

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

Hey, what's going on ladies and gentlemen, huh?

This podcast is a fucking doozy. We got a good one today. We had a great one yesterday, but this is another great one

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And now you can even buy and sell Bitcoin with the cash app instantly

Have you ever been curious about Bitcoin?

Most people who read about it in the news really don't know where to begin like what what is this shit?

How do I do this? Is it worth it? How much is it 9,000? I'm not spending \$9,000 on well

You don't have to the beautiful thing about the cash app. You could you don't have to buy an entire Bitcoin, which is what is it today, Jamie?

9500 today it was 8500 a couple of days ago

So you can buy as little as a dollar with the cash app and you can cash out

Directly to your bank account at any time or you can keep your funds in the app

So say if you bought one at 8,500 and then today it's 9,500 or eight

It was 8,000 the other day, right say if you bought it 8,000 and then today it's 9,500. You're like fuck it

I made 1500 bucks. I'm out

You'd have made 1500 bucks and not that long right like a week

I don't I'm not saying you should do that but what I am saying is the cash app is a fucking awesome way to do that

And it's a great way again to send and receive money with friends and family and

When you download the cash app for free in the app store or the Google Play Store

All you have to do is type in the code word Joe Rogan

You will get \$5 and \$5 will go to our good friend Justin Renz fight for the forgotten charity

And we're very happy to announce that through the cash app. We have already raised thousands of dollars to help build wells for the

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Last but not least. We're brought to you my mother fucking zipper cruder
Dum dum dum every business needs great people ladies and gentlemen. Are you hiring well?
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Zipper cruder the smartest way to hire
All right
My guest today is a sleep doctor and I said at the beginning of this podcast. This is a fucking good
one
This is a this one. I knew about the importance of sleep. I knew it was huge, but I
Know way more now and I'm stunned. I mean this is a this is a I'm gonna shut the fuck up and
introduce our guest doctor
Matthew Walker
The Joe Rogan experience
And we're live
What's going on? Did you sleep well last night? I did I didn't sleep too badly
I mean hotels are a tough thing
And we actually know the science that
One half of your brain will actually not sleep as deeply than the other when you're sleeping in a an
unusual room
Like a hotel room. Really? That's what fucks me up because what I'm on the road, you know
I'll do three different hotels in a week because I'll do like a Thursday Friday Saturday like with gigs
And then by the time Sunday rolls around. I'm a mess in rough shape. Yeah, is that what it is? Yeah
And it's a you know, it's a threat detection thing
I mean if you look at other species they can do this much more impressively than we can so

Dolphins or any sort of c-dwelling mammal can actually sleep with half a brain
So one half of that brain goes into deep sleep. The other half is wide awake
That's how people the DMV do it those people that work at the Department of Motor Vehicles
They're there they work
Half asleep. You ever meet him? I haven't no just teasing you
DMV listening going fuck you man next time you come in to get your license renewed
There's my next NIH grant. I think looking at the DMV and sleep, but yeah TSA workers same thing
Same same type of human that I've come across. Yeah
Them too. I'm just kidding fuckers relax
So when you're in a hotel room, what is happening that your half your brain is not really sleeping?
Yeah, so there's different stages of sleep. There are two principle types
One is non-repeat eye movement sleep or non REM sleep. The other is REM sleep
Which is also known as dream sleep, right and non-repeat eye movement sleep is further divided into
four separate stages
Which are unimaginatively called stages one through four
We're a creative bunch as it is true
But I think it's also our low IQ, but it's the deep stages of sleep three and four of that non-repeat eye
movement
That's where a lot of sort of body replenishment takes place great for the cardio vascular system
Metabolism all of those good things, but that's the deep sleep that one half of your brain will resist
going into
When you're sleeping in a foreign environment, so it stays in this kind of lighter stage almost like a
threat detection system
And you can imagine why you know, it's an unusual context evolutionarily
It would make a lot of sense to just have that sort of on guard one half of the brain
That makes so much sense and that that really for me
It fills in the blanks of like why even if I get you know, seven eight hour sleep on the road
I'm still kind of just out of it. Yeah, and that's in fact probably one of the I think the most impressive
parts of
New research on sleep. It's not just about quantity
It's also about quality and quality can be as detrimental if you don't get it as a reduction in total
quality
I mean both are essential, but I think it speaks exactly to your point
You just don't feel like it's a refreshing sort of deep sleep. Yeah, it feels totally different
It just feels like I guess I would say it feels like half asleep. Yeah, I mean, it's really kind of how it
does feel
Yeah, one of the things that I noticed I did this thing with my friends called sober October where we
Didn't smoke any pot or do any no drinking at all nothing for a month and when I did it
one of the things I found was that after about I don't know how many days but it was
Noticable that I would have these incredibly vivid dreams and then I had read that marijuana
Does something to suppress?
Heavy REM sleep like what what it what is happening there?
Yeah, so both of those chemicals both of which are used as a sleep aid alcohol and marijuana are
actually very good at blocking your dream

Sleep your rapid eye movement sleep. And so what happens is that the brain is quite clever in this regard
It builds up a clock counter of how much dream sleep you should have had but have not been getting
And it starts to develop this increasing appetite and hunger for dream sleep
So that finally when the alcohol actually gets out of your system sober October
Love the name
That's all of a sudden where you get what's called a REM sleep rebound effect
Where you not only get the normal amount of REM sleep that you would normally have you get that
plus the brain tries to get back
Some of that dream sleep that it's been losing over the past maybe 11 11 months
So you get try 20 years. Yeah, I didn't want to make any assumptions
So so you get this REM sleep rebounded effect and that's where you have these really intense dream
sleep
Situations. Yeah, the same reason that people they'll say like I had a bit too much to drink last night
Maybe it was a Friday or Saturday. They sleep in late. They say I just had these crazy dreams
What happens there is a kind of an acute version where the alcohol is swirling around in your system
And after about six hours, you're liver and your kidneys have finally excreted all of the alcohol
And your brain has been deprived of dream sleep for that first six hours
So then it feasts in the last couple of hours and that's why you have these really bizarre dreams
After you've been drinking a little bit too much. Oh, wow. So what is happening with marijuana
though specifically?
Do you know? Yeah, so marijuana
It it does help people well help it it puts people to sleep quicker
Although I think the question is whether it's really naturalistic sleep or not that they go into
certainly with alcohol. It's not
That nightcap idea is is a misnomer
Alcohol will actually well, it's a form of drugs that we call the sedatives and sedation is not sleep
It's very different, but we often mistake one for the other
Marijuana it seems to act in a physiologically very different way. It doesn't target the same receptors
in the brain
So it's unclear whether this speed with which you fall asleep after
Having a session with marijuana is actually natural sleep. Let's assume it is the problem
However, is that it then will start to disrupt REM sleep. It will start to block the process
We think perhaps at the level of the brain stem
Which is where these two types of sleep non-REM and REM sleep will actually get sort of worked out
That's where marijuana may actually impact dream sleep and shut it down and block it
Have there been any studies on chronic marijuana smokers like those dawn-to-dust type characters
that just are constantly high
Like and what happens to their brain from not because they must never hit REM sleep
Yeah, so people haven't looked at marijuana. They have looked at alcohol though. Mm-hmm exactly
that so what happens is if you look at
alcoholics
They will have something often when they come off alcohol something called delirium trends
Which is where sort of DT?

There what happens is that the alcohol has been blocking dream sleep for so long and the pressure for dream sleep is built up so

Powerfully in the brain. It actually just spills over into wakefulness

And so the brain just says look, okay, if I'm not going to get this dream sleep whilst you're asleep I'm just going to take it whilst you're awake. And so you start to essentially dream while you're awake

It's this sort of collision of two states of consciousness. So you get delirium

Wow

I always thought the DT's were detoxing other when someone said someone's going through the DT's okay

Yeah, so it's delirium tremor. Yeah delirium tremors. Yeah, I'm sort of hmm

So what like what is going on with them when this is happening?

So if they are going through this delirium during the day while they're conscious, what what's physiologically happening?

