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WITH DR. RICHARD GERHAUSER M.D.

Is Testosterone Replacement Therapy *Safe*?

Learn the Best Way to Fight Low T

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For men, age-related decline in testosterone is *inevitable*.

Levels drop by 1 to 2 percent *per year* after you turn 40. And the older you get, *the faster they fall*.

A blood test can confirm your levels, but you won't need a test to know they're low. You'll experience it first-hand with symptoms like low libido, erectile dysfunction, depression, fatigue, muscle loss, osteoporosis, weight gain, and more.

Some doctors will try to convince you that **testosterone replacement therapy (TRT)** is the answer to all your problems.

Unfortunately, *this therapy isn't all it's cracked up to be*.

I'll tell you the TRUTH about TRT… along with my **first line of treatment** for men suffering from low T.

WHAT'S INSIDE

Testosterone replacement therapy (TRT) has many variations, including injections, implanted pellets, lotions, gels applied to the skin or nasal passages, sublingual troches, and patches.

The Problem with Low T

Age-related hypogonadism, or low T, is characterized by a decline in testosterone levels in men as they age.

In my practice, I consider low T to be **below 300 ng/dl average** of two morning blood samples drawn between 8 and 10a.m. (when testosterone levels are highest).

This decline is a serious problem for older men.

Adequate testosterone levels are **essential** for bone mass, fat distribution, muscle mass and strength, and the production of red blood cells. However, low T can leave you lacking in other things, such as motivation, self-confidence, sleep, energy, and more.

A meta-analysis of 11 studies was just published in the *Journal of the American Medical Association*, showing that men with low or very low testosterone levels were at higher risk of **death** compared to men with higher levels.[1]

So if you're suffering from low T, you *should* take steps to boost your levels.

But I would **NEVER** recommend TRT as a ***first*** course of action.

Risk vs. Reward

Testosterone replacement therapy improves libido and sexual function in men with low testosterone levels. It can also alleviate symptoms of depression and improve overall mood and quality of life.

The therapy is associated with increased lean body mass and

muscle strength and reduced fat mass in mature men.

Plus, it can enhance bone mineral density, potentially reducing fracture risk in older men.

So far, so good… *but there's another side of the coin*.

You see, not all forms of replacement are the same. TRT has *many* variations, including injections, implanted pellets, lotions, gels applied to the skin or nasal passages, sublingual troches, and patches.

Although the FDA has approved *oral* testosterone for certain medical conditions, it has not been approved specifically for treating age-related low T. Because of that (and for ease of use), most providers use *gels*.

Unfortunately, this is the WORST way to boost your testosterone.

In 2015, the FDA required a boxed warning be placed on testosterone products after a 2010 study reported that men over 65 who were using testosterone gel had a *significantly increased risk of heart attack and stroke*.

The study was stopped early because of the risks.

Since then, a larger, randomized controlled trial did NOT show an increased risk of cardiovascular events with testosterone treatment compared to placebo.

So, who knows?

What I DO know is that applying these gels to your skin is problematic because enzymes in the hair follicles on your skin can turn *regular* testosterone into a type of **super hormone** called DHT (dihydrotestosterone).

Excess DHT can cause your prostate to grow *larger* and your testicles to get *smaller*, and it can cause hair loss on your head that mysteriously shows up on your *back*.

Your skin also contains an enzyme that can cause testosterone to be converted into **estrogen**. This can cause you to grow breasts while increasing your risk of heart attacks.

Additional Testosterone Risks

There have been concerns that TRT could stimulate the growth of prostate cancer.

Current evidence **doesn't** confirm a significant increase in risk. However, it may increase prostate-specific antigen (PSA) levels, which would necessitate regular monitoring.

Regardless, there's still a general agreement that TRT should *not* be used in men with untreated prostate cancer.

This therapy can increase red blood cell concentration (erythrocytosis), boosting blood clot risk. For this reason, your doctor will monitor your red blood cell count while you're on TRT.

Ultimately, I believe a BIG risk of having a single hormone abnormally high all the time is that your *own* production will drop. That means you'll be forced to stay on the treatment to maintain your levels.

Safer Ways to Boost Testosterone

The research makes it obvious that there's no clear answer when it comes to TRT's safety.

That's because it's not Nature's way.

Testosterone is just one in an orchestra of hormones that control life. Artificially increasing levels of this **single** hormone *will never be the cure-all you seek*.

A better way to correct the problem is to fix the **underlying** issues that led to your low T in the first place.

