



Guest

Matthew Paul Walker is a British scientist and Professor of Neuroscience and Psychology at the University of California, Berkeley. He is the author of the book - Why We Sleep (NY Times Bestseller, #1 Sunday Times Best seller). Previously, he was a professor of Psychiatry at Harvard Medical School. His research focuses on the impact of sleep on human health and disease. He has published more than 100 scientific studies and is the founder and Director of the Centre for Human Sleep Science.

A lot of us grow up with the narrative of sleep being a residual figure in our lives where getting work done at the expense of sleep is seen as a victory of will power and mind over body. The reality is that there are dire consequences of trading off sleep for work or for exercise and it often shows up several years later. Given the delayed feedback loop and possible lack of attributability, many of us possibly end up ignoring it. Sleep constitutes about one third of our time on the planet and the quality of sleep possibly accounts for the effectiveness of the remaining two thirds of our time on the planet.

Context to the conversation

Welcome to the 55th conversation at the Play to Potential Podcast. This is your host Deepak Jayaraman here. I help leaders play to their unique potential by working with them during phases of high stakes transition as a confidential sounding board.

In this podcast series, I talk to leaders from multiple domains (CEOs, Sportsmen, Artists, and Thought Leaders) on three broad themes – Leadership, Transitions and Careers.

I am really excited about this conversation as I believe the topic is relevant to each one of us. My guest this time is Matthew Walker, Professor of Neuroscience and Psychology at University of California Berkeley. Earlier he was the professor of Psychiatry at Harvard Medical School. He is the author of the NY Time Bestseller and #1 Sunday Times Best Seller Why We Sleep.

Sleep is something that accounts for about one third of our lives, yet we know so little about it. What is more fascinating as I understand more and more about this topic is that the quality of this one third governs the quality of the remaining two thirds of our lives? I used to think that Sleep was one of the three pillars of wellness (Exercise and Diet being the other two). But reading Matthew's book and speaking with him, I understand that Sleep is the foundation on which the other two rest.

I hope you will find the conversation as purposeful as I did. Without further ado, let us dive into the conversation with Matthew Walker.

Transcription

Deepak Jayaraman (DJ): Matt excited to have you at the Play to Potential podcast. Thank you so much for making time.

Matthew Walker (MW): Oh, it's a privilege and a delight to be speaking with you Deepak and thank you for having me on this podcast.

DJ: The first place I'd like to start Matt actually is about your journey. I read your book *Why We Sleep* with a lot of interest and clearly, you've looked at the link between sleep and various things, childhood adolescence, learning an instrument, old age dementia and so on. Give us a sense of the arc of curiosity you've had around sleep. How have you channelized your curiosity across the different applications over time and how has it evolved?

MW: Yeah, I think all sleep researchers are probably accidental sleep researchers. Probably when we were five or six-years-old and the teacher was going around the room doing that prototypical question of saying what would you like to be when you grow up? I don't remember anyone shooting their hand up and saying I would love to be a sleep researcher. It's just you know, it doesn't happen. So, I think we all accidentally fall into this field of sleep research and as was the case for me. Twenty years ago, when I was doing my PhD, I was studying patients with dementia, different types of dementia, and I was using brainwave activity to see if I could differentially diagnose what type of dementia they had very early on and I was failing miserably. And one night when I was going back to the medical residence where I was staying I would read all of these journals, I had a little igloo of journals in my room that I would sit down and examine. And I started to realize that the different types of dementias would actually eat away at different centers of the brain. Now some of those centers were sleep generating centers and others were not, and I realized perhaps that I was measuring the brain wave activity in my patients at the wrong time. I was measuring it while they were awake and instead, I should be measuring it when they were asleep. And so, I started to read a lot about sleep. I set up a small sleep laboratory and that's when we started to get fantastic results and at that point I realized a fundamental question had not been answered which was why do we sleep and with total naivety and not no hint of hubris I thought I would go and answer that question within two or three years and then return back to this question of dementia not realizing that some of the most brilliant minds in science had tried to answer that question and they had failed. And over the past 20 years, I have realized that hard questions will meter out there lessons of difficulty all the same no matter who is asking that question and I have been schooled in the difficulty of hard science when I've tried to answer the question why we sleep but now 20 years on we through not just my research, but just through all of the fantastic sleep researchers, we've actually had to append the question. We used to ask the question why do we sleep and the crass answer 20 years ago was that we sleep to kill sleepiness and that's the useless equivalent of saying well, we eat to cure hunger. It tells you nothing about the nutritional physiological benefits of food, but now with sleep based on the weight of the evidence, we've had to turn the question around and actually ask is there any physiological process in the body or any operation of the mind that isn't wonderfully enhanced by sleep when we get it or demonstrably impaired when we don't get enough and for the most part the answer seems to be no.

DJ: Wow, wow. I may be picking up from there Matt. I was influenced by the book *Eat Move Sleep* by Tom Rath, which I read a few years back where he talks about the importance of diet, exercise and sleep for our well-being and at least in my head I always knew that sleep was one of the three important pillars of wellness, but you actually go on to say that sleep is the preeminent force in this health trinity and you use an interesting term sleep as the Swiss army knife of wellness. Give us a give us a sense of why this is so.

MW: Yeah, I used to think that sleep was perhaps the third pillar of health alongside diet and physical activity, but the more I read the research I started to wonder if it was actually a little bit different that in fact sleep was the foundation on which those two other things sit. And I can just give you some examples as to why I changed my mind. Firstly, if you are dieting and trying to lose weight and watch what you eat, but you are not getting sufficient sleep, 70% of the mass the weight that you lose will come from the lean body mass such as muscle and not fat. In other words when you are under-slept and you are dieting the body becomes stingy in giving up its fat and it will hold on to that fat, but you will lose other components such as muscle. So when you are not sleeping well, but you are trying to be good and adhere to a diet, unfortunately, you will lose what you want to keep a hold of which is muscle and you will retain what you want to get rid of which is fat. And so, I think that's just one example in the field of nutrition. We also know for diet sorry for physical activity and exercise that if you are not getting sufficient sleep firstly the simple motivation for you to get out there and do some physical activity is significantly decreased; second, even if you do start to exercise, but you are not getting sufficient sleep firstly the intensity with which you exercise is actually less. We also know that the peak muscle strength and the peak jump height for example is impaired when you are not getting sufficient sleep. The time to physical exhaustion is decreased when you are not getting sufficient sleep. Even basic processes of exercise, for example, the ability of your lungs to respire and exhale carbon dioxide and inhale oxygen becomes compromised when you are not getting sufficient sleep. And we also even know that your ability to perspire which is critical when you are being physically active to cool your body and keep it at peak performance, that physical perspiration capacity also decreases when you are not getting sufficient sleep. So, I really do think that sleep... there is good argument to suggest from the data that sleep is the foundation on which those two other things sit. It's not just another pillar.