So it's almost as though the veil of REM sleep gets pulled over the waking brain as it were

So you have this mixed state of consciousness that you can pick up with brainwave recordings

And it just tells me I mean in some ways how

Necessary sleep must be if that's the lengths that the brain will go to to get that which it's been missing

Yeah, just shows you why you know it took mother nature

3.6 million years to put this thing called an eight-hour sleep necessity in place

And we've come along and within the space of a hundred years. We've lopped off almost 20% of that if you look at the data

Wow, really? Yeah

And so many people take pride in that too. I don't need eight-hour sleep. I got three

I'm good ready to go kick ass and dominate the world. Yeah. Yeah, it's the sort of like sleep machismo

Attitude there is a lot of that right. Yeah, I mean baby. I like sleep

Well, I mean you'd be glad to know that then you know men who sleep five to six hours a night will have a level of testosterone

Which is that of someone ten years their senior?

Hmm, so a lack of sleep will age you by a decade in terms of that critical aspect of wellness virility

You know muscle strength ten years. That's incredible

Wow, we had a woman on the podcast her name is Courtney DeWalter and she's a ultra marathon runner and she ran

And she's a real freak. I mean like an incredible athlete. She ran this thing called the Moab 240 it's

238 miles through the the Moab mountains and

She did it 22 miles

Faster than the second-place man. So she won it by like a whopping

I think it was 10 hours 10 hours ahead of the second-place winner and she slept one minute

One minute the entire time she tried to lie this is over three days

I think it took her less than three days. I think it took her like two days

She slept for one minute during the entire time but she tried to lie down

She she said she laid down for a few minutes

But she couldn't fall asleep and then she wound up actually just taking one minute and going to sleep

And she said that one minute was like one of the most intense

Restful minutes after that minute is over. She was woken up because she told her partner a running partner to wake her up at

A minute and she's like how long did you let me sleep and he was like one minute. She's like wow I feel great. Let's go but she was saying that she hallucinates and that she starts seeing like rabbits or talking to her and she

Sees things that aren't there and like mystical beings and stuff. She said it's really freaky But she knows that she's hallucinating because she's done this she's done a bunch of ultra marathons

So she just keeps going she just keeps going and she's like saying hi to rabbits. They're talking to her and stuff

Yeah, I mean and you see these reports, too

I mean there's there's a race of cycling race of things bike across America

You just got to go from east coast to west coast in a shorter time as possible and that's exactly what they do, too

It's all about managing how little sleep that you get and they will explain these wild hallucinogenic experiences on the bike

If you look at world records for people who have tried to sort of go without sleep and one of the most famous examples is a radio disc jockey called Peter Tripp back in the It was back in the sort of 60s 50s 60s and

He tried to break the world record. He went eight days straight

On and yeah, and no sleep. Yeah, he was broadcasting from Times Square and he would do a show there and

You know the scientists the psychiatrist said look, this is a very bad idea based on what we know Please don't do it and he said I'm gonna do it anyway

And then the scientists being the good scientists they said great

Do you mind if we study you could it be a great paper to sort of you know to write up and they tracked him and by day three

He was having florid delusions and hallucinations. He was seeing spiders in his shoes

He became desperately paranoid such as to think that people were trying to poison him in his food

One point it was the middle of winter some guys came in with sort of these beers, New York Wintertime came with these big jackets

He thought it was the secret service coming to get him and he ran out into the road

You know these are strange things

But so we know that that same profile of just starting to become you know psychotic

Which is essentially what happens naturally when you dream that you are I mean all of us here

You know as long as we slept last night became flagrantly psychotic when we went into dream sleep Because you start to see things which are not there so you hallucinate you believe things that couldn't possibly be true

So you're delusional you get confused about time place in person. So you're suffering from disorientation

You have wildly fluctuating emotions something that psychiatrists call being sort of affectively labile
And then how wonderful we both woke up this morning and we forgot most if not all of that dream
experience

So we're suffering from amnesia

What is happening when you're having these

These hallucinogenic experiences like what are the chemicals that are causing it? Do we know we
do?

Yeah, and we so we've done some of these studies where we put people into brain scanners

We let them fall asleep and then we see what happens within the brain which parts of the brain are
switching on which parts of the brain are switching off

When you go into REM sleep firstly some parts of your brain become
30% more active than when you're awake

So it's you know, we think of sleep as this sort of you know static passive state where everything just
kind of drops down in terms of activity

quite the contrary

But what's also interesting is that not all parts of the brain ramp up when you go into REM sleep

Visual parts of the brain increase motor parts of the brain increase emotional centers and memory
centers

They all increase

But the part of the brain that bucks the trend and goes in the opposite direction is the part of the
brain that we call the prefrontal cortex

This sort of CEO of the brain. That's very good at rational logical thinking that parts of the part of
the brain gets shut off

So it's almost as though, you know

The the prison guards are gone and everyone runs a mark because there's no controller

You know in place and so we know sort of from the patterns of brain activity

Why you become sort of so visual you see things why you have motor kinesthetic activity why things
feel it's so emotional

But also why things seem utterly illogical and irrational because your frontal brain the thing that
makes us most human

You can say goodbye to that for the rest of dream sleep. So there's no driver. So there's no driver.

Yeah now

Why do we forget?

Why do we forget those dreams because I I wake up and I am sure that I'm gonna remember these
dreams

And sometimes I do sometimes I remember and I don't think I really remember them. I think what it
is is very much like

You ever hear someone talk about a memory from a long time ago

I used to think that people actually remembered things from a long time ago

But now what I think is they remember remembering it

I think they remember talking about it

They remember how they described it and then they sort of remember that and repeat it and in their
mind convince themselves

That that's what happened because I've heard people

Tell stories about the past and they're they vary wildly from what is absolutely true like
Like factual you could check it. You could research it. You know what the facts are but in their mind
It's very different and I think that it's entirely possible that what people are doing is remembering
the
Recollection of these memories and how they told them and then also sort of people elaborate things
to make themselves look better
Or make the situation look more dramatic
But with dreams that doesn't make any sense
So I was I'm always trying to figure out like what is it about a dream where sometimes I can
remember the dream and
And sometimes it's so vivid when I wake up. I'm like, holy shit. That was crazy
What a dream and then I forget it 20 minutes later, right? What is that?
So firstly, I mean one theory of dreaming is that it's just simply a
Reconstruction when you wake up so you have these fragments of activity and what your cortex does
when it wakes up is what your cortex is designed
To do when you're awake normally which is try to package everything and make a good story make
logical fit out of the world
That's one theory. I don't believe that though
Your your point is a really interesting one. Do I
Remember my dreams
That doesn't necessarily mean I forget my dreams and what I mean by that is
Accessibility versus availability. So if you haven't had that experience where you've woken up
You thought I was definitely dreaming. I can't quite grab it, you know, it just and it's gone
Mm-hmm, and then two days later. You're in the shower. You sort of washing yourself. You see a
bottle of shampoo
You see the label and it just triggers the unlocking of that dream memory and it sort of comes
flooding back or
Someone says something to you think oh, that was the dream. Yeah, what that tells me as a brain
scientist is that the memory is there
It's preserved. It's available
But what happens when most of the time when we wake up is that we lose the IP address to the
memory
So it's present but it's not consciously accessible available not accessible if that's true
What it means is that this type of information we know can have
Non-conscious impacts on our behavior all the time. It's great brain science about this non-conscious
memory processing
It's possible that we store every one of our dreams. We just don't
Consciously have accessibility to it, but nevertheless it's changing how we behave how we feel each
and every day
No evidence for it. It's a theory. I'm still wanting to test
But that's possible too and it's only that anecdote where I can think I just don't remember the dream
I've forgotten it. I don't think that may be true. It may still be there
I just need to find the keys to sort of access that memory
What's stunning to me is how quickly the dream evaporates the memory of the dream

