

Announcer: Bulletproof Radio, a state of high performance.

Dave Asprey: You're listening to Bulletproof Radio with Dave Asprey. We're going to go deep with a guy who calls himself the Sleep Diplomat, and a professor of neuroscience and psychology at UC Berkeley, Director for the Center for Human Sleep Science, and the lead sleep scientist at Google. Guy's been on 60 Minutes, National Geographic, Nova, NPR, BBC, and author of the international best-selling book *Why We Sleep: Unlocking the Power of Sleep and Dreams*, which has sold a million copies worldwide in 34 different languages. In other words, that book kicked *The Bulletproof Diet's* ass, which is about half as many languages and half as many copies.

So welcome to the show, Matt Walker.

Matt Walker: Dave, it's a pleasure to be here, and thank you so much for having me.

Dave Asprey: I wanted to have you on because you said something that was sort of in your face. You said we're in the midst of a catastrophic sleep loss epidemic. What does that mean?

Matt Walker: There is a global sleep loss epidemic underway. What we know is that within the space of probably less than 100 years, which is obviously a blink of an evolutionary eyelid, we've lopped off somewhere between 15 to 20% of our sleep amount. If you look at surveys back in the 1940s, the average American adult at least was sleeping 7.9 hours a night. Now that number is closer to an average of six-and-a-half hours a night. That's the average, which means that there's a large part of the distribution that's actually well below that average.

So if you were to think about, say in the past 20 years, by way of a restricting device around your neck you've reduced your blood oxygen saturation by 20%. You're down to 80%. That would be astonishing, but that's exactly what has happened with sleep. We see that same profile in most developed nations. My home country, the United Kingdom is not much better, six hours and 49 minutes. Japan is worse, it's six hours and 22 minutes now. So that's a decimation of sleep that's happened throughout the industrial world, within less than 100 years.

Dave Asprey: Well, we're going to have to get right into an area where we might disagree. I'm not really sure yet. How do you know that that isn't enough sleep? I mean, there is that big study of 1.2 million people showing the people who sleep eight hours a night die more of all causes than people who sleep six-and-a-half hours a night.

Matt Walker: What we find is that the less and less that you sleep, the higher and higher your mortality risk, and the higher your risk for most of the diseases that are killing us in the developed world. There is actually though a very interesting curve to that mortality risk. You're right, that once you get actually above nine hours of sleep,

your mortality risk then increases significantly. It's not a U-shaped function, it's more like a J-shaped function, kind of a J turned backwards as it were.

In other words, mortality risk on the vertical, less and less sleep as you go to the left, the higher and higher your likelihood of dying is. But once you get past about eight-and-a-half to nine hours, there is a hook-up in the mortality risk. And at first it seems like perhaps that's telling us, if you sleep too much, you're going to die at a younger age. However, I think the media has been misinformed.

If you actually look at those studies, what seems to be happening is that that hook is caused by people who are very sick. And what we know, so these are people with, usually, infectious diseases or cancer. What was happening there is that sleep is the best health insurance policy, and it's the best immune and healing process that we know of. When you are sick, I think everyone knows, you just want to curl up, get into bed and sleep it off, essentially. Sleep, we know, actually responds to infection. It's a very well replicated finding. What was happening here, we now believe, is that those people were so sick, and their bodies and brains were calling up more sleep to help the fight against the disease, but the disease was just too much for sleep. It artificially looks like sleeping more is bad for you, but that does not seem to be the case.

Dave Asprey: All right. I love that answer. To put it in one sentence, basically sick people need more sleep.

Matt Walker: That's right. Sick people sleep more, and they need more sleep. But I do want to actually come over to your side, and this may be strange coming from a sleep scientist. Let's just go a little bit further with the thought experiment though. Could there be a thing as too much sleep? I actually think, yes, there could be.

Dave Asprey: Yeah.

Matt Walker: The reason I believe that is because it's no different for any of the other three critical ingredients of life: food, water, and oxygen. Can you overeat? Yes, you can. Can you actually get too much oxygen? Yes, it's called hyperoxemia, and it will cause free radical damage to brain cells. Can you over-hydrate? It happened in the 1990s with the ecstasy craze, where governments were saying, "When you go to dance clubs, please drink water." People drink too much. Their blood pressure went up and they had cardiovascular events. In all of these things there is a sweet spot, and getting too little and too much seems to be a problem.

Are most people in danger of getting too much sleep? Au contraire, would be my response.

Dave Asprey: Okay, full agreement with you there. I knew we were going to find some common ground here. But there's kind of the opposite side of the coin here. If

sick people need more sleep, wouldn't it follow that exceptionally healthy people need less sleep?

Matt Walker: If sleep was only there to actually, for example, support your immune system, you could imagine that would be the case, but it's not. There is no single major system within the body, reproductive system, cardiovascular, thermoregulatory, metabolic, or upstairs in the brain, in terms of a neural process. There is no single system of the body or the brain that isn't optimally enhanced by sleep when you get it, or detrimentally impaired when you don't get enough.

Sleep actually services every one of the biological operations that we know of in the brain and the body. And so, therefore, just because, let's say your immune health is good, doesn't mean that your cardiovascular system doesn't also need sufficient sleep, or your reproductive system doesn't need sleep, or your brain and your neural processes, particularly in fighting things like Alzheimer's disease, doesn't need sleep. So that's why just because you're healthy, you don't necessarily need less sleep. In fact, it's a very quick and easy way to get unhealthy.

Dave Asprey: Okay. I totally buy that. Now, if someone were to sleep six hours, say in an airport, versus six hours in a cave, what's the difference between those two nights?

Matt Walker: It's more than likely that there will be a difference in what we call sleep quality. So what you've done there, elegantly, is lock in quantity, which is where we're saying, "Look, clocked time is the same between those two conditions." When you're sleeping in a noisy environment, or in an unfamiliar environment, your sleep isn't the same-

Dave Asprey: With light.

Matt Walker: ... quality. Yeah. What do we mean by quality? Part of it is about how continuous your sleep is. Is your sleep broken up by brief awakenings throughout the night? That usually results in poor outcomes the following day that we can measure in brain and body. The other aspect of that is, let's say that you're not waking up any more, but the depth of that sleep is not going to be as deep. You're not going to get as much deep sleep, and you're also probably not going to get as much REM sleep. I think REM sleep has been the neglected sort of stepsister in the sleep conversation.

Dave Asprey: Yeah.