DJ: Hmm, and maybe if I persist with this theme Matt, clearly compared to eating exercising consumes time, and maybe if I take a very particular very specific use case early morning running, especially in a country like India where, you know, once the traffic starts it's difficult to find the time and space and the oxygen for running. A lot of people often end up having to compromise on sleep to squeeze in running as an exercise. Do you have any studies or any research that talks about the trade-off between lost sleep and early morning running?

MW: I think it seems to be clear that being physically active is absolutely of course essential but it doesn't seem as though you can exercise your way out of poor sleep or you can exercise your way out of inadequate sleep and you have to think about this from a high altitude evolutionary perspective. Sleep is something you can't short change your brain or body of and expect to get away with and from an evolutionary perspective sleep if you think about it is the most idiotic of all creations. When you are asleep, you are not finding a mate, you are not reproducing, you are not caring for your young, you are not finding food and worst still you are vulnerable to predation. And so, on any one of those grounds, but especially all of them together sleep should have been strongly selected against during the course of evolution. However, what we know is that in every animal species that we've carefully studied to date sleep is present and what that means is that sleep has fought its way through heroically every step along the evolutionary path. And my point is really just the following that sleep if it didn't serve an absolutely vital set of functions it would be the biggest mistake the evolutionary process has ever made and now we understand that sleep actually... that mother nature did not make a spectacular blunder in creating this thing called sleep that it serves so many vital functions. So, to think about compromising sleep even perhaps for the capacity for physical activity is perhaps unwise. Sleep is a biological need and when you fight biology you typically lose and the way that you know you've lost is usually through disease and sickness.

DJ: And often possibly there's even a time lag right between when you do this and when the disease hits you, sometimes the delayed feedback possibly gives people the false notion that one could get away with this.

MW: Gosh, yeah that's such an insightful point Deepak. I think there are acute effects of sleep deprivation that can be observed and perhaps the most tragic and immediate one is that you have what we call a micro sleep when you are driving a car and these micro-sleeps you are typically not aware of them, it's where the brain just goes to sleep for just a second or two. But if you are traveling at 50 or 60 miles an hour and you have one of those micro-sleeps, it can be the difference between staying in lane versus drifting to the opposite lane of oncoming traffic. And so, if you have one of these micro-sleeps, it could be the last micro-sleep that you ever have. And that's one of the most immediate and acute ways that a lack of sleep can be desperately impactful. But you are right to suggest that many of the impacts of chronic under-sleeping, chronic insufficient sleep as we describe it is that it's an aggravating influence over time. It's very much like hypertension. If you eat the wrong diet, or you are not physically active gradually your blood vessels start to harden and gradually you become more and more hypertensive, your blood pressure starts to increase and maybe it's only after 20 years of a lack of physical activity or poor diet that you get hit with cardiovascular disease or a heart attack. And the same can also be true for insufficient sleep. And this is why I think some people will say well, I'm in my 60s or in my 70s and I have only been sleeping, five hours a night and I'm just fine and I think there are good examples of this of very vocal heads of state Margaret Thatcher or Ronald Reagan. They were both very clear chest beaters regarding how little sleep that they seemed to need. Now, you mentioned at the start of the program that there are increasing and causal links to insufficient sleep and your risk for Alzheimer's disease and dementia and tragically... and this is completely not scientific, but I think it's perhaps not coincidental that both Thatcher and Reagan went on to sadly develop the disorder of Alzheimer's disease and it took their lives. And so, you are right, insufficient sleep seems to get you either acutely or chronically no matter what.

DJ: Hmm and we'll get to how much sleep is enough in a bit in this conversation Matt, but maybe to start with some of the basics in the book you talk about the notion of circadian rhythm. I hope I pronounced it, right and you go on to speak about the notion of morning people and night people, you call them morning larks and night owls and the fact that this might be a hardwiring by DNA and not a behavioral choice. And in my personal instance that topic alone has accounted for about 40% of the marital fights. So it's out of selfish interest that I want to get some clarity here, but give us a sense of what you mean by circadian rhythm and how some of us might be wired differently here.

MW: So, most living organisms, even things such as plants but including animals and mammals and us human beings we all have what is called a circadian rhythm which essentially is a 24-hour rhythm. And in human beings there is a master clock that sits inside of our brain, it's called the suprachiasmatic nucleus and it entrains our bodies and our brains to a 24-hour rhythmic activity and part of that rhythmic activity includes when we want to be awake and when we want to be asleep. Now for the most part human beings are diurnal species, in other words we typically like to be awake during the day and we like to be asleep at night. However, there is variance in when our preference is as human beings to go to sleep and to wake up and this comes on to the notion that you mentioned which is called chronotype. Are you a morning person are you an evening person or are you somewhere in between? And a lot of us in society because society is mostly geared towards morning types and we have a bias towards applauding morning types and chastising evening types as being lazy, that's rather unfair because we know that a significant proportion of whether you are a morning type or you are an evening type is determined by your genetics. And we now know that there are at least I think at last count well over 22 different genes that we know determine whether you are a morning type or an evening type. So, it's not really your choice, it's not really your fault

that you are an evening type and the morning types shouldn't be quite so proud either because it's not really their choice to be a morning type. Again, it's gifted by your genetics; it's hardwired into your biology. And so, depending on the distribution and data that you look at, about 30% of individuals seem to be morning types about 30% evening types and then the rest of us are somewhere in the middle of that. So, we do know that there is this genetic dependency that dictates whether you want to wake up early or whether you want to wake up late? Can you change that isn't always a question that I'm asked and there is some wiggle room, if you are an evening type and you want to become more of a morning type it's good to try and abstain from caffeine in the second half of the day and certainly into the evening. It's also good to try and block out a lot of night time light. So, staying away from blue light devices in the evening, trying to switch off half the lights in your home in the last hour before bed and then conversely getting lots of morning light. Those three different tips can try to help an evening type become a little bit more of a morning type. But the amount of wiggle room there isn't particularly very much. You may be able to drag yourself back by 30 minutes maybe up to 40 minutes, but you are not going to go from being someone who likes to go to bed at 1:00 a.m. to then finding it very easy to go to bed at 10:00 p.m. That's a little bit too much of a stretch to ask of your genetic hardwiring.

DJ: And I like the point you make in the book about the evolutionary hypothesis around this, which is trying to diversify the sleep waves so that as a group you have a wider security cover in the night. I thought that was an interesting... Could you expand on that a little bit? I thought that was a pretty nuanced insight.