We're in relation to an actual experience like if we went outside and we saw
Some lady walk up to some guy and kick him in the balls
we'd be like whoa
We would remember that and that you need to be able to tell your friends like yeah
Some lady just randomly walked up to some guy and kicked him the balls like we would remember that
and you would remember it 10 minutes later
You'd remember it an hour. You'd remember it. Yes next day. You'd be telling your friends. Yes
Just walked right up to him. I remember it like it was yesterday because it was right. Yeah, but a
dream
Can be 10 minutes ago and you wake up and dude
It was King Kong and he was he was swinging from my ceiling and somehow another he fit in the
room
But the room got bigger and you have these crazy dreams and then 20 minutes later. You forget all
of it
Like what is happening there? So one
One current explanation is that the chemistry of the brain when you go into dream sleep is radically
different
Yeah, so one of the chemicals called noradrenaline in the brain which downstairs in the body its
sister chemical is called adrenaline
Noradrenaline actually plummets to the lowest levels. It's actually it's a stress chemical in the brain
It's one of them that gets shut off during dream sleep
Which is even if you're panicking like what if you fall off a building well
What's interesting is that that chemical is low whilst you're having that dream, but when you wake
up
From those and some people often wake up. That's when you have the spike of noradrenaline. So it's
still low when you're in dream sleep
But there's another chemical that goes in the opposite direction. It's called acetyl choline
It's the chemical that is actually and altered in Alzheimer's disease and
These two chemicals will change essentially the input output direction of information flow into the
memory centers of the brain
So that makes sense because people take that as a new tropic. They do. Yeah, that's actually an
alpha brain
When when you take that it's there's been clinically proven to enhance memory
Especially verbal memory and recollection of words and things like that. That's right. So that's
happening while you're sleeping
Well, so you're in REM sleep. Yeah
But what may be happening are current models if you sort of build these neural models to sort of
mimic dreaming
It may be that during dreaming it's principally about the outflow of information to generate dreams
and in fact
The chemical profile is oppositional to input which is about saving
so it's about sort of pumping out information rather than committing information and so when you
come out of a dream sleep
You still get this sort of lingering after sort of taste of chemistry as it were in the brain

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That means that the dreaming brain is more programmed to be outputting a narrative and an experience rather than actually committing it to memory, which is the opposite direction. If that makes sense. It does make sense. How aware are you of dimethyltryptamine? I'm somewhat aware of it scientifically not not not experientially yeah, yeah

One of the things about psychedelic experiences with dimethyltryptamine first of all, it's endogenous. You know your brain produces it your lungs your liver produce it but when you have a DMT experience after it's over the memory fades very rapidly and it seems just like a dream in that regard where while you while you're having it

What's bizarre is that you're having it while you're awake?

Yeah, and then after you have it within 10 20 minutes

It is just like a dream that you can't remember

it's very I remember like little flashes of experiences that I've had and there's been a lot of speculation that that's one of the things that you're experiencing while you're in heavy REM sleep and that could be responsible for the crazy visuals that you have that seems so vivid I mean there's been times where I've had dreams where I was a hundred percent convinced that I was awake

Yeah, and then something happened like I do this thing sometimes where I'll and if I do it consciously a lot

I think I saw in one of those wacky movies like what the bleep to me

No, I think I saw it in that when you walk up to a door as you're walking through the door you knock on the side of the door and go am I awake?

Nope, not awake or am I asleep brother? Yeah. No, I'm not asleep

Because I'm not gonna door. Well, I did that in my hand was like going right through the wall

I went oh, I'm sleeping

And then I woke up and I was like whoo

But the feeling that I had while I was in that dream. It was so vivid

I mean everything seemed so real like what could possibly be causing me to construct this artificial reality in my mind that at the moment at least was indistinguishable from the reality that I experienced right now, and I'm assuming because I just knocked on this table that I'm awake

Yeah, I really hope I'm not just a

Yeah, a fictive character in your dreams. Maybe we're sharing a dream. Yeah, very inception like possible

Not based on the science so far

But I think you know what you're speaking about there really is almost

Why would why would mother nature create this thing called the dream experience?

You know, what would be the function of essentially every night going into what sums up to be about two total hours of

Virtual reality experience and testing

One possibility which is deeply unsatisfying is that it's just a byproduct

It's just epi-phenomenal that when your brain goes into this thing called REM sleep and all of the different patterns of brain activity that we described
An off-shoot is this thing that we call dreaming in the same way that a light bulb the reason that we construct the apparatus
That's a light bulb is to produce light
But when you produce light in that way you also produce heat
It was never the function of the light bulb
It's just what happens when you produce light in that way
Maybe dreaming is just sort of the heat of REM sleep and REM sleep serves lots of other functions, but
Wow, that doesn't feel to me right though. Hmm. Why?
Well, firstly, I think it's probably
Additionally metabolically demanding to have dreams in addition to this thing called REM sleep and whenever mother nature burns calories
It's usually for a reason because they're so precious. Hmm. That's a good point. That makes sense, too
Yeah, I read some article about the lack of REM sleep with marijuana users
And it was trying to say and it made me super skeptical even as a pot smoker
It was trying to say that it's not bad for you because what it's essentially doing is bypassing the REM sleep and going directly
Into the deep sleep and then it's helping you in that regard. Does that make sense to you?
It doesn't make sense as a neuroscientist. He says nay, you fucking stoners
So deeply unpopular, you know, I'm telling you know, you know, you know, don't smoke pot stay away from alcohol
You know apart from a general personality, which is dislikeable. This doesn't help me
You're definitely not dislikeable, but I don't think you're saying anything wrong. I think I think marijuana like
Most things is best used in moderation and one thing that I got out of the sober October thing
Wasn't just that it's fascinating to see the dreams like just ramp up and get crazy
But also that when you take a few days off and then smoke a little pot the pot actually has more of an impact in fact
one of my
Favorite psychedelic authors and lecturers the late great Terence McKenna his advice was to
Not do marijuana for long periods of time and then do as much as you could stand
And he was a you know a real psychedelic adventure and his thought was that to really get the benefit out of marijuana
It's not something that should be used daily and recreationally
Recreationally it should be used as a psychedelic sacrament not should be because he actually did smoke pot pretty rarely
Pretty regularly rather, but his thought was if you really want to get the full impact of it
You shouldn't be accustomed to it and when you're accustomed to it you build up a tolerance to it and doesn't have the same impact like
It's that thing. I don't know if you've ever been around pot smokers
But when someone doesn't smoke pot, and then they get talked into smoking pot with some pot

smokers. It's always a terrible idea
You got a bunch of people with super high tolerances and some poor person that doesn't have any tolerance
And they just they just get taken down a tornado
rabbit hole journey into their child
So paranoid and thinking about everything and freaking out all these sensations that they're just never experienced before but
Uh, the the idea that you could bypass
Rem sleep and go straight into the deep sleep. That doesn't make any sense to you
No, it doesn't and what we've learned over the past sort of 30 or 40 years is all stages of sleep are important
Hmm, you know when you think about sleep as a state it makes no sense
You know firstly you're vulnerable to predation. You're not right finding food. You're not finding a mate
You're not reproducing. You're not caring for your young on any one of those grounds sleep should be strongly selected against as a
Collective, I mean it's it's almost idiotic if sleep does not serve an absolutely vital function
It is the biggest mistake that the evolutionary process ever made
hmm and
That counts for all of the stages of sleep too
Again mother nature wouldn't waste time putting you into a state that wasn't necessary
And what we've discovered is that all of those different stages of sleep that we spoke about all have unique and separate functions
So you can't shortchange any one of them
You know you don't need to bias towards one and try and sort of you know placate the other
You know evolution has taken a long time to get the blueprint accurately
Correct for each physiological individual. I wouldn't play around with it and think that you're smarter than that process
We are I when I read it. I felt like it was a justification for smoking a lot of pot
Like man, you're just getting deeper sleep, man. You don't need that REM sleep. You're passing it up, man
You just go right into the deep heavy necessary sleep. Oh contra contraire potheds
So what is happening to the body during REM sleep? That's so critical that one particular aspect of sleep
so
firstly in the body the
Your cardiovascular system seems to do something quite strange
It goes through periods of dramatic acceleration and then dramatic deceleration during REM sleep.
Yeah during REM sleep quite unpredictable, too
We also know that during REM sleep your brain
Paralyzes your body so that your mind can dream safely
So wow, I mean and that makes a lot of you know
Sense if you're thinking that you're you know this world champion mixed martial arts person
And it's in the middle of the night. You're not it's dark. You can't see you're not perceiving your

outside world

You're going to get popped out of the gene pool very quickly if you start acting out that experience
So there is a barrier in place that mother nature locks you down in

Incarceration muscling castle or incarceration. That's crazy that you say that because when I was
fighting when I was young

I would wake up throwing kicks. I would kick in the middle of the night

I would do it all the time. I'd be sleeping and I just I would move and throw a kick in the middle of
the night

Yeah, I remember it waking me up like what the fuck is wrong with me

And then I try to go back to sleep again, but I was obviously

Dreaming about competing. Do you actually remember that so when you woke up?