Top testosterone-busters include poor diet, lack of sleep, lack of movement, stress, and artificial light.

Addressing these factors can make a dramatic difference in your hormone levels. Let's take a look.

1. Exercise:

A sedentary lifestyle is **terrible** for testosterone levels. When you're inactive, your pituitary gland doesn't send signals to your testes, telling them to produce testosterone.

This is an easy fix.

When you start an exercise regimen, you can boost your testosterone levels in just 12 weeks.[2] High-intensity interval training (HITT) is especially good for testosterone levels.[3]

Just don't *overdo* it. Prolonged aerobic exercise—or exercising to exhaustion—may *lower* testosterone.

2. Proper Sun Exposure:

Circadian disruption was tied to low T when studied in night shift workers.[4]

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This makes sense since sun exposure (like exercise) stimulates the release of hormones in your brain that tell your testes to produce testosterone.

In fact, **just one hour of sun exposure can boost testosterone by 69 percent!**

3. Sufficient Sleep:

Poor sleep and excessive stress can also affect T levels. In fact, just one week of restricted sleep (5 hours per night) led to a 15 percent decrease in testosterone in healthy young men.

This makes sense since testosterone levels naturally increase during sleep.

4. Diet:

A poor diet can cause your T levels to nosedive. Studies show that people who eat sugary, processed, and low-fat foods have lower testosterone levels. These foods can spike your insulin, which stops your body from producing testosterone.

The solution is to eat a nutrient-dense diet that includes foods rich in healthy fat, protein, fiber, magnesium, zinc, and probiotics.

5. Natural Testosterone Boosters:

Various herbs have been traditionally used to boost testosterone.

I recommend **ashwagandha** and **fenugreek** the most often since studies have shown both to boost testosterone levels.[5,6]

Magnesium makes this list, too, because it's been shown to boost free and total testosterone by up to 24 percent.

You can obtain these supplements through reputable sources like Life Extension (www.lifeextension.com).

My Personal Experience with Testosterone Replacement

Years ago, I worked in a large clinic with several providers who were pioneers and experts in TRT.

They all firmly believed that there was little downside to the therapy.

They finally convinced me to get tested, and according to their criteria, I was a good candidate based on my levels being in the lower range. Who wouldn't want improved mood, libido, erectile function, and muscle mass?

So, I went on low-dose daily injections.

After a few months, I noticed a slight boost in energy, but my mood was up and down, and my libido was also variable.

I stopped after six months because I felt it wasn't worth the effort.

That was nearly 20 years ago.

Since then, all three of those (younger than me) testosterone providers (and users) have died from issues that *could* be related to testosterone use *or not*.

As for me, I put into practice the lifestyle advice I've given you in this article, and my levels are fantastic for a 71-year-old. If it works for me, it could work for you, too.

Final Thoughts

It is important to understand my anti-TRT stance doesn't apply to everyone, as there can be many unique factors that would lead to low testosterone.

If addressing these lifestyle factors doesn't work for you, testosterone therapy could be an option.

Just make sure you work with a physician with a lot of experience with it to monitor the situation.

If you do opt for TRT, be sure to get *injectable* testosterone.

This form has been shown to reduce heart attacks, strokes, and mortality. And it's far safer than the gel.

The *Secret Cycle* Making So Many Americans Sick

The Hidden Trigger Behind America's Disease Epidemic

The United States is one of the wealthiest countries in the world—*but it's also one of the* ***sickest***.

Compared to the 38 members of the Organization for Economic Co-operation and Development (OECD), the US ranks 32 in life expectancy—four **years** *below average*.[1]

Yet we rank No. 1 on **healthcare** ***spending***, spending 3.8 times the average.

Why are Americans so sick?

Our twin epidemics of accelerated aging and disease can be tracked to our wealthy, modern conveniences.

The farther away we get from Nature, the *worse* our health becomes.

This applies to many areas, but I want to focus on how ***circadian disruption is ruining our health*** today.

The Missing Link to Modern Diseases

The circadian clock is an internal time-keeping system that coincides

with the 24-hours of the earth's complete rotation.

Circadian rhythms ensure that physiological processes occur at the optimal time of day. These cycles regulate digestion, hormones, body temperature, metabolism, and much more.

When your circadian clock becomes disrupted, *your body suffers*.

In the short term, this disruption can contribute to drowsiness, moodiness, and difficulty concentrating (think jet lag).

