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introduction

After a one-year internship, I began my career as a clinical doctor returning to a world I knew well: I would be the physician over-seeing a new program designed to support the Navy SEALs. I had been a SEAL and had an intimate knowledge of the physical and psychological stress that comes with the work.

That said, I was surprised to realize after my initial phase of work with the SEALS that I wouldn’t be operating as a sports medicine guy. Rather, my rounds with the SEALs, discussing the problems they were having and looking at blood tests and other data to try and get a grip on the situation, made it clear that my mission was less about knee-cartilage issues and more about the severe consequences of months and years of sleep problems. What kind of consequences? Some of these guys were near the end of their rope when it came to performance, recovery, and their overall psychological state. SEALs being SEALs, their tendency is to confront a problem like performance decline by going even harder. Sleep or no sleep.

That, of course, is exactly what we expect first-responders, serving our communities and nation day and night, to do.
I once read a quote that went something like this: “A professional is someone who does their best work when they don’t feel like it.” This is the culture of the Navy SEALs—they fit this definition of the word professional better than any organization or team I’ve ever encountered.

Ironically, it was this professionalism and a drive to execute demanding, high-stress missions—in the depth and dark of night, when (of course) the stealth was best to execute such missions—that was severely undermining the health of the SEALs.

The root of the problem: Inadequate sleep, poor quality sleep, disrupted hormonal regulation from irregular and unnatural patterns of sleep, and the downward spiral that can come from using drugs with the intent of aiding sleep.

Medical school hadn’t prepared me for this. I do not remember a single lecture about sleep during any of my classes. I also did not have any questions about sleep on any of the 3 licensing exams required to become a medical doctor.

Figuring out why an entire community of elite performers—especially one this large—were almost all suffering from the same sleeping difficulties was not simple. The reason for their predicament certainly wasn’t from a lack of awareness, a lack of medical advice, a lack of funding, or from a lack of access to medical expertise. SEAL guys are smart, motivated, and at the top of the food chain.
sleep: a weakness to be conquered? or a critical function of health and performance?

So what was going on? Why was a super-elite group of operators, in their late teens and 20s, their athletic prime, suffering a range of health and performance issues despite all of their intentions to be at their physical and mental best?

This scales down by the way to the average American citizen. From the record levels of obesity and type-2 diabetes to depression and chronic diseases related to cellular inflammation, sleep deprivation is finally being recognized as one of the lifestyle factors that is bringing on trends in health decline that are putting such a strain on our health care system to the tune of hundreds of billions of dollars.

As I openly declare in my lectures, the most cost-effective way to transform our healthcare system and prevent health care costs from toppling the economy would simply be changing our nations attitudes and practices when it comes to sleep.
the omnipotent goods that sleep delivers

A smart way to begin to understand America’s sleep problem is to first look at what the function of sleep is. Consider these values within the context of a society that casts adequate sleep as a weak habit of low-performers. This in contrast to the type-A achievers in the USA that are admired for getting away with six or less hours of sleep a night.

Research is crystal clear on this: Sleep literally effects EVERY aspect of your health, well-being, physiology and both physical and mental performance.

Here are just a few highlights of what happens during a quality night of sleep:

- ✔ It’s when you’re sleeping that memories are formed, consolidated, trimmed, examined, and reinforced.
- ✔ Tissues repair, regenerate, and grow. Immune function is increased. Diseases are fought.
- ✔ Waste is removed.
- ✔ Neurotransmitters, cellular signals, nutritional elements, and hormones are balanced.

Sleep literally effects EVERY aspect of your health, well-being, physiology and both physical and mental performance.

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lack of sleep: here’s the hit you take

When you don’t sleep well, or aren’t sleeping enough, what are the consequences?

✓ A single night of sleep deprivation has been shown to alter over 700 genetic markers, and not in a good way.
✓ One night of sleep deprivation has been shown to be more deleterious to driving safety than being over the legal blood alcohol level.
✓ Again, just one night of sleep deprivation has been shown through research to incur damage to a wide range of physical and mental markers for performance. Like decreased mental function, a slower reaction time and impairment to the following: communication facility, coordination, physical endurance, and physical strength.
✓ With this single night of sleep deprivation, research suggests that you shouldn’t be surprised at an uptick in emotional instability and a slumping mood.
So as I mentioned, the SEALs I began to work with had the task—like many the military, law enforcement and firefighting communities—of being asked to deliver optimal performance at times when the body is designed to be shut down for repairs: At night.