Did you remember dreaming at that point or did you just have no recollection of anything going on
at that point?

I believe I had a recollection. It's been a long time, but I believe I had a recollection

Like I would be like in bed with my girlfriend

I'd wake her up too, you know because I just don't like I wouldn't throw a full kick

But my body would move like I was going to you know like I would turn my hips and my leg would
extend

It was my body was it was I attributed to the the idea that it's so extreme like the activity of
fighting is so extreme that

My my

Brain had kind of like hypercharged itself to compete at this very high level, you know and

That this was like so unusual

That it was it was almost that red alert all the time and maybe even trying to work out patterns

Yeah while I was sleeping that's exactly the evidence that we have now

So for things like motor skills or even rats running around a maze where they will learn specific sort
of you know

navigational pathways and even skilled motor movements what you can do is you can place these

Electrodes into centers of the of the brain we work in my sleep center works on humans

But other people have done these studies in rats and you implant electrodes and you measure the
brain cells firing as the rat is

Running around the maze and let's say that you can sort of play little tones for each brain cell

So they're running around the maze and and you can listen to the brain cells learning the signature
of that maze

So it goes buh

What was amazing is that when you let those rats sleep, but you keep listening to the brain what you
hear is

As if the brain is actually in fact it is it's replaying the exact same

Sequence the memory sequence that it was learning whilst it was awake. It's replaying, but at a
speed that is 20 times faster

Whoa, so you know now we start to get into this inception world

And I don't mean to because the scientific data it really were not sort of in that territory

But you know that notion of time compression and time dilation that Christopher Nolan played so
well within that movie

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

We can see that at the level of brain cell firing in rats as they're learning these mazes
And it comes back to what you're saying, which is that
The better that they rehearse those skilled memories when you wake them up and test them the next day
That predicts how much better they are in terms of their performance
So it's not just that you learn you go to sleep and you replay and you hit the save button on these new memories
You actually sculpt out those memories and you improve them and we've done studies with motor skill learning critical for athletic performance and
And
Practice does not make perfect
Practice with a night of sleep is what makes perfect because you come back the next day and you're 20 to 30 percent better in terms of your
Skilled performance than where you were at the end of your practice session the day before
Wow
Wow, I mean sleep is the greatest legal performance enhancing drug that most people are probably neglecting in sport
Wow, and not just for your physical performance, but actually skill learning. That's right skill learning memory
And then also, you know downstairs in the body all of the recuperative benefits
And you can flip the coin by the way if you're getting six hours of sleep or less
Your time to physical exhaustion drops by up to 30%
So you could spend all of your time training for a 10-round fight
Perfect condition, but then I put you on six hours of sleep the night before you're now going to be physically exhausted by round 7
Rather than round 10. Wow
But well, and that's a really hard thing for fighters because they have a very difficult time sleeping the night before a big fight
Yeah, it's very very difficult because it's a variety and yeah, and I would imagine
It's got to be I
Mean it's probably going to take a huge toll on this probably be a huge benefit if they can somehow or another
Bypass all that and just relax and learn how to relax and learn how to actually sleep
I mean, it's I think you know, it's one of we're constantly trying to hack the physiological system
Especially in elite sports these days because you know small fractions of a percent of gain can make a huge difference
Well, that sounds like 30% that's a monster huge. Yeah
I mean your time to sort of not just physical exhaustion
But you know the lactic acid builds up quicker the less and less that you sleep your ability of the lungs to actually
Expire carbon dioxide and inhale oxygen decreases the less sleep that you have that makes so much sense
What because when I was doing I was doing fear factor and I was doing stand-up comedy
And I was also doing another television show and I was doing jiu-jitsu. I was I never got eight hour

sleep

I'm mostly got four usually got four and my cardio always sucked

Yeah, it was terrible and I'd be like why is my cardio sucker work out so much like that was probably what it was

Yeah, it's a huge part

Now how many hours of sleep should you get?

somewhere between

Excuse me somewhere between seven to nine hours

Once you get below seven hours of sleep. We can measure objective impairments in your brain and your body

I can show that in the last two days and I can show it because I basically did the same workout two days in a row

The day before I had flown back from Boston very tired

Hanging out with my kids all day went to get some sleep

but then I had to do some stuff at like two o'clock in the morning and

I just never really got good sleep and then my youngest daughter got up at five. She was crying and then

Eventually my alarm went off at eight

So my my sleep was like three four hours

It was all screwy and the night before it was even less because I had flown and I had to get up early for the flight

And I tried to sleep on the plane and I went running and I felt like dog shit

Yeah, and then during the day. I felt like dog shit. I just didn't have like as I was running

I just didn't have any extra gear. I was like, uh, I did it. I pushed through it

But then it was over. I was like, oh

Well last night last night I slept seven and a half hours woke up today lifted weights ran

Ran felt great feel great now like two days and difference. I mean, that's the difference the difference is one day

I got real sleep one day. I didn't I did the exact same thing even more today

I did I lifted weights today as well and I just feel great

So I could see I could see it physiologically in the the difference in my performance in 24 hours

Yeah, and that's noticeable. I mean we see that too, you know, you're

Your peak muscle strength your physical vertical jump height and your peak running speed

All of those things correlate with sleep the less that you have the worst those outcomes are

Probably one of the most surprising factors there was injury risk when they've looked at athletes across a season

And they've just plotted, you know, how frequently will they get injured and then they surveyed them

You know, how much sleep were you getting and they bucketed them into sort of people who are getting nine hours seven hours six five four

And it's a perfect linear relationship. The less sleep that you have

Hired your injury risk. So people getting nine hours versus five hours. There was almost a 60 percent increase in

Probability of injury risk during a season. Do you attribute that to?

Exhaustion or do you attribute that to a lack of recovery from the previous night's workout?

Is it a combination of those things? Is it exhaustion causing you to misstep perhaps and like twist an ankle or turn a knee?

Yeah, it's all of those things. I mean even if you look at micro balance if you look at sort of these stability muscles versus, you know

Major muscles those stability muscles also fail when you're not getting sufficient sleep

And I think we often underestimate how critical they are in sport performance

Particularly in terms of combating and placating injury risk too. So if you just get someone on a stability ball, you know

I'm sort of just dose them down with sleep eight hours five hours, you know three hours and just notice how those stability muscles help

You balance just the basic act of balance that deteriorates dramatically

No wonder you're getting more injury risk totally makes sense now as a neuroscientist

What do you attribute when when when people talk about visualization and visualization is a it's a huge factor in improving?

technical skills

specifically martial arts, which is a big fan of obviously

Martial arts when you you visualize people who visualize who sit down and like

Go over their body going through the motions and doing things though those people perform better

They perform better they

They they learn quicker. What do you attribute that to do you think it's the same thing as what's happening when you're sleeping?

Just maybe to a lesser extent. I think it's to a lesser extent

But people have done those studies where they've looked at sort of whether you actually physically practice

let's say on a keyboard just because it's easier to sort of manage in a laboratory versus just imagining

sort of typing out that sequence and

Just the act of physical visualization of sort of imagination of that motor skill

It's it's about 50% as effective as

Physically performing it too and it's 50% as effective what I mean

There is in changing the plastic connections within the brain. Well, so even just visualization, you know passive

Play as it were still can actually cause a rewiring of the brain beneficially

Wow, you know learning techniques specifically martial arts techniques

my good friend Eddie Bravo is a

World-famous jiu-jitsu instructor. He's he's always

Comparing it to tying your shoe and he said do you know how like when you were a little kid and you're trying to figure out

How to tie your shoe? It's an extremely difficult thing to do

You're like, how do I do this and you put that down and you do loops like I'm watching my seven-year-old daughter go through that right now

But now as a grown man when I tie my shoe, I could just be talking you know what?