Matt Walker: A lot of people say, "I'm just going to focus on my deep sleep numbers." That's probably not the best way to do it for two reasons. First thing, REM sleep is actually more important, we believe, for your mortality. And the reason is this. Back in the 1980s, there was some studies that will never be replicated because of ethical issues, where they sleep deprived rats until they died, and they had

three main groups. One group was totally sleep deprived, and those rats basically died as quickly from total sleep deprivation as they would from food deprivation. So sleep is just as important as food.

What was interesting is the other two groups. One of those groups was selectively deprived of non-REM sleep. Well, that's especially that deep sleep, and the other was deprived of exclusively REM sleep, rapid eye movement, sleep or dream sleep. What they found was that the rats died almost as quickly from selective REM sleep deprivation as they did from total deprivation, whereas non-REM deprivation, which is that deep non-REM sleep we were speaking about, the rats still died, but they just took about 60% longer to die.

So, in other words, if you want to kind of rank order the brutal priority of sleep and its stages, on the basis of those studies at least, it seems to be sleep in general, then REM sleep, and then non-REM sleep.

Dave Asprey: What percentage of your night, if you could sculpt the perfect night of sleep for you, what percentage of the night would you want to be light sleep versus REM sleep versus deep sleep?

Matt Walker: Typically, what we see in the healthiest people, and I guess that's the best barometer, you would probably want to be seeing somewhere between 25 to 30% of deep non-REM sleep. For REM sleep, somewhere between 20 to 25%, and I'm giving ranges here, so the numbers may not all add up, but it's an estimate. And then you want about 45 to 50% of lighter non-REM sleep, which is what we call stage two non-REM sleep.

I should note that that other type of non-REM sleep is actually critical. It's the most prolific stage of sleep that all of us experience, light non-REM sleep. You could well imagine thinking, "Well, that's just the stage that you have to go through to get down into deep non-REM, or go through to get up into REM sleep. So it's just junk sleep." It's quite the opposite. We're now finding that that type of sleep is packed full of things that we called sleep spindles, which are these short bursts of electrical activity that happen for about a second or a second-and-a-half. For example, sleep spindles are essential for learning and memory functions.

It doesn't surprise me when I take a step back, and we were to ask, "Well, which stage of sleep is more important?" The answer is, they're all important because sleep is the most idiotic of all evolutionary behaviors for lots of reasons. If Mother Nature could have excised any one of them because it was functionless, I well imagine she would have done that thousands if not millions of years ago. But the fact that all of these sleep stages have fought their way heroically through every step along the evolution path, must mean that all of them have a unique and important contribution to make, and that's exactly what we're discovering.

Dave Asprey: There was also the argument that Mother Nature didn't really evolve us to live in the world where, we get all the food we need, and tigers aren't really going to kill us. So some of those sleep things that evolved over all this time for the world we lived in, might not be as relevant for where we are today. Do you think there's a possibility that in a world with just a different level and type of stress, and a different amount of environmental control, nutrient availability, that sleep itself will change maybe evolutionary, or maybe even consciously?

Matt Walker: Yeah, it's a fascinating question. Actually, well, I'll come back to one thought about that. But I think sleep will evolve. Certainly, what we know, if you look back across the millennia, we obviously emerged from apes. There was something fundamental about the transition from tree to ground that happened. That when we as hominids, essentially came out of the trees onto the ground, the amount of REM sleep that we had shot up dramatically. In fact, we are unique in the entire animal kingdom, or at least the mammalian kingdom. We have twice the amount of rapid eye movement sleep than any other species that we've measured.

And so I make that point because it tells us that there were critical inflection moments during evolution where sleep changed for reasons that we still don't yet understand. There's some theories as to why. Will it change again? Undoubtedly so. What is the timeframe of that? I don't think we know. What we do know right now is that from populations that we take in this present moment, in the current evolutionary state of our electrified society, when you take someone below seven hours of sleep, we can measure objective impairments in their brain and their body.

Dave Asprey: If you had to stack rank this sleep. Let's say you're only going to get six hours of sleep because you're going to catch a flight tomorrow, or because you have screaming children, or all the reasons that people cite for not getting the amazing, perfect eight hours of sleep. Even though they're all important, what's... Is it REM, then deep, then stage two non-REM? Is that the order of prioritization?

Matt Walker: The inherent danger with that question is you have to ask, what are you trying to optimize for? Because each one of those different stages supports unique and different functions. So let's say that you want to optimize your glucose regulation. Well, there the argument would be you should focus on deep slow-wave sleep because that's been demonstrated causally to regulate blood sugar equilibrium.

If you're trying to optimize for your learning and memory, then you may want to focus on lighter stage two non-REM sleep, as well as deep sleep, because they have a combinatorial benefit. If you want to focus on, for example, your emotional health and your mental state, then you may want to optimize for rapid eye movement sleep. It really depends on exactly what your target is. Unfortunately, as human beings, you don't want to shortchange on any one of those, and you will pay the price no matter what.

Dave Asprey: I suppose the thing is you'll pay the price, but the average listener, and there's hundreds of thousands people listening right now, if they even track their sleep, and I've done a bunch episodes on sleep tracking. I was just looking at my numbers for last night. I got an hour and 25 minutes of REM, an hour and 32 minutes of deep sleep, in around seven hours and 20 minutes. That's not a great night's sleep for me, just because the numbers are low and the amount of sleep I slept is high. Normally I'm six-and-a-half, but I should be getting about two hours of each.

I'm listening to you about this non-REM thing. But I'm also, I'm going to be pragmatic, I'm looking at the ROI on sleep. What's the return on investment? Yeah, I could get two more hours of light sleep. Is it going to make me live 20% longer? Is it going to make me smarter tomorrow? Is it going to make me a better parent? What's it actually going to do for me, versus where I could put that other two hours of time?

Matt Walker: Actually all three of those examples sleep will support, that you described. Even the parental one, and your relationship, in fact. Sleep is predictive of marital difficulties, marital arguments, and the quality of marriage too. You can go from inside of the cell, and we could speak about the DNA, all the way up to high complex socio-emotional functions like interpersonal relationships. And you can see that damage.

I think it really comes down to the question of, what do you want out of life? Would you like to invite disease and sickness early into your life when you could be living a longer life? Or are you happy to actually pay that cost towards the end of life, and during your life, increase your risk of significant morbidity? For example, like a heart attack that you survive, but now you are compromised in terms of your heart function.