But in the long term, a disrupted circadian rhythm has been linked to an increased prevalence of everything from heart disease and cancer to obesity, diabetes, mood disorders, and more.[2]

The Heart Disease Epidemic, *Explained*

A prime example of how circadian disruption impacts your health is its role in America's number one killer… *heart disease*.[3]

Cardiovascular disease kills hundreds of thousands of people in the US every year *despite* modern interventions like drugs, stents, defibrillators, coronary artery bypass surgery, and more.

Yet heart attacks and strokes were rare before 1900.

What's changed?

This modern epidemic is a **direct consequence** of how we've modified the environment—particularly its negative impact on your circadian rhythm.

Studies repeatedly show that circadian disruption increases the risk of heart attack, arrhythmias, and heart failure.[4]

Circadian disruption *also* increases morning blood pressure, decreases cardiac function, impairs the heart's ability to contract, and more.

The circadian clock is an internal time-keeping system that coincides with the 24-hours of the earth's complete rotation.

That's because your circadian clock regulates essential factors that control how your heart functions… things like metabolism, heart contractions, signaling, and electrophysiology.[5]

For example, one of your clock genes, period circadian clock 2 (PER2), plays a crucial role in maintaining endothelial function and protecting against atherosclerosis by regulating nitric oxide production, inflammation, and oxidative stress.

Disruption of PER2—*often caused by circadian misalignment*—can lead to endothelial dysfunction and increased cardiovascular risk.

You don't have to be a shift worker to experience these disruptions, either. Even going to bed late or eating meals later in the day can cause circadian disruption that impacts your heart.

The Light Solution

One of the most significant controllers of these circadian mechanisms is the rhythm of light and dark with each passing day.

This input occurs via *photoreceptors* in the eyes and skin.

When you're exposed to artificial light at night—and NOT getting the appropriate light input to your eyes at sunrise, your circadian clock becomes disrupted.

This disruption sets the stage for disease.

Studies verify that the risk for many diseases correlates to whether you live in an area with artificial light at night.[6]

This is a BIG problem in the United States, which glows so brightly from modern lighting that it can be viewed *from space*.

Most modern lights have dominant blue frequencies, which damage photoreceptors and destroy melatonin, the antioxidant protector of mitochondria.

Lights aren't the only problem. Much of our exposure to nighttime artificial light comes from tech devices like cell phones, TVs, computers, etc.

Let's take a deeper dive into how this complex system works.

Circadian Rhythm 101

The circadian system is driven by a set of core clock genes and proteins that generate oscillations through

transcriptional-translational feedback loops.

These loops act like the gears in a clock, turning on and off various genes throughout the day and night. This helps our body know when it's time to sleep, wake up, eat, or perform other daily functions.

I'm going into the weeds a little bit here, but what I'm about to cover is still just scratching the surface of what we know. There is still so much to be discovered about this incredible system.

In mammals, the circadian rhythm has a master clock in the hypothalamus of the brain called the suprachiasmatic nucleus (SCN).

The SCN receives input from the retinal pigmented epithelium of the eye and other parts of the brain. The circadian rhythm generated by the SCN relies on delayed negative feedback in a core transcriptional feedback loop.

Circadian Locomotor Output Cycles Protein Kaput (CLOCK) and brain and muscle ARNT-like 1 (BMAL1) are primary activator genes of the circadian system.

The CLOCK protein forms a complex with the BMAL1 protein, binding to enhancer box (E-box) elements in DNA. This promotes the transcription of various genes, including period circadian clock 1 and 2 (Per1, Per2) and Cryptochrome1 and 2 (CRY1, CRY2).

Proteins coded for by the Per and Cry genes accumulate in the cytoplasm of the cell and then translocate to the cell nucleus. Once there, they inhibit the activity of the Clock-BMAL1 complex, thereby repressing their own transcription.

This forms the negative feedback loop.

Reverse ARB alpha and beta (REV-ERBα/β) and RAR-related orphan receptor (ROR) are receptors in the cell nucleus that regulate the expression of BMAL1. This creates an additional feedback loop that stabilizes the oscillation.

The positive loop involves the activation of PER and CRY by the CLOCK-BMAL1 complex.

The negative loop is formed when PER and CRY proteins inhibit their own transcription by interfering with CLOCK-BMAL1 activity.

Stabilizing loops involving REV-ERB and ROR help to fine-tune the oscillations and maintain the robustness of the circadian rhythms.

These oscillations control the rhythmic expression of many clock-controlled genes. These genes regulate various physiological processes, including metabolism, hormone production, the cell cycle, and many more functions.