MW: So if you look at cultures who have not really been touched by electricity, for example, if you look at hunter-gatherer tribes whose way of life has not changed for thousands of years, we can ask some very fundamental questions about not how we are sleeping in modernity today but how should we be sleeping as a species, how are we originally designed to sleep. And there are several insights that we've had from studying those populations but one of them is that sleep typically isn't an isolated activity. So, in many developed nations now we often will go to a separate room to sleep or we sleep with, you know, our marital partner etc. But sleep doesn't seem to necessarily be like that in these cultures, these hunter-gatherer tribes. Their sleep is much more of a social activity where the multiple family members will all sleep in the same room, children, aunts, uncles, mother, father etc. And why is this important to your point? Well, what we see is that there is quite a lot of diversity in terms of chronotype. So, think about from that evolutionary stance that I described earlier. You as a human being let's say that you are sleeping eight hours, that would mean that you are vulnerable as an individual for 8 hours that night but what if you were sleeping as part of a group and as part of that genetic diversity some of the group will actually be going to bed at midnight or 1 o'clock and other members of the group will be going to bed at 9:00 p.m. or 10:00 p.m. And then the people who went to bed early will be waking up early and the people who went to bed late will be waking up late. What that means is that as a group overall you may collectively only be "asleep" as a group for a sum total of let's say three or four hours because there are going to be some people at the bookends that will be awake late and watching over the group and other people who will be awake early and watching over the group. So, as a collective you are only vulnerable because of mother nature's genetic diversity of chronotype for perhaps three or four hours rather than as an individual vulnerable for eight hours. So, everyone gets their 8-hour chance for sleep but as a group you decrease your risk probability and perhaps you are only collectively as a group vulnerable for three or four hours.

DJ: Got it. And I want to pick up on a related theme Matt which is jet lag right, which a lot of busy leaders contend with and you make the point that circadian rhythms are independent of where you are; it's your internal body clock, but sometimes we need to adjust our body clock to an external clock and if we create shocks on the external clock by traveling on a jet plane, I'm curious about

your thoughts on how we grapple with it. And I thought to make it tactical from an Indian perspective if I take two archetypes, right one has travelled to the US which moves the clock by around 12 hours plus or minus or let's say you travel to Europe or to let's say Singapore or Sydney in Australia, which puts the clock plus or minus 6 or 8 hours. So, I'm curious about your thoughts on how leaders can grapple with jet lag when they're either moving eastward or westward in these sorts of leaps of time.

MW: So, you are right that it is quite a torturous activity on our biology. We were never designed to be fast forwarded or reversed in time by way of this remarkable invention called the jet engine and when we arrive in a new time zone there is a lag that happens and that lag is the difference between the actual time the clock face in that new time zone versus our internal clock, that 24-hour master clock that I spoke about before. And when you arrive in a new time zone, those things are markedly mismatched and that mismatch between your internal biological clock and the external new time zone is what we call jet lag. And that does come with deleterious consequences; we know this from for example cabin crew or airline pilots. We've studied those individuals who are constantly going back and forth between repeated exposures to jet lag and there are for example neurological changes that we see. Pilots, for example who've been flying and who do long-haul shifts, long-haul flights and parts of their brain particularly the memory centers of the brain end up shrinking. Now, you could imagine that that's just an associational effect that for some reason people who become pilots already had a smaller memory center of the brain so it's not causal but against that hypothesis what we know is that the number of years that they've been doing that actually correlates with the severity of atrophy in those parts of the memory centers of the brain. We also know that there are impacts downstairs in the body when you have that severe sleep weight disruption that comes with jet lag. It increases significantly your risk for the development of cancer and there are significantly higher rates of breast cancer, for example, among female cabin crew so much so that there have been court cases of government workers who undergo shift work and jet lag and they've won their case because of severe higher rates of breast cancer. So that's just to put some context around the impact of consistent jet lag. But your question is interesting, which is how do we try to risk mitigate or de-risk the consequences of jet lag. It's very difficult. There is no cure for jet lag or actually I should say there is a cure for jet lag which is don't travel but that's not particularly helpful piece of advice. Can we treat jet lag to a degree and here are some tips I guess for trying to help? The first thing that you should do as soon as you get on an airplane traveling long-haul flights is set every device that you have a clock face to including your wristwatch, your computer, your phone, your tablet, set all of those devices to the new time zone to which you are currently traveling and immediately that gives you context as to what time it is in the new zone. In other words that gives you a target to shoot for. And then you need to start asking yourself on that flight when should I be thinking about sleeping and use that new time clock on your phone for example to tell you when you should be sleeping relative to when everyone else in that new time zone is sleeping. So, a good example is if I'm traveling from let's say San Francisco back to London, London is eight hours ahead and when I see people on that plane, they typically are sleeping at the wrong time. Most people sleep late in the second half of the flight, which is the wrong time. Instead you should be sleeping early in the flight because everyone in the UK is already eight hours ahead of me. And so if I'm sleeping in the last few hours of that flight, I'm sleeping at nine o'clock in the morning, 10 o'clock in the morning, 11 o'clock in the morning UK time. Instead I should be trying to get to sleep as soon as I can and then I should actually wake up in the middle of the flight when everyone else in the United Kingdom is waking up. And the important thing is this whatever time you want to be going to bed in the new time zone you should then count back 12 to 14 hours and that's the time that you need to be waking up on your long-haul flight. The reason is because you need to accumulate at least 12 to 14 hours of sustained wakefulness for you to have enough sleepiness built up so that when you try to go to bed in the new time zone that you've just arrived in you are going to be able to fall asleep

and stay asleep. And often the reason that people can't do that on that first night is because they've slept too late in the flight and they only woke up maybe six or seven hours before then now then going to try and get back into bed and fall asleep again, and that's just not enough time of accumulated wakefulness for you to feel sleepy or to stay asleep. So that's the first two tips is to set your devices to the correct time and then sleep at the appropriate time but in fact wake up at the appropriate time. Try to avoid alcohol and caffeine on those flights, even though they sometimes are served for free and the temptation is to indulge, try to stay away from that and then finally once you arrive in the new time zone you should understand that your body clock can only catch up about one hour for every day that it is in the new time zone. So, let's say that you have traveled to a location that is six hours difference from where you left. It's going to take you about six days before you feel normal and you are acclimated to that new clock. How can you fast forward that or increase that speed of acclimation? Firstly, in the new time zone try to make sure that in the morning you get at least 30 to 40 minutes of exposure to daylight. It doesn't have to be bright sunshine, even a dull cloudy day can help you but try to be outside. Secondly, try to get some exercise in the morning that helps like a set of fingers on the dial of the wristwatch to stop moving it more quickly to acclimate to the time zone. And then the other thing that's usually underappreciated is feeding. It turns out that the intake of food is just as powerful re-setter of your biological clock as is daylight. And so, try to resist the temptation to eat when you are hungry, but instead try to eat at the same time when everyone else is eating in that new time zone and that can also help you as well.