Shift work is one aspect of this problem. But it exists throughout modern life.

In this regard, I’d like to give a big shout-out to Thomas Edison. Great dude, but he totally screwed us. Because of the light bulb. And because of the blue light a bulb emits, and what it does to us.

All light, other than red, has blue light in it. If you have light bulbs shining in your eyes three to four hours before you want to go to sleep, guess what you aren’t doing?

You aren’t ramping up melatonin production, which means you aren’t shutting down your adrenal function, which means you don’t get stages three and four of sleep.
Many people have heard of the concept that humans use the sun to adjust their biological clock. The overall driver of the biological clock is the circadian-rhythm controlling the SCN (SCN stands for suprachiasmatic nucleus). It’s often called the “master clock.”

Let’s talk about this master clock briefly, in a somewhat oversimplified way so that we can cut to the chase.

What is this master clock and what can be done with it?

First, how do humans regulate biological activities? Same as every other living thing on Earth: light. Single-celled organisms and plants do it in a different way than more complex animals, but light is the thing. We humans use our eyes.

Our eyes have special nerve cells in them that sense a certain frequency of light waves, specifically blue light. These nerve cells, when fired, let the rest of our bodies know—through the brain and nervous system—what activity we should be preparing for.

For example, as things start darkening, and less of this blue light is picked up by the eyes, the nerve cells inform the brain’s master clock, the SCN, about the decrease in light. This prompts the SCN to release chemicals that beget other chemicals, and ultimately change the activity levels of different areas of our brain, to get us ready for sleep. The SCN also notifies another area of our brain—called the pineal gland—that it’s time to start winding down, and in return the pineal gland starts secreting a hormone that many have heard of: melatonin.

Melatonin has many functions on many areas of the brain, but one of the main functions is to turn down the dial on adrenal hormone secretions—because our adrenal gland’s job, is to keep us awake, alert, and ready for life.

So here’s the thing: We know the brain’s wired to respond to the sun, and because of this, your adrenal function goes up and down, in a predictable manner, over about a 23.5 hour cycle.

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Before the light bulb, we used the sun to correct this 23.5 hours into 24 hours. With modern-day electric lighting, indoor living, televisions in every room, not to mention iPads and smartphones, it’s easy for modern humans get out of sync.

The bottom line when it comes to this easy abundance of lighting and digital stimulation is this: Without putting in measures and rituals so that our natural mechanisms can work the way their supposed to, we shouldn’t be surprised to be staring at the ceiling wide-awake and ready to go at a time when we desperately wish we were asleep.

Cortisol is an example of the biochemical array that can block a natural transition into sleep. Cortisol is a hormone that’s secreted by the adrenals and it is one of what we call the “alerting hormones,” meaning that it is one of the many hormones controlling wakefulness.

Cortisol is also part of the adrenal “fight-or-flight” pathway. Simply put, during fight-or-flight, you have an excessive need to be alert and active. You therefore have excessive adrenal functions, including excessive cortisol.

In this situation, cortisol does several things:

✓ It affects the conversion of thyroid hormone (T4-T3).
✓ It also affects blood glucose levels.
✓ It affects immunology and some inflammatory markers.

But, when we’re talking about sleep and cortisol, we are using cortisol as an estimate of adrenal function, which in reality encapsulates a lot of other hormones.

When your adrenal function is out of sync with the natural cycles the human body is designed to follow, an assortment of problems can be triggered.
physical performance, metabolism and sleep

All hormones are inter-related. Insulin affects metabolism. Testosterone affects metabolism. Growth hormone affects metabolism. Thyroid affects metabolism. Ghrelin and leptin are affecting your fat storage, hunger, fuel usage, etc. which are all metabolism-based as well.

Epinephrine and norepinephrine (aka adrenalin), are hormones that are secreted by the adrenals. They affect metabolic rate to a large degree.