So we know that there's probably... if you were to try and ask me, stack diet, exercise and sleep because they're the other two things that people try to optimize. Where does sleep sit in that? We can play that game at a number of different levels, but let me just go to one extreme. Let's say I take you, Dave, and I deprive you of food for 24 hours. I deprive you of exercise for 24 hours, or I deprive you of sleep for one night. And then I assay your body and your brain across all of the different dimensions that are important for health.

Dave Asprey: Sleep wins.

Matt Walker: Yeah, and sleep just decimates those other two. I mean, it's not even close. Now I'm not trying to belittle diet and exercise. They are fundamental, and it's all interacting, of course. None of these sit in isolation. But if you want a realization of what you're doing by under-sleeping, I think that that's one good metric to keep in mind.

Dave Asprey: Okay. That is a beautiful example, and I'm glad you brought that up because that really paints it in a great context. Just for full disclosure. I started out 20 years ago, pretty much hating sleep because it got in the way of all the cool stuff I wanted to do, right?

Matt Walker: Right.

Dave Asprey: Now I'm very conscious about using sleep as a tool, and I do things an hour or two before I go to bed that increase the quality of my sleep, and I generally wake up feeling really good. My numbers make me happy, to the point where I don't know that I would want to invest more of my life in sleep.

But I also am doing stuff that is related to the Russians. I wanted to ask if you've ever looked at this, and if haven't, we can just move on. Back in the maybe 60s and 70s, in the unique way that Russian scientists thought back then. They said, "Well, it's very expensive to send astronauts to space, and they spend a third of their time asleep. So let's just invent a technology so astronauts can sleep a lot less, and therefore we can spend less rocket fuel, build smaller rockets, and send less astronauts to space." Brilliant thinking.

So they invented cerebral electrical stimulation. They ran a very small current back and forth between the ears, at the same frequency as deep sleep, or REM sleep, to put the brain in that state, and probably do some weird electrical stuff, and found that they could function adequately, probably not perfectly, on two or three hours of sleep.

Have you experimented with or seen the results of any kind of technology that purports to increase the effectiveness or efficiency of sleep?

Matt Walker: There are a number of them. By the way, those studies, they don't really assess the true whole organism. They're usually assessing cognitive functions, so I think it's to be mindful of.

Dave Asprey: You have tumors, but your brain works.

Matt Walker: That's right, yeah.

Dave Asprey: They're not going to measure that.

Matt Walker: Your systolic blood pressure just went from 120 to 165 within the space of eight hours, but don't worry, you're fine.

There are several things that people could do to try to augment their sleep and get better sleep, in the mold that you're talking about. One is actually temperature. It's mostly effective for deep sleep right now, but what we know is that your body needs to drop its core temperature by about two two-and-a-half degrees Fahrenheit to initiate sleep, and then to stay asleep. That's the reason

you will always find it easier to fall asleep in a room that's too cold than too hot. Because too cold is taking you in that right temperature direction for good sleep.

There were some studies done, and we played around with this too, where you essentially strapped someone in what looks like a wetsuit that has all of these veins running all over it, these capillaries. Then you, as the experimenter, control the water flow in those capillaries. You can warm the water up, or you cool it down. You can do that to any part of the body discretely. What they were able to do is that by essentially warming the surface of the hands and the feet, they were able to shunt the blood out of the core of the body, and therefore your core body temperature plummeted as a result. And that increased deep sleep in young adults, but it even more dramatically increased deep sleep in older adults, and those with insomnia.

So temperature seems to be one of the ways that we can manipulate, at least, deep quality of sleep. If people are struggling with sleep, there's another technique called cognitive behavioral therapy for insomnia, or CBTI. That has really proven markedly efficacious. It's now, no longer the question is: Does CBT help improve the quantity and quality of your sleep? The question's now, in the research field that we're doing: Is that sleep improvement actually improving other downstream consequences? There now some great studies showing that it markedly improves your mental health, decreases your paranoia. It decreases anxiety. It decreases rates of depression. So there are a couple of methods that you can... some clinical, therapeutic, others environmental that you can play around with too.

Light is another one of those things that we could speak about if you wanted to.

Dave Asprey:

Yeah, Satchin Panda came on and talked a lot about light and biology. One of my portfolio companies actually makes glasses that block all frequencies of light that affect the SEN. And I think listeners could benefit from hearing you talk for just a brief period about how important light is for sleep. But I would just say go deep in the podcast with Satchin Panda, or check out the TrueDark website for a bunch of research on that stuff.

So, just talk about light and what you've seen light does that's good or bad for sleep, and just reiterate that for people who still turn their bright bathroom lights on at night.

Matt Walker:

So, yeah, and Satchin is fantastic. We know each other very well. We are a dark-deprived society in this modern era. And it's not just about the devices, although I'll speak just very briefly about those, that are harmful. It's also just that we bathe ourselves in electrical light throughout the evening. The reason you need darkness at night is to release a hormone called melatonin, and melatonin helps the timing of your sleep and healthy timing of your sleep.



Technology is perhaps becoming one of the greatest assaulting things in terms of our sleep. One study looked at the impact of one hour of iPad reading before bed, versus just one hour of reading a normal book in dim light. What they found is that the one hour of iPad reading actually blunted the amount of melatonin that was released by 50%, five-zero. Furthermore, it delayed the peak of that melatonin, which normally should peak a few hours before bed, and then rise nicely in the first couple of hours. It delayed that peak by three hours.

So myself, here in California right now, I would be much closer to Hawaii time if I read an hour on an iPad before bed, in terms of my melatonin. Two other things that they found with that study. One is that it also decreased the amount of rapid eye movement sleep that people were having. And then, finally, even when they stopped reading the iPad, in the days afterwards, there was a blast radius impact of that reading. That the effect on that sleep disruption didn't go away until two or three days later.

Dave Asprey: Wow.

Matt Walker: It's almost washing yourself out with a drug, just that one hour, you didn't shake it off for a couple of days.

Light is something that I don't think we think enough about. If you want a quick, I don't really like to call them hacks, but blue-light-blocking glasses. There was one study that demonstrated some efficacy there for melatonin. The other way that you can do it is just turn down half of the lights in your house before you go to bed. You would be surprised at how soporific that feels. It really does make you sleepy. Then, eye masks and black-out curtains throughout the night, if that's your thing.

Dave Asprey: It's ridiculous how much just dimmer switches can change your life. You go to my house, there's dimmer switches on everything. We don't use white LED light bulbs. We use halogen bulbs because they dim better and they have a more natural spectrum that's less blue. And at night we have red night lights, or even red full on, a few lamps, and all of my extra lighting is red.