DJ: Very interesting and very tactical thank you. In terms of how much is enough Matt, you talk about eight hours but somewhere you talk about seven hours, seven to nine. So, there are a lot of numbers being thrown around in the context of what's adequate sleep and very often I guess all of us fall into the temptation of saying maybe for me six is enough, for the rest maybe eight is required. So, give us a sense of how we should think about how much is enough and how much leeway should we give ourselves to cheat on this metric?

MW: So, there is a range and that range seems to be between seven to nine hours of sleep with the mean for the average adult being eight hours. And that range is given to us both by large-scale epidemiological studies, which help us inform once you get below a certain amount of sleep, then you start to increase your risk significantly for a variety of deleterious health outcomes such as diabetes, cancer, cardiovascular disease, stroke, depression, anxiety etc. and dementia. So, it's the epidemiological studies that guide those recommendations, but then it's also causal experimental studies that back that up because epidemiological studies cannot provide causal evidence of a relationship. They just show an association and those experimental studies then help us firm up those recommendations that its seven to nine hours for the average adult and that shouldn't be a surprise by the way. It's the same way for our calorie recommendations. We could say for the average adult male its 2,000 calories a day, but depending on your size and what you've been doing that day and your age there's going to be some variance around that calorie recommendation and the same is true for sleep. What we certainly do know is that once you get below seven hours of sleep, we do seem to be able to measure impairments in your brain and body. Does that mean that there are some individuals who can sleep for six hours without showing impairments? There are some genetic variants, some very rare genetic mutants that we found that can survive on six hours of sleep without showing significant impairment, but the probability of you and the listener being one of those individuals is really quite low. It seems to be only either a fraction of a percent or at least a couple of percent of the population. So, it is statistically very unlikely that you are one of those individuals. So that's the recommendation and for example here in America the Center for Disease Control suggests that short sleep is defined as less than seven hours of sleep. We also know that Harvard Medical School and the Center for Sleep Medicine there demonstrates that once people get less than eight hours of sleep regularly you do increase your risk for a number of

significant medical conditions. So, we have good advisory data there. How do you know if you are getting sufficient sleep? Well, short of doing sleep studies and having a vast array of biometrics performed on you that's the harder question to answer scientifically, but from a more practical advice-based way, I would suggest there are at least two ways that you can answer that question. Firstly, most people are short sleeping during the week and if when it comes to the weekend, if you don't have to work at the weekend you start to increase your sleep amount as if you are trying to get back sleep that you've lost which by the way sleep doesn't work like the bank and we can speak about that. But if you are trying to binge on sleep at the weekend that usually means that you are not getting sufficient sleep during the week and perhaps an even simpler test of whether you are getting the sleep that you need is the following. If you did not set an alarm or by chance your alarm in the morning did not go off would you sleep past your alarm and if the answer is yes, then it means that you would need more sleep that you are not getting the sleep that you actually naturally need. So, there are a couple of practical ways that you can ask yourself honestly am I really getting the sleep that I need.

DJ: And if I maybe take a particular use case Matt, a lot of the professionals in high intense professions, right whether it's lawyers, bankers, management consultants, several advisory professionals and several entrepreneurs often burn the candle at both ends and just to take a very specific use case they... I think if I do a mental distribution a lot of them might be saying let me sleep for six hours, it's not as grave as four or five hours; six hours still seems okay. Give us a realistic sense of the downsides of maybe losing about an hour of two of sleep a day. How does that play out over the medium and long term?

MW: So firstly I would say that sleeping six hours a night is certainly better than sleeping five hours a night or four hours a night, but I will just give you one example of the impact of an hour of lost sleep because it turns out that there is a global experiment that is performed on about 1.6 billion people across about 70 countries twice a year and it's called daylight savings time. Now in the spring when we lose just one hour of sleep opportunity, we see a subsequent 24% increase in heart attacks as a result. Whereas in the autumn when we gain an hour of sleep opportunity, there is a 21% reduction in heart attacks. And so, I think that that's clear evidence of how vulnerable our bodies are to even just the smallest perturbation of sleep. And by the way we see exactly that same profile that I just described for things such as road traffic accidents on our highways. We see the same profile for suicide rates. You can even see the same profile by the way for the harshness of sentencing from federal judges here in the United States when you lost an hour of sleep harsher sentencing, when you gain an hour of sleep more lenient sentencing. We can also see it at a much more minute level. For example, your genetics, there was a great study done out of Surrey University in the United Kingdom and they took a group of individuals and they placed them on a diet of six hours of sleep for one week and then they measured the change in their gene activity profile relative to when those same individuals were getting a full eight or nine hour sleep opportunity. And what they found was that when you are sleeping for six hours a night for just one week there were upwards of... in fact there were 711 genes that were distorted in their activity by way of that one week of six hours of sleep. So, in other words even you're... the very DNA nucleic alphabet that spells out your daily health narrative can be seen to be impacted by just one week of six hours of sleep relative to when you are giving yourself the correct opportunity for sleep.

Reflections from Deepak Jayaraman

DJ: This is your host Deepak here. What struck me the most here was the point Matt makes about the fact that only 1 or 2% of the people have a genetic variation that gets them comfortable with 6 or less hours a night. I am reminded of an experiment where a professor distributed a form to the

class and asked the students if their intellect was above or below the class average and about 95% of the class felt they were above average. So, it's worth remembering that we are much more likely to belong to the 98-99% of the population that needs 7-9 hours of sleep.

A lot of people treat sleep as a balancing figure. After they have pushed themselves hard on various things (work, exercise, partying and so on), they just live with whatever hours of sleep they get. And that approach is all the more tempting because a lot of the visible downsides are often visible only several years later. I used to be like that and really sacrifice sleep to pursue running in the morning but I could see the impact it was having on my productivity and effectiveness. This came up in my conversation with Matt Dixon (MD) as well, a Triathlon coach in the valley. He works with some of the leading CEOs and Entrepreneurs in the valley and he speaks about the importance of rest and rejuvenation.