The complexity of this system makes it hard to wrap your brain around.

I was reviewing a scientific paper that included a diagram of all the pathways controlled by the CLOCK-BMAL1 complex in the mouse liver.

It looked like the wiring diagram for a large power plant.

Most researchers who have worked out the circadian system are still stuck in the mainstream paradigm of "this research will help develop better drugs."

I doubt it.

But it says to me that **Nature rules**, and we'd better figure out a way to stop thumbing our nose at her.

Other Factors that Impact Circadian Rhythm

Without a doubt, your light environment is the biggest factor in regulating your circadian rhythm. But it's not the *only* one.

Here are other vital factors to consider.

1. Exercise:

Regular exercise plays an essential role in maintaining circadian function.[7,8,9]

Additionally, **when** you exercise can impact your performance because of the circadian mechanism.

Late afternoon appears to be the best time for peak performance, as it provides optimal circadian input from the exercise.

2. Eating:

Our early ancestors didn't have a 2:00am drive-thru, refrigerators, or bags of Cheetos for 24-hour food convenience.

This meant that they rarely ate at night—*and neither should you*.

Evidence shows that eating earlier in the day improves circadian function and metabolism. This is often called time-restricted eating.[10]

3. Wireless Radiofrequency Pollution:

Wireless radiofrequency pollution from Wi-Fi, cell towers, smartphones, smart meters, smart appliances, etc., can disrupt the circadian system.

Research shows that radio frequency exposure opens the voltage-gated ion channels of the cell membrane. This causes calcium efflux, which increases production of oxygen and nitrogen free radicals… ultimately damaging the circadian components.

4. Aging:

Unfortunately, normal aging can also take its toll on your circadian mechanisms. Studies show that the amplitude of circadian oscillations diminishes with age.

This makes it critical to follow Nature's directions *even more closely* as we age.

Tips for Getting Back in Sync

So, the big question is, how do we put our knowledge of the circadian system into an action plan that will help us avoid today's modern diseases?

You can get your body's clock back on time by following a few simple lifestyle steps.

1. Always be outside at sunrise with your eyes and skin exposed.
2. Spend time in the sun throughout the day, but morning sun is the **most** important.
3. Ground to the earth by walking barefoot or with grounding shoes. This can help you resync with the earth's electrical circuit.[11]
4. Don't eat after the sun goes down.
5. Exercise regularly, preferably outdoors and in the afternoon.
6. Turn off your lights, Wi-Fi, smartphones, and power grid at night, and try to minimize their use during the day.
7. If you have a modern disease, evaluate your environment and address any issues.

When you practice this reset plan, you can resync your circadian clock and slash your risk for everything from heart disease and cancer to obesity, diabetes, mood disorders, and more.

Warning! New Vitamin D Guidelines are ALL WRONG

How this Advice is Ruining Your Health... *and what to do instead*

Your body is a complex machine—and the "best practices" for keeping it healthy can be just as complicated.

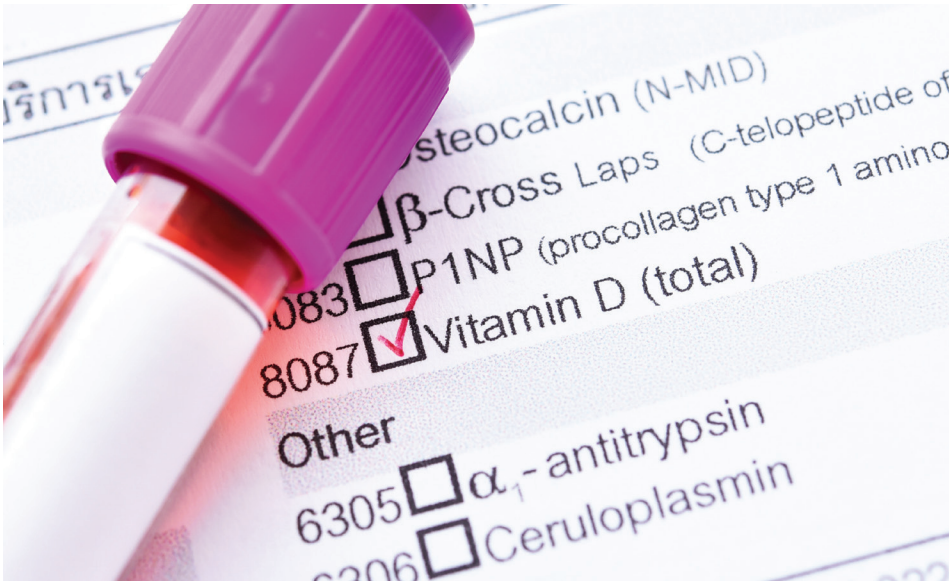
That's why we look to trained medical professionals to guide us toward optimal health.