Oh, yeah, we're gonna go tomorrow and I'll do in it

I don't even know what I did if you tried to ask me to explain how I tie my shoe

I'd be like, how do I tell you like I don't even know how I do it because it just I have it in there
It's it just and the idea with martial arts is you've got to be
All of your techniques have to be automatic someone extends the arm you instantly hook it and go
into the arm bar
You know someone you you have to have these paths like so drilled in that you don't even know
you're doing them until it's over
Yeah, so automaticity is one of the things that sleep actually
Accomplishes, you know I was talking about those 20 to 30 percent benefits in motor skill
performance
So we did some additional studies to actually say well what how it how does sleep do that?
You know were in your skill performance to sleep give you the benefit
So you're right tying a shoelace, you know even driving a car
Would stick, you know at first it's just overwhelming. It's so difficult. It's clutch. It's gas pedal, you
know, it's gear
And now it's just second nature, you know, it's shifted from conscious to automatic from conscious to
non-conscious
If you look at performance that is conscious and not automatic. It's usually very staccato
It's this then it's that then it's that it's not fluid if you heard someone trying to sort of play piano to
begin with
It doesn't sound very fluid, you know as someone who is a maestro. It just flows out of them
So we looked at this with motor skill performance again sort of like keyboard playing musicianship
And you learn and you learn you get better and let's say that you type a sequence
Let's say four one three two four and people learn it
But they have these problem points throughout the sequence they go four one three two four four
one
Three two four as if it's there's a sticking point. It's the same thing with any skilled performance in
in athletics
And it's the brain chunking things up a very long motor sequence gets chunked up into small sort of
digestible bites
It's a good way to begin learning
But it's not a way to create automaticity at some point
What you have to do is stitch all of those things together and it just flows like a sentence like a
sentence
Yeah, like a piano piece like you know a sequence of movements if you've got you know in martial
arts you've got you know
so
What we found was that before sleep you've got these big problem points these gaps in your motor
skill learning
Sleep does not necessarily improve the places where you're already good sleep is intelligent
It goes in finds that problem point to that friction point in your motor skill
It's sort of deficit and it smooths it out. So you come back the next day and now it's just four one
three two four four one three two four
four three it's
Automaticity and it's exactly what you're describing. You know speak to musicians. They'll say I was

playing

I just couldn't get that piece the night before and then I came back the next day and I sat down and I could just play

Sleeps doing its work. I've heard that too with problems and that's why people say sleep on it

Yeah, yeah, you've never been told to stay awake on a problem

Yeah, it's true, right? Yeah, it's sometimes when you're about to go to bed

It's almost overwhelming. You just can't concentrate on anything else

But this problem whatever it is and then you go to sleep and you wake up in the morning like it's all right

Yeah, it's gonna be fun. Yeah, I got it. I know what to do and sleep

So, you know, there's lots of anecdotal evidence of sleep-inspired creativity and now this shifts to one of the benefits of dreaming in fact

It's during dream sleep when we take all of the information that we've previously learned and we start to collide it

With all of the new information that we've learned. It's um, I mean, it's a little bit like group therapy for memories

You know, everyone gets a name badge and you all get to speak to each other

And the brain starts to seek out and test novel connections and new associations

So it's almost like informational alchemy and you wake up the next morning with a revised mind-wide web

That is now capable of divining, you know, incredible solutions to previously impenetrable problems

And lots of anecdotes, you know, Dmitri Mendeleev came up with a periodic table of elements by way of dream-inspired insight

You know talk about a Herculean task take all of the elements in the known universe and figure out a structure as to how they all fit together off

You go his waking brain could not do it. His sleeping brain solved the problem

Whoa

And Einstein by the way, this is great. Einstein was suggested to be a short sleeper and we don't know if that's true

But even if he was he was a habitual napper during the day

I've got some great pictures of him on his workbench

and he used sleep ruthlessly as a tool for creativity

and he would sit at his desk and he would have a sort of pad of paper and a pencil and

He had a chair with arm rests and he would pick up two steel ball bearings and take a metal saucepan

and turn it upside down placed underneath the arm of the chair

And put the two steel ball steel ball bearings in his hand

Then he would rest back and he would start to fall asleep and so he didn't fall too far into sleep

What would happen is at some point his muscle tone would relax. They would release the steel ball bearings

They would crash on the saucepan wake him up, and then he would write down all of the creative ideas that he's had

Isn't that brilliant?

So no wonder yet

You're never told to sort of stay awake on a problem and in every language that I've inquired about today
French Swahili that phrase sleeping on a problem seems to exist
Which must mean that this benefit of dream sleep transcends cultural boundaries
I should note. I think it's important that the French the French translation is much closer to you
You sleep with a problem. We the British you say you sleep on a problem the French you say you sleep with a problem
I think it says so much about the romantic difference between the the British and the French, you know
Yeah, the French trying to fuck everything trying to fuck their problems. I'll lose my British passport for sake. No, but that's okay
Well, I will but I won't either
Think it's just a joke. Um, that's fascinating that Einstein figured that out too that he literally had like a whole routine
And that he would drop this ball and hit it bang and wake up and start writing like
I would love to be in the room watching Einstein do that. I must have been fascinating. Oh, sorry. I said Einstein. It's Edison
My goodness. I'm an idiot Edison. Oh, sorry. That changes everything
That's um, wasn't Edison a thief though. Didn't he steal everything from Tesla?
Uh, I think there's a lot given to be made, uh, but I mean he has a lot to answer for by the way in terms of the way
That we're sleeping, you know, he a lecture. He was the first person to electrify society
Not necessarily create the the libel, but he really, you know gave shifted us from
A point where now we controlled the night in terms of illumination
And we are a dark deprived society in this modern era and that's one of the things that is keeping us awake at night
A lack of darkness. Yeah, not just that but also our inability to see the stars anymore
The the light pollution that we have at night. I think it's I think it's a giant shift in perspective like, uh, have you ever you ever been to a, uh, planetarium or, um, an observatory like one of those, uh,
at night, um, there's a Keck observatory in Hawaii's place
I try to go to uh every year and it's it's
Really stunning because it's very high up
I think the observatory is
It's somewhat it's somewhere more than 9 000 feet above sea level
And then I think you go even further and then they have the telescopes
But you go to visitor center and you go to the visitor center and they have some telescope setup
But it's you actually drive through the clouds
So as you're driving up this mountain, we were bummed out
We're like, oh, it's cloudy. We might not be able to see anything and then you drive through the clouds
And then when you get through the clouds, you're like, holy shit
And you feel like you're on a spaceship flying through space
And this is what our ancestors saw every night when they went to sleep with a clear sky

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They saw all the stars. They saw the full milky way like this
And the way the big island has set up, they use diffused lighting all over the island
Because of the kek observatory
So you don't have the same level of light pollution that you have when you're in a normal city like
Los Angeles
Which is terrible. I mean LA if you look up you see like one or two stars because everything's lit up.
It's crazy bright
That I think that perspective is that's a giant factor in the way human beings look at their
relationship with the universe
But I think that also just the light everywhere constant light everywhere
That's got to be a big factor in why people sleep so little, right? Yeah, we know it is now
I mean these studies have been done, you know, the first part is the external light which is, you
know, street lighting
You know, even if you've got curtains that can still bleed through
Yeah, but then when you come into the home, you know the invasion of light into the home by way of
technology has been a big problem
People looking at their phones before they go to bed. Well, firstly, yeah, I mean the incandescent
light bulb
Sort of was the start of it
And light bulbs can suppress a hormone that's called melatonin
It's the hormone of darkness and it tells your brain when it's dark and when it's time to sleep
But then you add into that screen usage
And they've done studies where for example, um, you know one hour of ipad reading versus just one
hour of reading on a book
You know in dim light
That one hour of ipad reading firstly delayed the release of this critical darkness hormone called
melatonin by about three hours
So if you read on your ipad for an hour here in california
Your melatonin peak is not going to arrive. I mean somewhere in hawaii time. In fact, it's three hours
delayed
Wow, it's 50% less in terms of its peak
And furthermore, you don't get the same amount of REM sleep and when you wake up the next
morning
You don't feel as refreshed or restored by your sleep those studies have been done too. Wow
What should someone do?
Um, if they have a hard time sleeping like say if you're a person who is insomnia
You have a hard time getting getting to bed. You have a hard time staying asleep
When you wake up, you can't go back to bed. Yeah, are there other strategies?
There are I mean, I think for most people there are five things that you can do just
Out the gate to get better sleep regularity is probably the most important thing
I can tell you go to bed at the same time wake up at the same time
No matter whether it's the weekend weekday
regularity is key
We've spoken about light