The difference in the quality of my sleep, if I look at screens or whatever, I wear the glasses. The glasses from my company, they're red and they block violet and green and blue and other things, for the melatonin effect. But I double my deep sleep on my sleep ring if I do that versus walk around the way I used to. I've found that between temperature, which you recommend, and light, as well as just not eating too close to bedtime, and then a couple of supplements. The supplements for me help the REM, but for my deep sleep, it was all about just turning down the lights.

Your studies show that it's actually affecting REM sleep, not deep sleep. What is the hack that raises REM sleep the most, other than lights?

Matt Walker: There's actually very few hacks for REM sleep it turns out. One of them may actually be that... We're just exploring right now, we don't have enough data, is reverse engineering the deep sleep hack, which is if you look at the circadian profile throughout the night. Circadian just means your 24-hour biological rhythm. Your body temperature starts to go down before bed. It hits its rock bottom core temperature around three or four in the morning. Stays there for about another hour, and then it will start to rise back up in the late morning.

Why is that important for REM? Well, your deep sleep and your REM sleep are not evenly distributed throughout the night. You have most of your deep sleep in the first half of the night, and you have most of your REM sleep in the second half of the night, especially in fact in the last quarter of the night. Which, parenthetically by the way, should give people pause because if you were to say, "Look, I normally get eight hours of sleep, and I only got six hours last night. I lost 25% of my normal sleep. I lost two hours from eight hours, 25%." That's true, but it's not quite true. Because, yes, you lost 25% of your total sleep, but you may have lost 80-90% of your REM sleep.

There is a nasty twist in that tale of how sleep is distributed. If you're shortchanging your brain by waking up early because you think you want to get a jumpstart on the day, or get to the gym. You should be mindful of that science.

By the way, I may be sounding like I'm trying to tell people how to live. I'm not. I'm not here to tell anyone how to live. All I want to do is empower you with the science of sleep, and then everyone can make their own informed choice. I'm not trying to suggest how to live here.

Dave Asprey: You're not coming across as that. But if you do this, then this will happen. That's precious knowledge, and that's the stuff that I am working to tease out on every episode of the show. I don't think that our audience is going to be offended at all by this.

Matt Walker: I hope not.

Dave Asprey: I'm intrigued though because the idea that wake up at 5:30 every morning to become a better human being, you're saying that that could kill your dreams.

Matt Walker: And probably yourself a little bit quicker, or rather a lot quicker.

Dave Asprey: Oh, man, Hal Elrod's going to be so mad at you.

Matt Walker: All I'm speaking are the scientific truths.

Dave Asprey: I did wake up at 5:00 a.m. every morning for two years because I decided... This is going way back, but I said, "All right, this is what the strong people do. So I'm just going to make myself do it." And I found after two years, I could do it. I'm

normally a very late... I stay up very late naturally. But after two years, I said, "You know what? My creativity's down. I just don't feel as good. I can do it, but I don't like it." I just quit, and just said I'm going to sleep when my body wants to sleep, and I've been happier ever since.

That said, Hal, if you're listening, I totally support your Miracle Morning thing. I just think the definition of morning might be different for some people than for others, right?

Matt Walker:

It really is, and I think that's important to understand that there are evening types and there are morning types. You're an evening type. And you don't get a choice. You don't get to decide. It's genetically determined. We know the genes. You are given that edict at birth. It's very difficult to change it. When you fight against that, you normally are returned by way of disease and illness.

Morning types, it's great to be waking up at 5:00 if you're going to bed at 8:30-9:00. Evening types, it's great to be going to bed at 1:00, if you're waking up at 9:00 or 10:00 in the morning. I'm not trying to shame anyone in terms of an evening or morning type, what I am saying is though, it is important to do two things. Firstly, get the necessary amount of sleep, that we know from science, and we can arbitrate on that amount. The other is, and I think this going to be the next public health front on sleep, is sleeping at the right time for you.

One way this comes across when I always speak to patients or people when I do public speaking, they'll come up and say, "Look, I've got terrible insomnia. I get into bed and I can't fall asleep for the first hour or hour-and-a-half." Then I ask them, I say, "If you had a completely free day with no commitments, desert island, no one to wake up for, what time would you go to bed normally and wake up do you think?"

And they would say, "I'd probably go to bed at maybe midnight or 1:00, then I would probably wake up at 8:00 or 9:00." Then I say, "Well, what time are you going to bed now?" And they say, "Well, I go to bed at 10:00 because I want to wake up at 6:00 to get my day started."

So what's happening there is that they've placed their sleep eight-hour-window in a way that is mismatched against their biological, what we call, chronotype, morning type or evening type. They don't have insomnia. They're just trying to fall asleep at 10:00 PM when their brain is not ready to fall asleep. It's only going to be ready to invite sleep at midnight, and so no wonder it's masquerading as what we call sleep onset insomnia. When you shift, you start to sleep just fine.

Dave Asprey:

I absolutely love hearing that. It makes sense. Go to sleep when you're tired, and you'll wake up when you're not tired.

One of the reasons that I pulled my kids out of school just very recently, and we're going to try homeschooling for a year is because the school makes them

wake up in the middle of the night, from a kid perspective, anyway. So I'm dealing with chronically tired kids, who are kind of miserable in the morning, and super tired. No matter how early I put him to sleep, they're just waking up too early because the school is prioritized around work. I think the value of letting the kids sleep when teenagers, or preteens in my case, want to sleep, it's just worth it for a growing brain that I'm willing to do deal with the extra work involved in homeschooling.

Is there hope to fix the start time of school to be biologically compatible with our children?

Matt Walker:

There is a movement that's underway right now, and actually here in California, we had it on the bill. It got passed through the legislature last time around, to delay school start times here in California, but it was not signed by the governor in the end. We're now going back, and I think we have a chance at doing it this time around.

We will look back with shame and sadness at how we were trying to educate our children amnesic by starting them at school at 7:30 or eight o'clock in the morning. We know from the data, and there is wonderfully powerful data that is... I cover it all in the book. Firstly, when children start school later, and we're talking about nine o'clock here, their academic grades increase, behavioral problems decrease, truancy rates decrease. Psychological and psychiatric referrals also decrease. But one of the most surprising findings is that the life expectancy of kids actually increased. And you may be thinking, "Well, how on Earth do you determine that?"