One of those organizations is the **U.S. Preventive Services Task Force**. The USPSTF is a group of independent experts who review the latest evidence and provide recommendations to primary care doctors on clinical prevention services.

In other words, it's an organization your doctor looks to for the latest scientific information, which gets passed along to you.

There's only one problem… sometimes their recommendations are *flat-out wrong*.

I'd like to share their latest recommendations for vitamin D—and explain why you should toss them out the window (*and follow MY advice instead*).



Finding out your vitamin D levels—and then pinpointing why they're low—is critical for an excellent health span.

Bogus New Guidelines

I'm **not** against mainstream medicine. However, the modern medicine model tends to see the body in isolation, as opposed to the complex, interconnected machine that it is.

This approach is reflected in the USPSTF's latest vitamin D guidelines.

These so-called experts are now recommended AGAINST routine screening for vitamin D levels.[1]

This is terrible advice based on faulty evidence—and the exact OPPOSITE of what I encourage all my patients to do.

This conclusion was largely based on an equally terrible study showing that supplementing with vitamin D didn't reduce the risk of fractures.[2]

Of course, it didn't.

I don't know how many times I have to explain that vitamin D *doesn't work alone* in the body to bring about its benefits. For example, without optimal magnesium, your body can't convert vitamin D to its active form. And without enough vitamin K, the

vitamin D and calcium combo won't protect your bone mass.

Vitamin D isn't a one-man show.

What's more, this study is fundamentally flawed. Many people in the placebo group were already taking vitamin D supplements! So, of course, there wasn't a dramatic difference in fracture risk between the supplement group and the so-called 'placebo' group. They were both getting vitamin D! This glaring oversight alone is enough reason to toss the entire study out the window.

The USPSTF is missing the forest for the trees here.

Whether vitamin D *supplements* reduce fracture risk or not, **maintaining optimal vitamin D levels is vital for much more than bone health**.

Why D Is Critical for Good Health

The active form of vitamin D functions as a hormone that exerts multiple physiological effects. Its target receptors, called vitamin D receptors, are expressed in almost ALL human tissues.

Here are just a few key reasons why everyone should know their vitamin D levels—and then work toward making sure they're up to snuff:

- Vitamin D enhances the absorption of calcium and phosphorus in the gut, essential for maintaining bone density and preventing osteoporosis and fractures.
- Vitamin D receptors are present on immune cells, where vitamin D modulates innate and adaptive immune responses.
- The vitamin enhances the pathogen-fighting effects of monocytes and macrophages and decreases the production of inflammatory cytokines.
- It's involved in xenobiotic detoxification, oxidative stress reduction, and neuroprotective functions.
- It influences the renin-angiotensin-aldosterone system, which plays a role in blood pressure regulation.
- It regulates cell growth, differentiation, and apoptosis.
- Adequate D levels are associated with a reduced risk of certain cancers, including colorectal, breast, and prostate.
- Vitamin D is involved in the synthesis of neurotransmitters such as serotonin, which can affect mood and has been linked to reduced depression.

The BEST way to get vitamin D is from the sun. When your skin is exposed to UVB rays, it causes your body to make its own vitamin D.

In addition, vitamin D *deficiency* has consistently been found in just about any health condition you can think of, including hypertension and cardiovascular disease.[3]

That's why, in direct contrast to the new USPSTF guidelines, **I test ALL my patients for the storage form of the vitamin 25(OH) vitamin D**.

Finding out your vitamin D levels—and then pinpointing *why* they're low—is critical for an excellent health span.

As a clinician, low blood levels of vitamin D tell me that the patient either lacks sun exposure or cannot assimilate sunlight.

Supplements are NOT the Answer

While supplementation *can* address low vitamin D levels, it's often less effective than you'd hoped.

For starters, vitamin D is fat-soluble. If you don't take these supplements with high-fat foods, you're wasting your money.

As I mentioned above, if you're deficient in other vital nutrients, your body won't be able to utilize vitamin D effectively.

Another problem with vitamin D supplements is that they can be **toxic** if taken in excess.

These factors help explain why recent large randomized controlled trials of vitamin D supplementation have been disappointing at best.