MD: *"accumulation of stress and fatigue and so the biggest mistake that we see people make is to think I know I need to exercise because I know that's something to do that's makes me healthy so, how am I going to add this on the top of life and many people what they do and the great example is Oh it's wonderful go to bunch of friends I am going to do Ironman Turkey and it sounds wonderful and what does it take to train for that and it takes 20 hours a week goodness me I don't have twenty hours a week but there's the training program and to dump it on top of life and I am just going to have to find a way to cram it in. To be successful and to actually integrate the key components of rejuvenation and recovery as well as training what we have to realize is that we have to integrate it into a person's life so that not only does, they can then improve in that discipline because hopefully they are looking for improvement but so that they can lift their health they can lift their performances as a CEO or an executive and it can help them to thrive across areas of life and so it's all about integration, we go through a very particular process where we look up the habits the start and we look up their genuine landscape of their life what have been non-negotiable? And when we think about non-negotiable there's obviously the commitments in the work place quite often there's the commitment with their family and we want them to be available and present for their family, their children, their wives, their husbands or whatever it might be and then the other component that we have is non-negotiable is sleep and saying ok how much do you sleep and is that necessary and is it high enough quality which is the other component of effective sleep not just quantity are you getting enough?"*

DJ: Treating sleep as a non-negotiable and organizing the rest of our life around it is an interesting frame as compared to treating it as a residual variable.

Thank you for listening. If you are finding this conversation purposeful, you might also like to tune into my conversation with Matt Dixon a Triathlon coach in Silicon Valley, who specifically speaks about the role of rest and recovery when you train for triathlons.

If you are deriving value from the podcast, please consider paying it forward to Antarang Foundation, an organization I work with closely. Antarang Foundation is a not for profit that works with 1000s of young adults and helps them play to their potential. While the world of human potential, I believe, is uniformly distributed, the world of opportunity is unfortunately unevenly distributed. We may not realize it or want to acknowledge it, but the reality is that a lot of us are beneficiaries of the ovarian lottery that sets us up very differently. To know more about how you can make a difference, do visit the Pay it forward section at PlaytoPotential.com. Please rate us on any platform you are consuming this content. Now let's get back to the conversation with Matthew Walker.

DJ: Let's just move to a different theme that you talk about in your research and in the book Matt. You talk about two different types of sleep: REM sleep and NREM sleep and I found one of the things interesting you say that if you sleep two hours less out of eight hours you might think that you are getting 25% less overall sleep, but you might be missing 60% to 90% of the REM sleep. So, for the purpose of listeners talk to us a little bit about what these are and what the benefits of each of these types of sleep is and how we should think about ensuring that we get enough of these in our nightly sleep routine.

MW: So human beings and most all mammalian species seem to have two broad types of sleep what we call non-rapid eye movement sleep or non-REM sleep and then rapid eye movement sleep or REM sleep also known as dream sleep. And non-rapid eye movement sleep has been further subdivided into four separate stages unimaginatively called stages 1 through 4 increasing in their depth. So, stages 3 and 4 are those really deep stages of non-REM sleep. Stages 1 and 2 are the lighter forms of non-REM sleep. And those two types of sleep non-REM and REM will play out in a battle for brain domination throughout the night and that cerebral war is going to be won and lost every 90 minutes in humans and replayed every 90 minutes and what that creates is this 90-minute cycling architecture of sleep. So when you first fall asleep, you go into the light stages of non-REM, then you go down to the deep stages and then after about 70 or 80 minutes, you'll start to rise back up and then you will pop up and you'll have a short REM sleep period and then back down you go again, down into non-REM and up into REM. Now that 90-minute cycle stays constant throughout the night. However, what changes is the ratio of non-REM to REM within that 90-minute cycle as you move across the night such that in the first half of the night the majority of those 90-minute cycles are comprised of lots of that deep non-REM sleep. But in the second half of the night that seesaw balance changes, and now in the second half we get much more rapid eye movement sleep. And so, this comes back to exactly what you were saying. Let's say that you take a standard eight-hour night of sleep and you wake up two hours early to get a jump start on the day, how much sleep have you lost? Well, in terms of total amount of time, you've lost two hours out of 8, which is 25% However, there's a sting in that tail which is hidden to you, which is that yes, you've lost 25% of total sleep, but because that's the REM sleep rich phase of your sleep you may have actually lost maybe 70%, 80% almost 90% of your REM sleep of your dream sleep. So, understanding how sleep works and how sleep is structured can really help us understand how better to manage our sleep schedules.

DJ: And from a Layman's perspective Matt, could you talk about the benefits of REM phase of sleep and non-REM phase of sleep just so that we understand what the implications of this are?

MW: So, every stage of sleep that we have is important and there are different functions that are associated with different stages of sleep. So for example deep non-REM sleep stages three and four they seem to be important for aspects of keeping our immune system healthy, helping with our cardiovascular system, for example deep sleep is perhaps the very best form of natural blood pressure medication that you could ever wish for. Your fight or flight branch of the nervous system, calms down your heart rate drops and as a consequence your blood pressure drops. But we also know that deep sleep is helpful for cementing new memories and essentially hitting the save button on your memory so that you don't forget, but we also know that lighter stages of non-REM sleep for example stage 2 non-REM sleep is also important for learning and memory, but there that type of sleep helps actually refresh our short-term memory capacity and if you are not getting that lighter stage of non-REM sleep you wake up the next day and you don't have that refreshed ability to start learning and acquiring new information. It's almost like a USB stick that the lighter stages of non-REM sleep help refresh the capacity of that USB stick. So, the next day you can start acquiring new files again. Rapid eye movement sleep however or dream sleep also has many functions. Some of those functions are to help support our emotional and mental health. In fact, REM sleep is a wonderful form of emotional first aid. And when we start to disrupt or deprive people of non-rapid

eye movement sleep, we typically see changes significant changes in mood and emotional reactivity. We also know that REM sleep correlates for example with the degree of testosterone in males. And so, REM sleep seems to have associations with our reproductive health and our reproductive fitness as well. So, I can go on and on but we certainly know that these different stages of sleep they all serve vital functions for human beings but different stages of sleep at different times of night support different functions and operations of the mind and the body.

DJ: Got it. And when I read the book, I noticed you talking about the impact of REM sleep on things like empathy, creativity, judgment and so on and clearly a lot of these are elements of executive functioning. Business leaders would love to be loaded with some of these elements. Have there been any studies done around REM sleep and let's say leadership capability out of curiosity?