The leading cause of death in late-stage adolescence in most developed nations is actually not suicide, it's road traffic accidents. That is where sleep matters enormously. I'll give you one example from Teton County in Wyoming. They shifted their school start times from 7:35 in the morning to 8:55. And those kids firstly reported getting a whole hour extra sleep. But when they looked at that subsequent year, what you saw was a 70% drop in car crashes in that narrow age range of 16 to 18.

Now, to put that in context. The advent of ABS technology in cars, which is the anti-lock brake system that prevents your wheels from locking up, that dropped accident rates by 20 to 25%, I think. And it was deemed a revolution. Well, here is the simple biological factor, getting enough sleep, that will drop accident rates by up to 70%.

I think, if our goal as educators truly is to educate, and not risk lives in the process, then I fear that we are failing our children in a quite spectacular manner with this incessant model of early school start times.

Dave Asprey:

Oh, man, it makes me so happy to hear you say that. I am going to take that audio snippet and put it all over Instagram because you're right about that. I

remember just the torture of school when I was young. I never made it through school without falling asleep in at least half my classes every single day. They'd always yell at me. I'm like, "How am I supposed to stay awake in here? What you're teaching is boring, and I'm tired." I still, actually, was a good student because, honestly, it wasn't that hard. You could read everything that they said in 20 minutes. But I feel, you look at what we're doing to tens of millions of kids, and it's just not okay on basic human levels. So to hear someone from-

Matt Walker: It's not.

Dave Asprey: ... a big school, and with your credentials say that, thank you. Keep saying that. It's really important.

Matt Walker: Well, I think it is. The way that I've been approaching this now with the California legislature is sleep is actually a right of all human beings. Ergo, it is a civil right. So this delayed school start times mission, it should be part of a civil rights movement. It is the civil right of our children and our teenagers to be given the chance to get the sleep that their brains need. Because when sleep is abundant, minds flourish. And when it's not, they don't.

Dave Asprey: I just had the hack for that come to mind. It just so happens that I am an ordained minister. I got one of those online ones so I could marry a friend one time. So I hereby now create the Church of Sleep, and if you're a member of the Church of Sleep, you can have a religious exemption for showing up for the first part of school because the leader of your new religion around sleep has just ordained that if your kid starts school before 9:00, you are going to hell.

There, problem solved. What do you think?

Matt Walker: I think it's an unorthodox but elegant solution.

Dave Asprey: Only one way to deal with bureaucrats, more bureaucracy. I love it.

All right, back to REM sleep. There's a guy who's been on Bulletproof Radio. His name's Dan Gartenberg, and he started a company called Sonic Sleep with an NIH grant, like a million-dollar grant, looking at ways to enhance deep and REM sleep using soundscapes. The app is Sonic Sleep, and we talked about some of the results there. I've seen differences in my sleep score from using the app.

Have you seen efficacy around white noise, around playing certain binaural beats, or any other sound technology for improving sleep quality, other than just masking background noise?

Matt Walker: So there's some scientific studies actually done on that. I would only really trust the scientific studies. It's not to say that companies can't do scientific studies, I just haven't seen data from such companies providing good science. What I will

say is that there's experiments being done in scientific laboratories, and there are several things that we know.

There is some evidence from Northwestern University that pink noise may potentially be able to help improve deep quality sleep, although I think the consistency and reliability has been difficult to look at or at least replicate. There is another technique where you actually are measuring the brainwaves online. When you go into this deep sleep, you get these beautiful deep sleep brainwaves that go up and down, maybe just once or twice a second, which for the brain is very slow. Normally the brain is going up and down 40 to 80 times per second.

As you're measuring it, what they tried to do, and this was a group in Germany, they essentially started to play tones just at the strike of midnight of each one of those peaks of the deep slow brainwaves of deep sleep. In other words, they were almost acting like an auditory metronome to try and help amplify those deep sleep brainwaves. And they were able to increase the size of those deep sleep brainwaves, and they also showed some memory improvement.

But here's the problem. If you actually, again, read into that paper. If you keep stimulating for more than a few seconds, the brain shuts down the benefit because what happens is that the excitation in the brain gets too much, and if it continues unchecked, you would essentially go into an epileptic seizure. The brain has lots of wonderful feedback loops that will prevent anything like that from happening within a biological realm. In terms of its real benefit efficaciously throughout the night, that looks like it's really unproven and unlikely to be the best route for improvement of deep sleep.

Right now, I think the sound data is unclear. I should also note, by the way, just as a counterpoint, one of the best ways that we have to selectively remove your deep sleep is to play auditory tones to you. And it's a very elegant method where I can have you sleep for eight hours constantly, I never wake you up, but I can selectively remove almost all of your deep sleep by playing these auditory tones at a level that is a sub-awakening threshold.

So, as soon as you look like you're going down into deep sleep, I start playing these tones, and your brain starts to rise back up in its alertness, and goes back into light sleep. I can prevent it from going down into the deep depths by way of playing these tones. I think you have to be very careful with the sound quality and exactly what you're doing with the brain. You actually may not even be increasing the deep sleep brainwaves. You could actually be impairing them or blocking them.

Dave Asprey:

I definitely monitor mine to make sure that that isn't happening when I use stuff like that. It's interesting, there's another study with babies and white noise. In fact, this was in my very first book called *The Better Baby Book*, about how do you have healthier kids with, hopefully, bigger brains. It turns out that white noise for very young infants causes all sorts of bad things in their brains when

they're sleeping, not good things. So you have a lot of parents reflexively playing it to make babies sleep, but it had something to do with the lack of synaptic pruning, if I remember right. Like, yikes.

We're just beginning to explore what sound does, and there are definitely some scientific things out there that they're making progress, and I think with good science. But it's early days there. I feel like 20 years from now, we'll probably know something way more than we know now. Do you agree with that?

Matt Walker: I agree, and I think, yeah, I very much... We're actually exploring some ways to do that with both electricity and also sound as well. But I think sound, to me, is one of those things to just take a step back and ask... Think about the way in which we sleep, as a species and most species, they typically retreat to a place where there is usually low amounts of sound. In fact, the brain actively shuts off its sensory gate deep inside the brain. It's called the thalamus. And it actively inhibits and prevents sound from coming up into the brain and being processed. All of these things, when I think about it from the most fundamental scientific perspective, tells me that the invasion of sound into the brain during sleep is one that evolution has taught us is usually not desirable.

It doesn't mean that it couldn't be a pathway to a hack, but I think it's, right now, it doesn't seem to be the logical path, for me at least.

Dave Asprey: Got it. So be cautious there.

Matt Walker: Yeah.