For example, when you in the last hour before bed try to stay away from screens
But also just switch off half the lights in the house
You would be surprised at how
Soporific that is it really starts to sort of make you feel a bit more drowsy
They've done some great studies where they would take people out, you know into the Rockies
No electric light no electricity whatsoever
And they started to go to bed two hours earlier than their acclaimed natural bedtime
It wasn't just because they didn't have anything necessarily to do
It was that their melatonin was rising, you know two hours earlier. So keep it dark
The third is probably keep it cool
Your brain actually needs to drop its temperature by about two to three degrees Fahrenheit to
initiate sleep
And that's the reason that you will always find it easier to fall asleep in a room. That's too cold than
too hot
I've seen people use cold pads. Have you seen those you sleep on these cold pads? What do you think
of those?
Yeah, I mean the evidence is pretty good that cooling the body actually works. They've um, you know
in the book
I write about a series of studies where they had people in it's almost like a wetsuit
But it has all of these veins running through it
And they could actually perfuse warm or cold water
Into any part of the body hands core of the body feet
And so that you could exquisitely manipulate the temperature of any part of the body
And what they found is that they could effectively cool the body down and it
It instantaneously made people fall asleep faster and it gave them deeper deep non-rem sleep
That's sort of restorative sleep for the body
So and you can even look at studies where people sleep semi-naked
And that also seems to improve their sleep and they get a little bit more deep sleep too
So cold is better
The paradox here though is that you need to warm your feet and your hands to kind of charm the
blood away from your core
Out to the surface and radiate that heat
Really? So you should go to sleep with socks and gloves on?
Yeah, or better still have a hot bath
Um evidence here too, um that I discussed where people say
You know, I get out of a hot bath. I feel nice and toasty and relaxed and that's why I fall asleep. It's
the opposite
When you get into a bath, you get vasodilation
All that you sort of get rosy cheeks red skin all of the blood rushes to the surface you get out of the
bath
And you have this massive thermal dump of heat
That just evacuates from the body your core body temperature plummets and that's why you sleep
better
So you can hack the system very easily

Wow

So your core body temperature plummets and that's what makes you sleep easier. Yeah
That sounds so counterintuitive. Yeah, but it makes sense
And it makes sense because that's how we were designed if you look at hunter gatherer tribes
Whose way of life has not changed for thousands of years and you ask how do they sleep?
One of the things that seems to dictate their sleep is the rise and fall of temperature
You know temperature is it it's lowest in the nadir of the night, you know
Three or four in the morning and as that temperature that climate temperature starts to drop
That's when they start to get drowsy as if temperature is just sort of signaling to the brain now
It's time to sleep. So light as well as temperature are two key triggers to help you get better sleep
If you look at those tribes by the way and when they go to sleep and they wake up
You know, they go to sleep probably at two hours after dusk sort of eight to nine in the evening wake
up about
Half an hour even an hour before dawn. It's the rise in temperature rather than light that triggers
their awakening
But there's a reason you know
Have you ever thought about what the term midnight actually means?
Middle of the night right and that's what it should be for all of us
But in modernity we've been dislocated from our natural rhythms and now midnight has become the
time when we think
I should check facebook last time, you know, I should send my last email
Yeah, that wasn't that is not how we were, you know designed to sleep
And in fact, we may also be designed to sleep biphasically too if you look at those hunter gatherers
They don't sleep one long bout of eight hours at night
Yeah, I've heard this recently that people that you should have two sleeps
The idea of two sleeps. Yeah, it's actually a little different than the idea of two sleeps. So
There was a time in sort of the decensin era
Where people would sleep for the first half of the night maybe sort of four hours or so then they
would wake up
They would socialize they would eat they would make love and then they would go back and have a
second sleep
If you look at
Natural biological rhythms in the brain and the body that doesn't really seem to be how we were
designed
It certainly seems to be something that we did in society, but I think it's more of a societal
trend than it was a biological edict
However, we do seem to have two sleep periods the way that we were designed those tribes will
often sleep about six and a half
hours seven hours of sleep at night
And then especially in the summer they'll have that siesta-like behavior in the afternoon
And all of us have that
Sort of this what's called the post-prandial dip in alertness just means after lunch
And if I measure your brainwave activity with electrodes, I can see a drop in your
physiological alertness somewhere between two to four p.m. In the afternoon, but is that dependent

on diet?

It's not people think it is, you know, especially after they've had a heavy lunch

Yeah, you can actually just have people fast and sort of well

Fasting for long periods of time actually makes your sleep much worse

But um, you can have people abstain from lunch and you still get that drop. So it's independent of food

It's a genetically hardwired pre-programmed drop that suggests we should be sleeping biphasically

But does is that dependent upon their standard diet because if if someone is on a carbohydrate carbohydrate rich diet a lot of times you do get that spike and then you crash

Crash but when people are on low carb and high fat diets

They don't get that and they they they tend to be more even with their energy through the day

Yeah, so yeah, that's sort of more constant release of energy can actually help you sort of almost combat that lull

But that lull exists no matter what exactly so even if you don't think it exists. It's there. It's still present

Interesting. So why did they do that and then the the dickens error?

Why did they but what is there a root cause of their double sleep thing?

We don't know. I mean it's hard to sort of really go back fascinating. Yeah, it's an that was a trend

Yeah, that it was a movement that they would just wake up and do things and yeah, maybe it's because they didn't have tv

They know what to do with themselves. Yeah

Sounds like they did some pretty interesting things which were nice, but yeah, well they created a lot of art then too

Right a lot of writing and a lot of fascinating stuff came out of that time now when you're um, when you're measuring

Uh people's health and when you're measuring people's health in regard to how much sleep they have

Like what how do you how do you do that? Do you just talk to people? Do you do surveys?

Like how do you get like a detailed analysis of people's patterns?

So you can do it at many different levels

I mean we can start at the sort of gross high level which is epidemiological studies across millions of people

Where you do surveys you ask them about their sleep and then you look at health outcomes

The first thing from that data that's clear is an unfortunate truth the shorter your sleep the shorter your life

Whoa, short sleep predicts all cause mortality, which is really ironic because people that

Want to sleep less. I like, you know, I don't have a whole lot of time

You know this life is short. Yeah, it's fucking shorter if you sleep less

Yeah, the old maxim, you know, you can sleep when you're dead. Yeah

Well, it's mortally unwise advice

Because we know from the data you will be both dead sooner and the quality of that now shorter life will be significantly worse

Yeah, that's counterintuitive to people

The the idea that you need this

It's not just like you're making best use of time by sleeping less. You're not
You'd make best use of time by being awake less. Exactly, which is crazy
I mean wakefulness firstly from a brain perspective is low level brain damage. We know that
Wakefulness is yeah low like right now. We're you and I are getting low level brain damage. Yeah,
that's right
And it's sleep that offers a reparatory function. Wow. And and you know, I'll give you one example
Which is your risk for Alzheimer's disease
Insufficient sleep across the lifespan now seems to be one of the most significant lifestyle factors
determining whether or not you'll develop Alzheimer's
What studies or if any have been done on people that work third shift?
So people have looked at shift work in general. Um, they haven't necessarily split it down to that
granular point, but
Um, what we see is that shift workers have higher rates of obesity higher rates of diabetes
But perhaps most frighteningly cancer
And in fact, we now know the link between a lack of sleep and cancer
Um, is quite strong insufficient sleep is linked to cancer of the bowel cancer of the prostate cancer
of the breast
And the association has become so powerful that recently the world health organization
Decided to classify any form of nighttime shift work as a probable carcinogen
Whoa
Yeah, so jobs that may induce cancer because of a disruption of your sleep-weight rhythms
Are there other correlating factors like don't people that sleep less or work into the night?
Don't they eat more and eat more shitty food? They do both of those things. Yeah, and we know
exactly the path of
Yeah, and we know exactly the pathways. So there are two hormones that control your appetite and
your weight
One is called leptin. The other is called ghrelin
Um, they sound like hobbits, but they're not the real the real hormone the real chemicals
It's bizarre, but so leptin is the chemical that tells your brain
You're full. You're satiated. You don't want to eat anymore
Ghrelin does the opposite. It's the hunger hormone. It says you want to eat more. You're not satisfied
with your food
If I take people and these studies have been done
We've done some of these studies too
And you just put you a group of healthy people on four or five hours of sleep for let's say one week
And you look at those two hormones. They go in unfortunately opposite directions
So leptin that says you're full stop eating that gets suppressed by a lack of sleep ghrelin the hunger
hormone
That gets ramped up
So firstly people who are sleeping just five to six hours a night will on average eat somewhere
between
200 to 300 extra calories each day
Because of the under slept state add that up. It's about 70 000 extra calories a year
It's about 10 to 15 pounds of obese mass each year, which uh for me is starting to sound familiar