MW: Not leadership ability directly but one of those things that you mentioned there is creativity and ingenuity and those two things we are led to believe are the engines that drive businesses forward. And what we know is that sleep including rapid eye movement sleep or dream sleep can actually provide a three-fold increase in your problem-solving capacity. So it gives you creative insights and we know from scientific evidence that you can start to create solutions to previously impenetrable problems and it's during dream sleep that there's almost a form of informational alchemy where the brain starts to collide all the things that it's recently been learning with the back catalog of all of the information it has pre-existing and by way of that colliding of information, that marinating of all of the memory ingredients together that's the way that we can start to divine novel insights to these previously difficult problems. I suspect it's also the reason by the way that you've never been told to stay awake on a problem. Instead you are told to sleep on a problem and in just about every language that I've inquired about to date that phrase sleeping on a problem or something very much like it seems to exist and what that means is that the creative brilliance of sleep transcends cultural boundaries. It's common across the globe.

Reflections from Deepak Jayaraman

DJ: This is your host Deepak Jayaraman here. When I spoke to the Chess Legend Vishy Anand (VA) on the podcast, he spoke about how sleep played a critical role in his effectiveness as a player. When I asked him about some of the rituals he followed around sleep, this is what he said:

VA: *"I found that a ritual, a good night sleep is very helpful, especially a sleep who just disturbed, because we are not talking about the rest as much as the ability to put the more nervous energy in the emotion from the previous day away, so that when you wake up you are looking at a fresh day that works well so, and then I work backwards from that and after very tensed game I try to go for a long walk or I might even go to the gym, I am not going there for the exercise I am going there to tied up my self so that I will have a shower and just fall asleep and I will not waste energy thinking about the game, there are even players who prefer to do all their work at night, so they will work till the five or six in the morning, and then go to sleep and then wake up at 2 o clock and go straight to the game, without any further work, and what they are fighting is if you wake up at 9 o clock and your game is at 2 o clock, I can do this but if I do this he might do that and if I do that he might do this and therefore what should I do? This could go wrong, that could go wrong, and you are using a lot of nervous energy thinking about this stuff, so what they are trying to accomplish by waking up at 2 o clock as they have no time to worry about the game they have done all their work at the last night and then they have gone to sleep"*

DJ: If I go back to the case of business leaders who are pursuing early morning exercise and trading off morning sleep, it is worth reflecting on the impact of this trade off on the quality of your REM

sleep and therefore your leadership effectiveness. Now, let's get back to the conversation with Matthew Walker

DJ: And actually one of the stories in the book really appealed to me, thanks to my father, I'm a big fan of The Beatles. I also learned the instrument, I play the guitar and I was learning the song Yesterday a while back and it's a song that's been voted as one of the greatest songs ever right, number one pop song of all time by MTV and Rolling Stones and so on and I also couldn't help notice the connection that you are from Liverpool. So, tell us the story of the link between the song yesterday and sleeping.

MW: So at the time Paul McCartney was actually down in London he was staying at a residence on Wimpole Street in London, and he was filming a movie down there and he recalls that in his bedroom he actually had a small upright piano in the corner and he woke up one morning with this beautiful tune, this beautiful melody in his mind and he immediately understood the chords and the progression of those chords and he went straight over to the piano and started playing them and he penned down this music and he thought this is just beautiful, it's so lovely this progression that you know of from Yesterday And he thought where have I heard this before, I don't recognize it, but it must be from someone else and the more he thought about it the more he realized that in fact it wasn't a tune that he had heard, it had been a set of music that had been gifted to him in his sleep and it was that chord progression. It wasn't the lyrics there, but it was the chord progression. The other song that is fantastic also one of the highest rated Beatle songs is Hey Jude and in that there is a description that says "Mother Mary, in my hour of darkness, Mother Mary comes to me speaking words of wisdom".

DJ: Let it be.

MW: Sorry, Let it be. Yeah, I'm sorry not Hey Jude, Let it Be and Paul McCartney describes that that was actually inspired by a dream and there's been suggestions that Mother Mary would, you know, the religious overtones that it could be Mary Magdalene but it's actually not, it's his mother, his mother was called Mary McCartney and he had a dream one night when he was struggling with his professional career and his mother came to him and just said, don't worry, continue what you are doing, everything will be fine, Just Paul let it be and that's why the lyrics are described that that in his hour of darkness Mother Mary, his mother Mary comes to him speaking words of wisdom, let it be and so a beautiful inspiration sleep inspired creativity and we see that lots in artists and scientists as well.

DJ: Wow, and just may be sticking to that theme Matt in terms of learning an instrument in the book you also talk about research around the criticality of sleep before and after you go and learn an instrument. So to make it tactical any... for somebody learning an instrument, whether it's the piano, the guitar or the drums any tactical inputs on how they should think about sleep in the context of building muscle memory?

MW: So we've done a lot of work in this area and it's a topic that we call motor skill memory or motor skill learning and it's applicable for learning a musical instrument as you described, but it's also applicable for other areas learning a new sport, flying a plane, doctors with surgical procedures. These are all critical complex motor skills. And what we've discovered from a highline headline perspective is that practice does not make perfect despite that phrase being offered to us. In fact, it's practice with a night of sleep that makes perfect because what we discovered is that when you practice you do learn and you do improve but what we also learned is that once you stop practicing the brain actually will continue to learn in the absence of any further practice. However, that

delayed learning that offline learning occurs exclusively during periods of sleep and not across equivalent time periods whilst you are awake. So, it isn't quite practice that makes perfect as I said, it's practice with a night of sleep that ultimately seems to lead to motor skill perfection.

DJ: Hmm and is there may be just another question on this before we move forward anything to do with the timing of sleep in learning an instrument? Is there some research that talks about let's say a certain time window within which you fall to sleep after you learn an instrument or vice versa, has there been any study around that?

MW: There has and we have done some of this work and others have contributed to it as well. We seem to see a stronger association with sleep in the last couple of hours of your night. So, for these types of motor skills memories we have been finding that it's a lighter form of non-dreaming sleep what we call stage 2 non-REM sleep and particularly these remarkable electrical bursts of activity that occur during stage 2 non-REM sleep called sleep spindles. And the greater the amount of that sleep that you have in the last two hours and the greater the amount of these sleep spindles during that stage in the last for example, quarter of your night, that seem to most accurately predict the degree of improvement both in your speed of performance as well as your accuracy of performance.

DJ: Hmm and one of the things, one of the statements that really struck me in the book was the notion of self-assessment of sleep deprivation and you talk about that being very similar to a drunk person assessing their level of drunkenness and it's a very similar theme that came up in my discussion around self-awareness on this podcast as well. There's a paradox here, the most self-aware people often think they are not self-aware. So, I find this interesting because in a way it explains a lot of behavior where people tell themselves that they are okay but sometimes they don't realize that they are the problem. So, give us a sense of why this is an issue that we should care about and therefore how we ensure we break out of this false notion of self-assessment.