Dave Asprey: In terms of supplementation, and I've written extensively about various things that are out there, L-theanine and GABA, and things like that. But I've never had a supplement that quantifiably raised my REM sleep specifically, without just improving overall sleep quality. Bulletproof makes a sleep supplement, full disclosure here, I'm not talking about Sleep Mode. I'm talking about a Lion's Mane Mushroom Extract from a company called Life Cykel. They were just on the show. And the guys there said, "Dave, try the dual extract form." And I said, "All right, I'm going to try this." And they said, "Try it for dreaming."

I've always been around 25-30 minutes of REM sleep, no matter how many hours I sleep, and no matter what I do. It's been like that for as long as I've monitored my sleep for 15 years. I started doing that stuff, and I mentioned I got an hour-and-a-half of REM sleep. I take seven dropperfuls of Lion's Mane Mushroom Extract, that raises, at least in studies, nerve growth factor and BDNF and things like that. All the sudden, I'm getting, at least from my perspective, baller levels of REM sleep. Have you heard of mushrooms doing that, or psychedelic mushrooms, or chicken? I don't know. What are things that raise REM sleep for everyone listening?

Matt Walker: Yeah, there's no evidence right now that Lion's Mane actually helps improve REM sleep, none that we can see-

Dave Asprey: In broad populations.

Matt Walker: ... in animal studies, or in humans, neither animals nor human. Yeah, nor broad population, or even small experimental laboratory studies. There is some evidence that it may actually help improve some aspects of sleep, but certainly not REM sleep.

Dave Asprey: Interesting.

Matt Walker: No evidence for that. Now, to be clear, absence of evidence is not evidence of absence. So it's still possible that it may be. All I'm simply saying is that there's no scientific data to do that.

What about your N-of-one? I think that's interesting. I would imagine that you're someone who may not be prey to the placebo effect, but what I would also say is that the placebo effect is the most reliable effect in all of pharmacology.

Dave Asprey: Oh, it's real.

Matt Walker: I would love to see studies that actually do a proper crossover placebo control, double-blind study, to see if it's causal.

Dave Asprey: I'm encouraging those guys to do exactly that. The supposition, I have no evidence of this, is that the dual extract... Most of the time, people just eat the mushrooms or make a tea. There's an alcohol-base of extracts, and there's a water base of extracts, and maybe the psychoactives are in one versus the other. I don't think anybody knows, but it's the only thing I've found that worked for me. So I'm definitely a fan, but like you said, early days, no double-blind trial, so I'm going to tell Life Cykel to do a trial, and see if I can get them to. If so, I'll send you the data, if it's properly double-blinded et cetera, et cetera. And if it's good, then you can try it.

Matt Walker: Yeah, I'd love to see those data.

Dave Asprey: Okay. That's cool. All right, yeah, we have time. Let's talk about Ambien, tranquilizers, Thorazine, I have no idea if you use that for sleep, ketamine. All the other things that are heavy-duty sleep drugs. Is there a role for these in society?

Matt Walker: I think it's fading and it's fading very quickly. Part of the reason, let's just speak about typical prescription sleep aids. These are what we call the sedative, hypnotic drugs. Most people would know the classic sleeping pills that you could take by brand, and I won't call any one of them out. The studies are now



quite clear that using those medications markedly increases your risk for mortality, for death. Those sleeping pills have also been significantly associated with the risk of development of cancer, all forms.

In fact, so much so that in 2016, the American College of Physicians actually made a landmark recommendation, on the basis of the fact that those sleeping pills very rarely give you much of a benefit above and beyond placebo, and the deathly and carcinogenic associations that have been found. They recommended that sleeping pills must no longer be the first line recommendation for insomnia. It has to be cognitive behavioral therapy for insomnia, which is the psychological therapy technique.

Then I believe, I think it was maybe just 20... What date are we now? Something like 26-27 days ago, the FDA actually upped the safety warning on sleeping pills because of the dangers that were associated with them. It raised the risk category of them. So I think their time is now starting to come, and I should note, by the way, this is not an attack on the those pharmaceutical companies, nor the scientists who developed those drugs. I know some of those scientists and they are desperately trying to produce medicines that help humanity.

Dave Asprey: They're all trying to help.

Matt Walker: Yeah, but it's just the fact that those medications unfortunately don't help. They do not produce naturalistic sleep. And you also, when you come off them, have a horrific what's called a sleep-rebound effect, where you go back not only to the bad sleep that you were having, but it's even worse as a consequence. Those drugs, I think, are to be stayed away from.

There's also some evidence, not quite as compelling, for the use of things like antihistamines, which some people may be using in the evening.

Dave Asprey: Benadryl.

Matt Walker: Like Benadryl. I think the data is less certain there, but it doesn't look great. Again, I think you can look for alternatives.

Dave Asprey: I'm really concerned about people using Benadryl for sleep. There's no doubt, it does work, especially if you ate some old fish that night, and you have histamine response, which is stimulating. I'll take a quarter of a Benadryl. But if you take a whole one, there's really good data that Benadryl inhibits your ability to move memories from short-term to long-term?

Matt Walker: Yeah.

Dave Asprey: You'll have a fuzzy memory if you sleep on it.

Matt Walker: Same with the prescription sleep medications.

Dave Asprey: Oh, I didn't know that.

Matt Walker: Yeah.

Dave Asprey: Ambien, okay, I'm sorry. I won't call them out by name. The thing that rhymes with rambien.

Matt Walker: I think it's important to ask-

Dave Asprey: And others, yeah.

Matt Walker: ... what do we mean by, it helps me? Because what people mistake is that those drugs are a class of drugs, as I've said, that are called the sedative hypnotics, and sedation is not sleep. But most people mistake the former with the latter when they take them.

I'm not going to argue when you take those drugs that you are awake during the night. You're clearly not. But to suggest that you are in naturalistic sleep is an equal falsehood.

Dave Asprey: Okay. That is profound and awesome. I'm just loving our conversation so far.

Matt Walker: I'm glad.

Dave Asprey: All right, I want to go way back in your career. Because when you worked on your PhD in neurophysiology, you studied the brainwave patterns of people with different forms of dementia who were awake. What did that teach you?

Matt Walker: It taught me, for two years, absolutely nothing because I failed to get any meaningful results. I was trying to differentially diagnose people very early on as to which type of dementia they had. Was it Parkinson's disease or Alzheimer's disease, or what we call frontotemporal dementia? I was sticking electrodes on the head, and I was measuring their brainwave patterns. And I couldn't find any good results to separate them at all.