Sleeping well optimizes your ability to control your metabolism throughout the day. One of the important translations of this is how much body fat you ultimately carry. If this turns out to be a lot, you’ll fall into the category of obese, along with a third of all Americans. Obesity is what leads to a host of risk factors that are often referred to as metabolic syndrome.

Aside from the health issues that emanate from being overweight, ability to perform work is hindered by poor body composition. Sleep is imperative for good body composition—body composition meaning muscle to fat ratio.
Imagine a subject registering a 30% level of body fat doing an overhaul on his metabolism—through diet, exercise and sleep—so that rather than storing calories, he’s burning more throughout the day (this includes sleeping) and in time drops the body fat percentage to 15%. What do you think is going to happen to his personal record for how many push-ups he can do in two minutes? Or how far he can run in 12 minutes? Or how easily he can navigate the 5 flights of stairs to his apartment?

Again, the chief point I want to make is that sleep is one of the best things that you can do to control your metabolism and your overall body composition.

We know that a single night of insufficient sleep affects insulin and glucose regulation.

Insulin is in charge of something we call fuel partitioning. Fuel partitioning is what your body does with the food you eat. When insulin sensitivity is low, you tend to store more body fat—as opposed to using that fuel for your muscles, or the rest of your body’s physiologic functions.

Typically, when you have low insulin sensitivity, you crave high glycemic index foods, which is then usually followed by a blood sugar crash, which then makes one hungry again. This means you will be eating a lot more calories to try to maintain a favorable blood glucose level.

Additionally, hormones like testosterone and thyroid hormone are also affected by sleep and have an effect on body composition and fuel partitioning, too.
napping: an effective tool to hit the reset button

If you’re doing a lot of intense work throughout the day, you are depleting your neurotransmitters, increasing inflammatory markers in the brain, and possibly depleting your brain’s fuel source.

If you want to recapture alertness, or if you want to recapture some of that executive functioning or creativity, you can create a nap that is of the perfect length—at the ideal time of day.

For example: restoring creativity is a relatively short nap, executive functioning is a little longer. If you want to prepare yourself for a hard workout after work, a mid-day nap of a pretty substantial duration (about 90 minutes) will improve your physical performance.

However, I have to give a caveat; naps are 120 minutes or less--otherwise it’s just called sleep. Naps longer than 120 minutes will interfere with night-time sleep.

Additionally, napping too late in the day will decrease sleep pressure (your body’s urge to sleep), and may therefore interfere with night-time sleep. Therefore, one should probably not finish a nap less than about 3 hours before bedtime, but ideally naps should be around the half-way point of your waking hours.

An excellent resource on this is the book “Take a Nap” by Sara Menick. I have used her techniques with my clients with great success.
In my clinical experience, much of what most people think of as “normal aging” is actually more tied to sleeping habits than one’s chronological age. Forgetting why you walked into a room, continually misplacing things, hurting when you stand-up, getting fatter, weaker, dumber, slower, and colder are the markers of sleep deprivation and hormonal changes (caused by inadequate sleep). Your body isn’t counting years, it is responding to your metabolic and physiologic environment. Evidence of these types of biological shifts become more noticeable with time, hence the greater disparity seems more apparent the longer one is alive.

Have you ever met anyone that looks 10-15 years younger than one would expect (purely because we compare them to ourselves and others we associate with)? I can promise you, unless cosmetic surgeries and procedures are involved, that person appears younger because she takes care of her body and mind, and this MUST include adequate sleep.
shift work

Any time I lecture—especially when I’m dealing with law enforcement, paramilitary, or the military—this is, by far, the most common question I am asked.

There’s no getting around it: Shift work negatively impacts your sleep and, as it follows, negatively impacts your health.

What we know is that there are some compensatory things that we can do: napping, eating the right diet, doing appropriate exercise, practicing mindfulness training, etc.

Meaning, there are ways to mitigate the negative impact of shift work, however we cannot completely get rid of all of the associated morbidity (ill-effects) and mortality (death). We cannot get rid of all of the detriments because shift work distorts the natural circadian rhythms and “clock dependent alerting.” This goes back to my earlier statement: Research is shaping up to suggest that there is probably not a disease, performance, or biomarker that isn’t affected by sleep deprivation.