MW: So in studies where we take individuals and these are studies done by lots of other sleep researchers where we take individuals and we will start to give them different doses of insufficient sleep let's say putting them on a week of seven hours of sleep or six hours of sleep, five hours of sleep, four hours of sleep and over that week or that two-week period gradually we see cognitive impairment, typically we see these what we call cognitive lapses all these micro sleeps. And what's interesting is that we can objectively assess how impaired you are when you are dealing with insufficient sleep. What we can also then ask you as a participant how are you feeling right now and what do you think your performance was like on that last test and we can keep asking that question. So, we have an objective measure of your performance and then we have your subjective assessment. And unfortunately, what we find is that your subjective perception of how well you are doing with insufficient sleep is quite a measurable predictor of objectively how you actually are doing with insufficient sleep. Translated it actually just means that you don't know you are sleep-deprived when you are sleep deprived and the analogy would be a drunk driver at a bar. Maybe they've had five or six drinks and they stand up and they pick up their car keys and they say look I'm fine to drive home. And your response is no, I know that you think subjectively that you are fine to drive home but trust me objectively you are not, you are impaired and unfortunately that's the same way with a lack of sleep and that's one of the reasons why I think the public in addition to perhaps the science not being well communicated by someone like myself that's another reason why I think people think that sleep is perhaps a luxury and it's negotiable when in fact, unfortunately, it's not a luxury. It's a non-negotiable biological necessity.

DJ: And as we come towards the end of the conversation, I want to talk a little bit about technology Matt and the proliferation of light emitting devices. There's clearly a lot of clutter in terms of what people are hearing in terms of the impact of these devices on sleep and in terms of their attention.

Give us a sense of how we should think about this issue. What are the watch-outs if you really had to cut through the clutter and give the listeners some tactical inputs on how they should deal with their devices whether it's a phone or a tablet or a computer or a television? What are the issues that you feel people don't understand enough?

MW: Certainly, we know that the invasion of technology into the bedroom or just before we enter into the bedroom has been a deleterious impact on our sleep, and there are a variety of ways that technology impacts our sleep. The first and perhaps most obvious from a sleep science perspective is the blue light emitting devices and LED screens and phones and tablets. There was a study done by folks at Harvard Medical School and they showed that if you compare one hour of iPad reading before bed versus just reading a normal book under dim light, in those individuals who read the iPad firstly there was about a 50% reduction in a critical sleep regulating hormone called melatonin. And furthermore, the peak of that melatonin was delayed by about three hours and that melatonin peak helps my brain and body understand when it's night time and when it wants to sleep. So here in California if I read an iPad for one hour before bed my body clock would be fooled into thinking it's much closer to Hawaii time than it actually is to California time. And they also found in that study that one hour of iPad reading before bed disrupted the amount of rapid eye movement sleep or dream sleep and even when they stopped reading the iPad there was still a blast radius that the sleep disruption continued for several days later almost as though there was a washout period. But there are other ways that technology impacts our sleep. Another component is what we call sleep procrastination, which is that you could feel perfectly tired and you are perfectly capable of falling asleep and staying asleep, but these devices perhaps if you are using them even in bed you think well, oh, I'll just check Facebook that one last time or I'll just send that last e-mail or I'll just look on Twitter for that one last time and all of a sudden you look up and it's 30 minutes later and now you are shortchanged on your sleep by half an hour. So, sleep procrastination is another component. We also know that many people keep their phones next to them in their bedroom and some people or non-trivial amount of people will report actually waking up in the night and actually checking their phone and even if they don't do that simply having the phone next to them on their bed creates what we call anticipatory anxiety that disrupts sleep. So, a better example of this is let's say that you have a very early morning flight, the night before knowing that it's there waiting for you the next morning you typically don't sleep as well. And in fact, the degree of that anxiety of that anticipation correlates with the degree of impairment in that deep restorative non-rapid eye movement sleep. Now having your phone next to you in the morning is a lighter version of that sort of more acute scenario and the reason is because for many of us when we wake up in the morning the first thing that we do is reach for our phone and we swipe right, we unlock the phone and then this torrent of anxiety comes rushing into our world: emails, latest tweets that have happened and what you do by having your phone next to you at your bedside is train your brain to anticipate and expect that anxiety each and every morning and it can decrease the quality and the quantity of your sleep. So, the advice there would be firstly let's see if we can try to have a wind-down routine where in the last hour before bed you try to stay away from screens and those blue light devices. And secondly, if you are going to have your phone next to you the advice normally would be try to keep your phone outside of your bedroom. But if you have to have it there see if you can do an experiment and ask yourself can you simply not look at your phone for the first five minutes upon waking in the morning and see if that makes you feel a little bit more relaxed and more comfortable around your morning routine. And then if you achieve five minutes try do 10 minutes and then perhaps see if you could not check your phone until you have had your morning cup of tea or coffee and you'll be surprised that how much that helps both your mental health as well as your physiological sleep health.

Reflections from Deepak Jayaraman

DJ: This is your host Deepak Jayaraman here. This reminds of something that came up in my chat with Rich Fernandez (RF), CEO of Search Inside Yourself Leadership Institute, an initiative that started as a Leadership Development program in Google but now is set up as an independent organization that helps individuals and companies build more mindfulness in their leaders.

RF: "What I would say is ritualize it and routinize it so make it a ritual or routine so personally for me it's the first thing I do when I wake up, I latterly get up from beds, splash water on my face and I go down stair to my office and then I sit in the morning. This is early morning before the sun is up, I mean early riser and before my family is awake, before I check my email or open up the laptop or look at my phone or anything it's the first thing I do and then second thing I do is I brush my teeth."

DJ: A related point came up in my chat with James Clear (JC) – Author of Atomic Habits. He speaks about the power of a gateway habit for us to get started on something.