But what we also know is that it's not just that when you're under slept you eat more
You eat more of the wrong things
So if and these the great scientific work if you give people this sort of finger buffet
And they can eat whatever they want and it contains all of the different food groups
And you sleep deprive them or you give them a full eight hours of sleep
Yes, they start to overeat by somewhere around about 450 calories with total sleep deprivation
But what they go after is heavy hitting carbohydrates and simple sugars process food
And they stay away from the healthy sort of leafy greens nuts proteins, etc
So you're not just eating more you're eating more of the wrong things
And that's why a lack of sleep has such a strong
Obesogenic profile to it
And you can take a step back too and you say well
If you look at the rise of obesity over the past 70 years
It's just this
Upward exponential increase and if you plot on the same graph the amount of sleep that society is
getting
It goes in the opposite direction as sleep time has declined obesity rates have increased
I'm not going to sit here and tell you that the obesity epidemic is simply a sleep problem. It's not
It's a problem of us being sedentary process foods larger food serving sizes
If you take those factors though by themselves, they cannot
Explain the increase in obesity other things are at play is sleep one of them now. We know it is
It's a critical factor in the obesogenic epidemic. I know from personal experience when I'm tired
I always gravitate towards the worst choices. It's for me. It's late night cheese burgers
Yeah, you know wendy's at two o'clock in the morning or whatever
Um, what happens if you get naps like say if you only have five hours of sleep
But you take a two-hour nap during the day. Does everything make up?
Yes and no so what you're talking about there is what we call prophylactic napping
Which is sort of strategically trying to help combat your deficiency of sleep
Naps can actually give you benefits. We've done some of these studies where they improve, you
know
Your learning your memory your alertness your concentration, especially your emotional regulation
too sleep is
critical for emotional first aid and mental health
However, you can't keep using naps to self-medicate sort of short sleep of you know four or five
hours each night
Um, we know that the system itself your your brain has no capacity to
Regain all of the sleep that it's lost. It will try to sleep back some of that debt
But what we've discovered let's say I take you tonight. I deprive you of sleep eight hours lost
Then I give you all of the recovery sleep that you want on a second third or fourth night
You will sleep longer, but you will only get back maybe just three or four hours of that lost total eight
So sleep is not like the bank. You can't accumulate a debt and then hope to pay it off at the weekend
And so there is no credit system within the brain for sleep. You can't bank it
Which is odd by the way, I I would love that system
Yeah, then you would know what you owed you would know what you owed

But I could also just know when I'm going into a state of you know, sleep debt and I could build up some credit
And there's precedent for this by the way. There is a system like that in the brain
It's called the fat cell because there were times during our evolutionary past where we faced famine and we faced feast
And so the body learned to adapt to that and said when you have feast
Store it up as caloric energy in these things called adipose cells fat cells
And then when you go into famine you can spend that caloric credit
Where is that in the brain? Why don't we have that? The reason is very simple
Human beings are the only species that deliberately deprive themselves of sleep for no apparent reason
in other words
Mother nature has never faced the challenge of coming up with a safety net for lack of sleep
We've never been forced to come up with that solution
That's why we get such demonstrable disease sickness and impairment when you undergo a lack of sleep
So this is a recent occurrence in human beings. Is that what you're saying?
Yeah, I mean the the only time we see it in nature is when you go into
Conditions of starvation the only way that you can get a species to sleep less
And it's very very difficult to do because sleep is just so essential
Is when you put them under conditions of extreme starvation there, they will
Forgo some sleep to stay awake so that they forage in a larger sort of
Circumference area to try and find more food
It's probably the reason that when people go into fasting their sleep is so terrible
Because the brain is receiving this ancient trigger that you're going without food
You're in a state of starvation. You need to stay awake and hunt for food
That's why your sleep gets so much worse when you're when you're undergoing fasting
That's fascinating. I did not know that so fasting is when you're talking about multiple day fasting
and not intermittent fasting
Um, we don't know the evidence for intermittent fasting. So, you know, if you're some people are
doing sort of 12 hours 14 hours 16 hours
There that doesn't seem to be extreme enough to trigger
A change in sleep, but if you fast for these long periods, you know, two days three days four days
You can really see some quite marked sleep fragmentation. Sleep is you know, ask any of those
people they'll tell you
That's fascinating because people always cite the health benefits of multiple day fasts
Do you think that that's just
Like a placebo effect
I mean, certainly we know that there are chemical pathways that when you go into fasting are
activated
That seem to be beneficial for health outcomes and there's a big literature on sort of fasting and
aging with the mTOR pathway
For example, but you know, we also know that as a species we were not designed to have such
terrible fragmented sleep

And we spoke about how sleep regulates your appetite
Right, you know the if you're trying not to eat food and sort of control and manage your weight
The last thing that you probably want to do is be short changing yourself on sleep because it's only going to make you
Even more hungry and reach for sort of worse food
So I still think there's room for fasting in the equation, but I think those extreme fasts
You know and the havoc that it plays on sleep
It's still yet to be understood. You've got to be very careful with playing around with anything going beyond sensible, you know behavior
So what does it like what is if say if you're going to fast for two days
What switches on that forces your your body into this haphazard sleep program?
So that's where that hormone ghrelin just kicks into high grip gear that hormone that is just saying
It's a starvation hormone at that point. It's not just a hunger hormone
You've gone over into starvation and that will promote a work alertness
It promotes chemicals that try to keep you away chemicals like dopamine to sort of you know force you wide awake
So it's forcing you to go hunt or gather. That's right. Yeah
And this is even if your body goes into a state of ketosis
That we don't know people have not tried to correlate sort of you know the profile change in ketosis versus alterations in sleep
I actually think it would be fascinating, you know, maybe
There's a there's a peak where it's bad and then you sort of you crest it and then things get better
You know, does the body acclimate to that? I don't know
It's we've never seen the body being able to sort of
Re-engage with you know cognitive function with a dose of sleep deprivation that keeps going
So if I am these studies have been done take people and give them two weeks of seven hours of sleep
Five hours of sleep three hours of sleep or no sleep
You know even by sort of seven days or even 14 days of six hours of sleep
Your cognitive performance just nose dives like a dart into the ground
And it doesn't show any signs of leveling off as if there is no asymptote that it could keep going
Um, and by the way people should know that after 20 hours of being awake
You are as impaired cognitively as you would be if you were legally drunk
Wow, what about physical movement? Same thing. Yeah in terms of your yeah alertness and reaction time
But it's worse and this is where you know drowsy driving comes in for every 30 seconds that we've been speaking
There has been a car accident linked to sleeplessness
Drowsy driving it seems kills more people on the roads than either alcohol or drugs combined
Whoa, why are why are drowsy driving accidents so deathly real now?
I'm not endorsing those other things of course not but let's just think about why that's the case
When you're under slept you start to have what are called microsleeps
Sometimes your eyelid does not close all the way. It just partially closes
But the brain essentially goes to sleep for just a very brief period of time
You can even see individual brain cells looks like they go to sleep during these micro sleeps