So the goal for the shift worker—and this is a goal I have in working with a Navy SEAL—is to adopt tools and habits to mitigate the shift problem as best as possible given your specific conditions and circumstances.

First, let’s take a look at what optimal sleep is.
what is optimal sleep?

Optimal sleep is comprised of the following:

✓ You should fall into it easily and relatively quickly. This actually gets into a concept called “sleep latency.” We’ll discuss this in detail later, but the basic concept is this: it should take you about 15 minutes to fall asleep. Substantially more or less indicates sub-optimal sleep.

✓ It should be uninterrupted (or at least perceived as uninterrupted). Sleep studies reveal that we all wake-up multiple times per night, but are usually unaware of this if our sleep is healthy.

✓ It should be regular, meaning you go to sleep and awaken at approximately the same time every day, including weekends. There will, of course, be some normal variation to this with seasons, life stressors, and obligations. However, we are speaking in generalities here. Suffice it to say that sleeping is like any other activity, in that the more disciplined and consistent one is, the better one will be at it.

✓ It should be restful and restorative. THIS IS THE MOST IMPORTANT ASPECT OF OPTIMAL SLEEP! Even if you sleep exactly 8 hours every single night, go to sleep and awaken at exactly the same time every day, but you awaken exhausted every day, and count down the hours until you get to sleep again, your sleep is NOT optimal.
4 tips to improve your quality of sleep

Think about some of the automatic routines of hygiene built into your day, like brushing and flossing your teeth, taking a shower, shaving, washing your hands. All habits that you don’t have to think about. This is what you want with sleep hygiene: to make it a habit, like all of these other forms of hygiene. There are some general guidelines that will improve your ability to go to sleep, your ability to stay asleep, and the quality of your sleep.

Ideally these are used in concert with the natural cycles of night and day, if that’s not possible, these same techniques can be used to help you get the best possible sleep with the time you do have.

Set up your bedroom. Thomas Edison screwed us when he finally figured out the light bulb. Human beings, like ever other living thing on planet Earth, takes cues from light. The circadian-rhythm controlling suprachiasmatic nucleus (SCN) is sort of a master clock of our circadian rhythms. Located just above the optic chiasm in the hypothalamus, the SCN will trigger changes that charge you up for activity or start shutting you down for sleep, based on the blue light waves. So your first order of business when it comes to sleep hygiene is to make your bedroom your room for two things: sleeping and sex. TV, email, even reading a book should be done in another room. As you ritualize your sleep routine, by doing things like blacking out the windows (every little crevice) and putting your alarm clock...
in a drawer so that when you turn out the lights, it is truly dark—helping the SCN send the message to your brain and hormonal system that it’s time for sleep.

**Ritualize Your Sleep Routine.** Just like the bedtime routine of little kids (take a bath, put on your pajamas, read stories, etc.), you must likewise create a bedtime routine and do all of these things in successive order. THEN it is time to turn off the lights and go to sleep. Ideally you do this at the same time every night.

**Add a relaxation technique.** Adding a simple relaxation exercise—even just a few minutes of slow, deep breathing—is a nice addition to your sleep routine. It will help you wind down and get yourself ready for sleep, and give a boost to the transition of your brain waves into the slower, synchronous waves of deep relaxation and ultimately sleep.

**Supplements.** [Doc Parsley’s Sleep Remedy](www.docparsley.com) was developed after working with the SEALs and helping them to mitigate the difficulties of their work (usually at night, as well as the kind of work that encourages a host of stress hormones being released into the body) so that when they did have the opportunity to sleep they could actually do so. The Sleep Cocktail is a combination of nutrients, including vitamin D3, magnesium, tryptophan and a small dose of melatonin that was designed to replace bits and pieces that might be missing; putting them back in helps to allow the kind of restorative sleep they need to increase both their performance and recovery.

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*For more information on Dr. Kirk Parsley and strategies to improve the quality of your sleep, visit his FAQ page on [www.docparsley.com](http://www.docparsley.com). For information about his nutritional supplements, visit [www.docparsley.com](http://www.docparsley.com).*

*Also be sure to watch his TED Talk on the subject of why sleep deprivation is America’s number one problem.*