At weekends, I used to go home with this stack of journals, and I'd have a little igloo of journals in my doctor's residence. I'd sit there and read every weekend. One of those, after two years, journals helped me understand my mistake. Some parts of the brain in some of those dementias were being eaten away. And those parts of the brain were sleep centers. Whereas for other dementias, the brain regions that controlled sleep were unaffected.

I realized that at that moment I was measuring the brainwave activity of my patients at the wrong moment in time. I was measuring them when they were awake, and I should be measuring them when they were asleep. So I started doing that and got wonderful results. That led me to the question, "Well, if sleep is so disordered in these patients, is it not just a symptom of Alzheimer's

disease, but perhaps it is a causal trigger?" And at that point, I asked the question: Well, then why do we sleep? At that point, 20 years ago, no one could answer that question. The best response we had was, "You sleep to cure sleepiness," which isn't very helpful.

Now, 20 years on, we've had to actually upend the question. We've actually had to ask, "Is there anything in the brain or the body that isn't beneficially improved when you get sleep?" And the answer seems to be no, there's nothing we can find.

So that set me on a journey to discover why we sleep, and it created a love affair that lasts with me to this day. I am still deeply enamored with sleep. I thought I was going to solve that question within just two or three years, as to why we slept, and then go back to my work with Alzheimer's disease. I didn't realize that some of the most brilliant minds had tried to answer that question and failed. Hard questions will meter out their lessons no matter who is asking them, and I got schooled. 20 years on, I'm still in part asking that question. But I've finally been able to come back full circle, and we now do a lot of work with the causal relationship between a lack of sleep and Alzheimer's disease, not just the associational one anymore.

Dave Asprey:

I have a weird dataset in that one of the companies that I started does high-end neurofeedback training, five days intensive stuff. There's some portion of people who come through there who have way more alpha brainwaves with their eyes open than normal people. I'm not one of those, but I am a person who until I really got on top of this as a young man, I used to have intrusive theta brainwaves. This is a dream state that's during the day. So, as I'm in high school, sleep-deprived, trying to pay attention, now I know because of all the EEG work I've just done on myself, there are states of just out of control theta that I was going into.

What happens, or what are the reasons that people get the states associated with sleep during the day?

Matt Walker:

Principally, sleep deprivation, and the reason... So when you look at rapid eye movement sleep, the brainwaves are actually going up and down maybe four to eight times per second, which is what you described as theta activity. When you go deep sleep, it now slows down much, much more. It's down to, as I said, one to two cycles per second, which is what we call delta activity.

What you're describing there is having theta bursts of activity. One of the things that we've learned from alcohol, or alcoholism and patients who are alcoholics. Alcohol is one of the best ways that we know of to block your dream sleep, to excise and selectively deprive your brain of rapid eye movement sleep. Now, if you keep doing that time and time and time again, the brain builds up what's called a REM sleep pressure. In other words, it starts to have this increasing hunger for REM sleep, so much so that at some point, REM sleep being so essential, REM sleep just bursts onto the scene when you're awake. Because the

brain is saying, "Look, if you're not giving me the chance to get REM sleep, even when you're asleep, then I'm just going to take it whenever I can."

You get these intrusions of REM sleep during wakefulness. And that is the state that we call delirium tremens, when alcoholics actually have these delusional psychotic episodes. It seems to be that what they're having is a bleed over of rapid eye movement sleep into the waking state. In other words, they're dreaming while they're awake because the brain is so hungry for REM sleep it has to start taking its fill.

Dave Asprey:

That is fascinating. Okay. There's two times in my life where I've had periods of intense, vivid nightmares. One of them is when I was in a house that had toxic molds, and it turns out... I did a whole documentary on toxic mold. And this is a common symptom of people who are in houses with high levels of *Stachybotrys*, and things like that. The other time was a couple years ago I had a relatively dangerous intestinal parasite, and the day I got it, I started, well, I'm just going to say disaster pants became my friend. I had it for four months. I saw three different experts before I got rid of it. But every night for those four months, I had just something's-trying-to-kill-me dreams.

I don't have nightmares. I haven't had nightmares in 25 years. They just aren't a part of my life, but I was having these. And the second I start taking the medication that killed the stuff in my gut, the dreams went away. Is that common, that when people get sick, they have vivid nightmares? Or when there's something in their environment, pollution, noise, whatever? Tell me a little bit about those unusual, intense, vivid nightmares?

Matt Walker:

We actually don't have too much data regarding serious infection and the association with nightmares rather than just standard dreaming. What we do know is that when you raise body temperature, which normally happens when you have an infection, fever is often associated with a delirious state. You can say, "They were delirious with fever."

One current way of thinking about that is that your core body temperature actually increases, and so much so, which it normally does with REM sleep, and by the way that comes back to our earlier conversation. One way that you may be able to increase REM sleep is actually by warming the body back up, and that's what I failed to complete my story with in terms of reverse the drop in core body temperature with deep sleep. You need to cool down to get deep sleep, and perhaps you need to warm up to get more REM sleep. Although we're still looking at that, we don't know.

But that's one possibility. You were having, essentially, this morphed, this alternative version of REM sleep because of an increase in your body temperature. And it doesn't have to be marked. We're talking just 0.5 of Fahrenheit, in terms of degree change, could trigger that. But in truth, we just don't know. I don't know of a single study that's demonstrated that right now. Again, it doesn't mean it isn't plausible.

You speak about ways that you can actually though, suffer nightmares, and one of the things that we know, tragically and reliably is trauma, and the quintessential demonstration of this is PTSD, or post-traumatic stress disorder. We've done a lot of work on sleep and mental health.

I should note, by the way, that in the past 20 years of our work, I've not been able to discover a single psychiatric condition in which sleep is normal. I think sleep has a profound story to tell in our understanding and our treatment and, I hope, ultimately our prevention of grave mental illness. But in terms of PTSD, in fact, it's impossible to receive a clinical diagnosis of PTSD if you don't have sleep disruption including flashback, trauma nightmares. That's how core they are to the disorder. That's how fundamental they are.

We know more about what's going on there. I created a theory of REM sleep, which was called REM Sleep is Overnight Therapy, essentially. We know that it is during REM sleep, in healthy people, where a center in the brain that releases a chemical called norepinephrine, or noradrenaline is shut down. So everyone is probably familiar with the sister chemical in the body, which is called adrenaline. But there is a version of that upstairs in your brain called noradrenaline. It's associated with stress and alertness. REM sleep is the only time during the 24 hour period where your brain completely shuts off the release of that stress-related neurochemical.

