.
2. Optimize your circadian rhythm by going to bed around sunset or shortly thereafter (in the summer) and getting up around sunrise.
3. Engage in moderate exercise. Avoid strenuous and high-intensity workouts, as that will release LA from your cells and raise your cortisol.
4. Take a high-quality vitamin E supplement at a dose of 100 milligrams to 150 mg. The specific isomer you need is D-alpha tocopherol, which is the active form. Avoid the "DL" form. You also want the other tocopherols (beta, gamma and delta) and a small amount of tocotrienols. Vitamin E helps counteract the adverse effects of the LA, so that when it's liberated through lipolysis, it won't cause so much oxidative stress.

The Surprising Benefits of Aspirin

I've recently evolved my views on aspirin and [recently wrote an article](#) on why. I now suspect aspirin can be a supplement that most people can benefit from. For example, aspirin is a powerful anti-lipolytic, which means it decreases the breakdown of PUFAs released from your fat cells. Aspirin also:

Lowers your cortisol levels
Is a master regulator of an inflammatory pathway called NF kappa B (NF-kB)
Helps increase testosterone and progesterone, which are two of the most important sex hormones in your body
Increases your metabolism by uncoupling the mitochondria, which helps weight loss. Uncoupling mitochondria means that instead of making ATP, your body is going to make heat. So you don't get energy overload and oxidative stress; rather the energy is released in the creation of heat
May decrease the risk of COVID death by 50%
Lowers aldosterone, which helps normalize blood pressure

I now take aspirin daily. Baby aspirin is one option, but I believe a daily dose of 325 mg, once a day, is better for most unless you are using it to prevent a clot, then a baby aspirin once or twice a day is likely better. Avoid enteric coated (timed-release) aspirin as they contain questionable additives. Instead, look for ones that contain only aspirin and corn starch (in this case, the amount of corn starch is not a concern, as we're talking minute amounts).

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Notes

¹ [Nutrients October 31, 2020; 12\(11\): 3361](#)

² [A Midwestern Doctor Substack March 10, 2023](#)

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