These studies don't indicate a problem with vitamin D, but they do show that *supplementation is not the best way to obtain it.*

Instead, the BEST way to get vitamin D is from the sun.

When your skin is exposed to UVB rays, it causes your body to make

its own vitamin D.

Unlike supplements, *you can't overdose on vitamin D from sun exposure*.

If more UV exposure occurs after your body has received an adequate supply of vitamin D, your body produces suprasterols and toxisterols, which shut down vitamin D production.

In addition, sunlight provides other health benefits that *can't be replicated with vitamin D supplements alone*.

Sunlight exposure—particularly in the morning—helps regulate circadian rhythms by influencing melatonin production. Proper circadian rhythm is crucial for sleep quality, mood regulation, and overall health. (See the article on page 3 for more on this.)

Studies have not been done to determine the amount of time needed for this process, but I believe that more is better. Longer duration is *especially* necessary to reverse circadian-related health conditions—or to help combat the mitochondrial damage that occurs with age.

Later in the morning, UVA light starts to penetrate the atmosphere. This light stimulates the release of nitric oxide in the skin arterioles, which lowers blood pressure and improves endothelial function to reduce heart disease risk.

The midday sun provides UVB, which produces vitamin D in your body.

You can also get a small amount of vitamin D through foods like eggs, fish, and mushrooms.

Final Thoughts

Besides advising against having your vitamin D levels tested, the USPSTF (along with the entire mainstream "health" community) recommends avoiding your body's BEST source of vitamin D… *the sun!*

This fear-mongering is causing an epidemic of vitamin D deficiency and keeping you in the dark about the problem.

Of course, avoiding the sun can also lead to a host of other health problems. (See sidebar below.)

With all of this misinformation, *is it any wonder Americans are so sick?*

Here's the key takeaway today:

Vitamin D is critical for optimal health. The best source is the sun, and you should have your levels tested.

To find out exactly when UVB is present in your location, you can download a smartphone app called **D Minder**. This helpful tool factors in your skin type, altitude, location, and more to tell you how much vitamin D you'll be getting from the time you spend in the sun.

It's always a good idea to start with shorter durations until you've built up the protective melanin in your skin.

Talk to your doctor about getting your D tested, but be warned that insurance doesn't always cover it.

To get your levels tested on your own, you can order a **Vitamin D, 25-Hydroxy Blood Test** through Life Extension (www.lifeextension.com) for less than $50.

The Dangers of *Avoiding* the Sun

Shunning the sun doesn't just leave you vitamin D deficient—it can trigger a cascade of health complications.

When skin is exposed to the sun, melanin forms and serves as a natural protector against damage from UV rays. Besides providing a healthy tan, ample melanin in the skin, brain, and eyes is critical for optimal health.

Melanin's electrons are a big part of our energy and information system that animates life. In addition to light exposure on the skin, animal studies show that UVB light in the *eye* stimulates melanin production in the *skin*.

UV energy also stimulates our skin to defend itself against stress using the *cutaneous-neuroendocrine system* (the network connecting our skin, nerves, and hormone-producing glands).

It triggers vital processes in our brain and hormone system (*central neuroendocrine system*) that help keep our whole body balanced and functioning properly.

UV light on the skin and eyes slices proopiomelanocortin (POMC) into peptides like ACTH (which controls adrenal hormone production), beta-endorphin (a natural opiate high that reduces pain), melanocyte-stimulating hormone (melanin production, appetite, and energy homeostasis), and lipotropin (fat burning).

As research advances, especially the physics of atoms and subatomic particles, scientists have discovered that UV frequencies are absorbed by many chromophores (molecules responsible for absorbing light and giving substances their color) and other molecules in the body, including hemoglobin, mitochondrial cytochromes, vitamin B12, DNA, proteins, opsins, aromatic amino acids, and others.

Interestingly, our bodies don't just absorb light, they also give off tiny amounts of their own UV light. Scientists call these emissions 'biophotons,' and they can tell us something about our health status.

Perhaps this is where the term "a healthy tan" came from.

I'll end with this thought: Each of our approximately 37 trillion cells have an estimated 100,000 chemical reactions per second.

Any electron excitement of a molecule with UV is enough to generate or break a covalent bond. In a living system, this stimulus could be an important mechanism or possibly the only way.

By staying indoors all day—or covering up with clothing, sunscreen, and sunglasses when you go outside—you're blocking out all of these critical UV functions in the body… and making yourself deficient in vitamin D.