I proposed that REM sleep is the optimal environment in which all of the emotional and memory centers of your brain come back online, which they do, they erupt in their activity. So you can start processing emotional memories. But, beautifully, you're doing it in this quote-unquote safe neurochemical environment, where you can strip away the painful, stinging edges of those emotional experiences, so that you wake up the next morning feeling better. And you've resolved that emotional conflict. It's not time that heals all wounds, but it's time in REM sleep that provides that emotional convalescence.

What we've found in people with PTSD is that they don't have normal REM sleep. They have fragmented REM sleep, and they don't have enough REM sleep. If you measure their levels of noradrenaline, in the central nervous system... And we don't do that by sticking a needle in their brain and sampling it. We do a puncture of their lumbar spinal fluid, and so we can measure the CSF, cerebrospinal fluid, and estimate what's going on in the brain. They have very high levels of noradrenaline, too high.

The model that I proposed suggested that in PTSD, because they have this stress-related chemical switch back on during REM sleep, they can't reprocess those trauma experiences. So night after night they keep replaying them, hoping for that overnight sleep therapy, and they don't get it. Then, we started working with a psychiatrist in Seattle called Murray Raskind, who did some great work. He did this work before I actually... He didn't know of my theory, and my theory didn't know of his data. But he'd been giving a drug called Prazosin to his PTSD war veterans that he was treating, and that was given for their blood pressure

because it helps lower blood pressure. And it's a generic drug, so it turns out that it crosses the blood-brain barrier and also impacts the brain.

They were coming back and they were looking, and they said, "Your blood pressure's better." And the patients were saying, "But I'm no longer having those trauma dreams." What was happening is that that drug Prazosin actually decreases the amount of this stress chemical. What we believe then was happening is that finally they decreased the amount of that stress-related chemical in the brain during REM sleep. It allowed them to process those memories normally and naturally so that they could start to resolve the trauma. After, gosh, many years of work, it's subsequently now become one of the only medications that's approved for prescription of PTSD nightmares in the veteran community.

Dave Asprey:

God. You're blowing my mind here. One, I haven't ever come across that before. I definitely had PTSD. It's something I worked through, largely, 20 years ago. And I did have crappy REM sleep, which we already talked about. But unlike most people 20 years ago, I have my numbers for my epinephrine to norepinephrine ratio. If I'm remembering this right, they said you were dealing with burnout if you were above eight, and my number was 45. It might have been my norepi to epi ratio. I was completely beyond blown out. And I dealt with the PTSD stuff, and resolved that. Now my levels are much more normal.

I did not know about that drug. I think a lot of people, and we have a lot of vets who listen to the show, a lot of people with TBI interest because I've covered that a lot. I think that's going to add to the body of knowledge. Thank you for bringing that up. I'm going to have to check that out more myself.

I have one more question for you, Matt. This has been such a fascinating show. I feel like I could interview you for another couple hours. The final question has something to do with sleep, but it has more to do with aging. I just wrote my new book on anti-aging and what I think the future's going to look like. I want to ask you this. How long do you think it's possible for you to live? Given what you know, access to the resources you have, and what's coming in the world of medicine and everything else, what's your number?

Matt Walker:

Right now, I'd probably say I'll live to over 100, I think, to just do an under/over. In part, that's just because I'm embedded in the entirety of health and wellness and science. And so I try to do as many of the things right as I can. I would say though that I'm often asked how much sleep I get, and I give myself a non-negotiable sleep opportunity of eight hours every night. I do that not to be a poster child for this mission that I'm on, and I am on a mission. I want to desperately reunite humanity with the sleep that it's bereft of. But it's not, it's actually selfish because if you knew all that I know about sleep, you would actually choose to do nothing other than give yourself eight hours a night.

My family on my father's side has a very strong history of cardiovascular disease. We know that deep sleep is one of the very best forms of blood

pressure medication that you could ever wish for. I think I invest in the cheapest most painless health insurance policy I know of, which is called an eight-hour night of sleep, and it's largely democratic. It's freely available to most people if you're a healthy sleeper. I'm not trying to belittle people who struggle with sleep. Then, diet and exercise.

The fourth thing that I've really put on my roadmap though, recently, probably the last five years is mental health. I think mental health, dealing with stress and anxiety, we know that even just being social and having a good social life is critical. For example, we did a study on sleep loss and loneliness a couple of years ago. I won't bore you with the details there, but we read a lot about loneliness, and it was striking to me that loneliness is more deathly than being obese, which just blew me away. You can see the impact of loneliness all the way down to the expression of genes it turns out. The science is very good.

I think in terms of my own health pillars and bastions, I place sleep as the foundation, and then I place diet, exercise, and good mental health and good social health on top of that. I would very much hope that I live to see 100.

Dave Asprey:

I love that answer. Thank you for sharing it. And thank you for writing *Why We Sleep*. It's one of the books that has me thinking about my sleep, focusing on quality, and maybe I'll get up to seven hours, but I don't know if you're ever going to convince me to do eight. But you have convinced me to shift it. Your book, *Why We Sleep*, is one of the many reasons I decided that I would pull my kids out of school and let them sleep because that's probably more important for their brains that whatever the heck they were going to do in that first hour of early morning torture that they call first period in school.

Matt Walker:

I'm delighted the book had that impact. That alone, in terms of ensuring your genetic legacy, but also gifting your children with the very best developmental start to their life. I hope they thank you for it in years to come.

Dave Asprey:

They'll either thank me or be pissed, but I'm good either way. That's up to them. I got to tell, for people listening, I recommend a good number of books. In fact, I interview authors quite a lot on the show. At the end, I always tell you the name of the book and where you can go to find it, and all of them are worthy of your time to read. There's some that are more worthy than others, just like I still would tell you that maybe that deep sleep is more important than REM sleep, if you could only get one, but they're both necessary and all that.

This is one of those shortlist books that you want to read, if you want to perform better as a human being. Ostensibly, that's probably why you listen to the show. *Why We Sleep* should be on your must-read list, up there with Robert Greene's last book, which is another fantastic episode if you haven't heard that one, where we talk about *The Laws of Human Nature*. This is the basic stuff of being a human.

There's plenty of diet books, I wrote one, there's hundreds of them, but there aren't that many really good sleep books. As you've heard on the show, sleep matters more than food because you can fast for a month, you can't go without sleep for a month. So get your sleep lined up the same way you have your food, and your stress, and your exercise, and all that other stuff, and you will win. And use this book to help you do it.