JC: "So, the two-minute rule says take whatever habit you are trying to build and scale it down to something that takes two minutes or less to do. So, read 40 books a year becomes read one page or do yoga 4 days a week becomes take out my yoga mat and sometimes when I say that people resist a little bit because you are like okay, I know the real goal isn't just to take my yoga mat out like I know I actually want to do the workout. So, if it's this mental trick and I know it's a trick like why would I fall for it. Then if you feel that way, I understand that but I would suggest for the first day or the first week actually force yourself to stop after two minutes. So, I tell this story of a reader named Mitch and I mentioned this in the book and he ended up losing a lot of weight, 100 pounds, so 40 kilograms or something like that and when he went to the gym for the first time he wasn't allowed to stay for longer than 5 minutes. So, he would show up at the gym, work out for... do half an exercise, get back in the car, drive home and it sounds silly, right, it sounds ridiculous because you are like this is not going to get the guy the results that he wants but what you realize if you step back is that he was mastering the art of showing up, he was becoming the type of person that went to the gym 4 days a week even if it was only for 5 minutes. And this I think is a much deeper truth about habits that's often overlooked which is a habit must be established before it can be improved, right, you have to make it the standard in your life, make it the new normal before you can worry about optimizing it or expanding it from there"

DJ: It is worth thinking about the small gateway habit you can set up for yourself to get started on the way you relate to the electronic devices. Let's get back to the chat with Matthew Walker

DJ: And just maybe last question as we wrap up, a very, very micro and a tactical question, but for people that... you know, I've had these situations as well where you are in bed, you are tossing around and you know you need to sleep but you are not getting sleep and you wonder if you should just wake up and do something else given that you are awake anyway. Couple of questions here. One is any tactical things people can do to drift into sleep and second is, is there something around get up, do something else and come back and sleep when you are sort of tossing around without adequate sleep.

MW: So, I think three things here that are relevant. Firstly, try not to get too anxious. Now after this podcast and hearing all of the marked deleterious health consequences that come from lack of sleep that's easier said than done but I think one of the problems with my message and my communication with the public is that people can sometimes get even more anxious and can make their sleep worse and I'd really like to try and suggest that people not do that. Try not to have a retrospective view what is gone has gone and let's sort of be more prospective and think about what can we do even if you've had a bad night of sleep last night. What can we do tomorrow night to

make that sleep better and implement behavioral change for the long-term, that's the first point? But more acutely in that moment it to come back to your question the first thing that people can try is actually meditation? It's one of the things that has been researched and seems to have a really quite beneficial effect on people struggling with insomnia. And part of the reason is because when you are awake and you are starting to become anxious the fight or flight branch of your nervous system kicks into high gear and the brain as a consequence starts to ruminate or catastrophize and you have that rolodex of anxiety and then downstairs in the body you release stress chemicals such as adrenaline and your heart starts to race and it's very difficult for you to fall asleep in that physiological state. But meditation helps essentially take your mind off itself. So, you stop ruminating and worrying and it also helps with resting the nervous system and taking you out of that fight or flight state and then you can start to fall asleep more easily, that's the second suggestion. The third however is that if you've been awake and none of this is working and you've been awake for maybe 20 or 25 minutes the advice is don't stay in bed, actually get up and go and do something else and only return to bed when you are sleepy and there's no time limit. And the reason is the following: your brain is an incredibly associative device and if you lie in bed awake your brain starts to learn over time that this thing called your bed is about being awake not about being asleep and you need to break that association and you should only return to bed as I said when sleepy and that way your brain will gradually over time relearn the association that your bed is this place of sound and secure sleep. And so, the analogy here would be you would never sit at the dinner table waiting to get hungry. So why would you lie in bed waiting to get sleepy and the answer is you shouldn't, you should get out after a certain time period and just go back when you are sleepy.

DJ: Lovely on that note Matt thank you so much for making the time. Really, really insightful on pretty much something that governs 33% of our lives. So, thank you for making the time.

MW: You are so very welcome and thank you for having me on and thank you for giving me the chance to communicate the importance of sleep to the public. I think, I can only do so much by myself. I need wonderful outlets such as yourself and your podcast to be able to communicate. So, I feel very privileged and thank you for the opportunity to offer this message of sleep to the public.

DJ: Thank you so much, Matt.

MW: Okay, take care, goodbye.

Reflections from Deepak Jayaraman

DJ: I hope you found the conversation purposeful.

I find that a lot of us grow up with the narrative of conquering sleep as a victory of will-power and mind over the body. This element of winning over sleep is often celebrated if I recount my days at IITM or IIMA or in Management Consulting. And given the lack of attributability and delayed feedback loops where it might take years or decades for us to realize what we have done, it can feel like a false victory in the short term. A couple of my friends from my peer cohort who are in their early 40s are dealing with life-threatening conditions as we speak. I know that they led intense, stressful and sleep deprived lives. Now I don't want to attribute causality with limited context. But when these things get diagnosed, no one attributes it back to the sleep deprivation per se. After talking to Matthew, I am more convinced that there is no running away from the deleterious consequences of sleep. And if we link it back to Lynda Gratton's work and her insights on the podcast about a lot of us living upto a 100, early 40s is not even the halfway mark.

The other thing is that in the leadership and transition advisory work I do, I am beginning to realize that good leadership is as much or more about whom you are being and how you show up and as about what you are doing. Effectiveness sometimes trumps efficiency when you are at senior levels. After reading Matt's book and speaking to him, I am more convinced about the link between sleep deprivation and thoughtfulness, presence, listening, empathy and other related aspects which are related to effectiveness.

I realized that I was really trading off sleep and pouring that time into long-distance running and that was beginning to show on my temperament and my effectiveness. Now, I am trying to bring sleep back into the equation in my life. I hope you will see it more and more as a non-negotiable than treat it as a balancing figure.

Just a couple of requests before we wrap up. Do take a moment to rate and review the show on Apple Podcast or any other platform you use to consume the content. It will help others discover the podcast.

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To know more about the Advisory work I do, please visit the About the Host section at playtopotential.com. Look forward to having you tune into one of the subsequent conversations at the Play to Potential podcast. Bye now.

End of transcription

Nugget from Matt Dixon that is referenced: [Rest, Sleep and recharge](#).

Nugget from Vishy Anand that is referenced: [Understanding the Processor inside](#).

Nugget from Rich Fernandez that is referenced: [Developing the meditation habit](#).

Nugget from James Clear that is referenced: [2 minute rule - the gateway habit](#).

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Matthew Walker - Nuggets

- 55.00 Matthew Walker - The Full Conversation
- 55.01 Matthew Walker - Sleep - The Swiss army knife of wellness
- 55.02 Matthew Walker - Morning Larks and Night Owls - a hard wiring
- 55.03 Matthew Walker - Dealing effectively with Jet-lag

- 55.04 Matthew Walker - How much sleep do we REALLY need?
- 55.05 Matthew Walker - REM and Non-REM sleep and criticality of each
- 55.06 Matthew Walker - Sleep, Music and the Beatles
- 55.07 Matthew Walker - Deleterious impact of Devices on sleep
- 55.08 Matthew Walker - Getting back to sleep when wide awake

About Deepak Jayaraman

Deepak seeks to unlock human potential of senior executive's / leadership teams by working with them as an Executive Coach / Sounding Board / Transition Advisor. You can know more about his work [here](#).

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