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

At that moment if you're traveling in a vehicle on the freeway
You've got a one ton missile traveling at 65 miles an hour and no one is in control
One ton if you're lucky. Yeah. Yeah, exactly last time you saw a 2,000 pound car unless you have a Miata. Yeah
Yeah, or a yeah McLaren P1, but you know if you are even those are heavier than that. Are they really?
Yeah, she has my lack of knowledge despite living them
But um, you know, I think and what happens here is that when with drugs and alcohol, it's often the case of
A problem of later reaction with with a lack of sleep. It's a problem of no reaction at all
So you're out of it. So you're out of it. So rather than breaking too late
There's just no breaking whatsoever. That's why I have a tip for people too
If you you you find yourself cold or tired and driving and you have to stay awake take either ice
Or ice cold water and put it in a washcloth and then rub your face with it. It keeps you awake works
Yeah, it works. I mean if you're forced to drive for whatever reason you have to you know
You have 20 minutes to go and you're really exhausted
Do that ice is the best take a like a wet cloth put ice inside of it and just rub your face
It just wakes you right up for whatever reason and it's I mean those the statistics around tries to
drive you driving though
You know frightening and it's a weird thing when you're on the road
You're there's something about those white lines that just want to put you to sleep
There's no other time where I feel more compelled to just conk out while I'm awake
Yeah, it's it's probably one of the greatest sedatives known to men
You know if that monotonous, you know behavior and the longer you go with that monotony the
worst things get
You know and if you look at um, you know teenagers, that's where we see some of the greatest
Impact of sure drowsy driving, you know, it's the leading cause of death in most first world nations
suicide is second
Wow, that is crazy and it speaks to this, you know in this model of later school start times
They've done these studies. There was a great one that was done. Um, I think in tetan county in
wyoming
They shifted their school start times from 7 35 in the morning to 8 55 in the morning much more
biologically reasonable for teenagers
The only thing more impressive than the extra hour of sleep that those teenagers reported getting
was the drop in vehicle accidents
There was a 70 reduction in car crashes the following year when they made that time
70 70 so the advent of abs technology for example anti-law brake systems that dropped accident
rates by
20 to 25 percent some deemed it to be a revolution
Here's a simple biological factor sleep that will drop accident rates by 70 percent
You know, so I think if our goal is educators truly is to educate and we've spoken about learning in
memory
And not risk lives in the process then we are failing our children in the most
Spectacular manner with this incessant model of early school start times. Why do we do that?

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

Like what and not just early school times, but early work times too. I was driving to the airport the other day at 6 a.m

6 a.m

Bumper to bumper traffic on the 405. I was like, this is insane. Look at these poor fucks
What are we doing? And if you're in the car at 6 a.m. There it means that you probably woke up, you know, five

Yeah, you know, you know 30, you know average school start times, you know in the u.s. Some of them, you know

7 7 25

Buses for a school start time of 7 25 will begin leaving at 5 30 in the morning

That means that some kids are having to wake up at 5 15 5 o'clock. Maybe even earlier

That's a lunacy. It is lunacy. Now. Why do they do that?

I mean, it's just a pattern that they've always done and they don't they never corrected it

Yeah, it's a pattern that actually has changed over the past 30 or 40 years

I mean American schools used to go to um used to start around 9 o'clock

And then it started to shift ever and ever earlier. Why?

Part of it is because of work times that parents had to get to work at ever earlier

So they drop kids off before work. Yeah, and then bus unions and bus schools

They comply to that same time frame as well and it becomes very difficult, you know, and I'm

I don't mean to chastise school systems or the bus unions, you know, it's an incredibly difficult logistics problem

But I have to think that, you know, what is our goal here if our goal is to keep our kids safe

And to get them well educated and get information into the brain and nurture them and, you know, create them to be the next generation

Early school start times, you know, are not the thing to do

There's a lot of lazy kids out there. They're going yes

Well preach on doctor preach

I mean the data, you know, they looked at these academic things too, you know

One of these another example comes from adena in minnesota and they shifted school start times from

I think it was 7 25 to

8 30 in the morning and they looked at sat scores

And in the year before they made the time change the top 10 performing students got an average sat score of 1288

Which is a great score

The following year when they were going to school now at 8 30 rather than 7 25

The average sat score was one thousand five hundred

That's a two hundred and twelve point increase, which is non-trivial. Wow. That's gigantic. Yeah

Yeah, I just yeah, I think it's the school time in correlation with the work time

It's very difficult to get people off of that. Yeah, and that's part of what, you know, modernity has done

We're we're working longer hours

And also we're commuting for longer durations of time

So therefore people having to wake up earlier

They come home later and the one thing that gets squeezed sort of like vice grips is this thing called sleep

You know and the decimation of sleep throughout industrialized nations as a consequence is having a catastrophic impact on our health and our wellness

And the safety in the education of our children

Silent sleep loss epidemic. Wow

now other than

Um, making the room cold and warming up your hands and your feet and things on those lines

What about diet? Is it or even time that you eat?

Is there a specific time before you go to bed that you should eat? How much time should you give yourself to digest your food?

So the general advice right now is don't go to bed too full and don't go to bed too hungry

Again, if you're going to bed too hungry, you can get that sort of that signal of I'm starting to go into low level sort of starvation

And that can keep people awake at night

Um, the evidence in terms of diet composition sleep is quite unclear. It's not particularly well researched area right now

What we do know is that diets that are high in sugar and

Sort of heavier starchy carbohydrates and low in fiber

Those diets tend not to be good for sleep. You tend to have less deep sleep and your sleep is also more fragmented throughout the night

Um, so that's sort of right now the best advice

So you should eat several hours before you go to bed, but not five hours. That's right

Yeah, like two hours maybe and it's different for different people and you will know it

You know, if you're sort of starting to wake up with really severe hunger pangs

What about supplements like melatonin supplements or things on those lines?

melatonin

Is efficacious it's useful when you're traveling between time zones

So at that point your body clock your internal clock is out of sync with the actual real time in the new time zone

And let's say I fly from Los Angeles over to London back home

Um, you know, my melatonin spike is going to be eight hours in the past, you know, sort of back in time

It's not going to arrive with me for eight hours

So I can take some melatonin. I can fool my brain into thinking. Oh my goodness. It's actually dark

When despite in California, it's still daylight once I've arrived at the airport

So you can use melatonin strategically for jet lag once people however are stable in a new time zone

Melatonin does not seem to be efficacious for helping sleep

That said though if people out there are taking melatonin and they think it helps

I would tell them to keep taking it because the placebo effect is the most reliable effect in all of pharmacology

So if it works for you, no harm. No foul. Keep taking it. Interesting. So, um, the people that take melatonin nightly

Like this is what gets me to go to bed. Really. They're just playing a trick on their mind
Yeah, unless you're an older individual where your sort of 24 hour rhythm
It's called your circadian rhythm starts to get blunted and it's not as strong anymore
That's where night nightly use of melatonin actually has been demonstrated to be efficacious
But if you're young, healthy, and you're taking melatonin, it's unlikely that it's actually helping your
sleep
That's probably the placebo. So it really should just be
just for traveling. Yeah, or weird situations where your sleep is interrupted. That's right
And you need to kick it into gear bring it back on. Yeah, so it's almost like a hack
Yeah, it's definitely, you know, that's one way that you can hack jet lag
I mean, there's no cure for jet lag, but there's actually lots of ways that you can hack jet lag. Are
there any other vitamins or
Nutrients or
particular foods that enhance the sleepy effect
I mean, there's always the thing about tryptophan. Everybody thought the tryptophan was in turkey
Yeah, what I read was that was bullshit and what was really going on was that you just ate a gigantic
meal
And it's filled with stuffing and mashed potatoes and all those carbohydrates cost you to just crash
And it's usually it's the time that everyone goes back through into sort of the living room. You lie
down
Yeah
Most people are chronically sleep deprived and finally you get the opportunity to sort of just rest and
no one's doing anything
Because there's no plans
What what do you think the numbers are of sleep deprived people in this country?
So we know those numbers actually
Almost one out of every two adults in america are not getting
The recommended eight hours of sleep
Almost one out of every three people that you pass on the street are trying to survive on
six hours or less of sleep
Um back in 1942 galloped at a pole and what they found was that the average american adult was
sleeping 7.9 hours of sleep
A night now that number most recently is down to six hours and 31 minutes for the average adult
during the week in america
That's the average by the way. That means that there's a huge swath of people well below that
average
And what about the people that say that they sleep they go to bed
They they sleep five hours. They wake up and they feel great. Yeah, is that bullshit?
Um
We have the number of people who can survive on six hours of sleep or less without showing any
impairment
Rounded to a whole number and expressed as a percent of the population is zero
Wow
Wow zero

And one of the big problems with the lack of sleep by the way is that you don't know your sleep deprived when you're sleep deprived
So your subjective sense of how well you're doing with a lack of sleep is a miserable predictor of objectively
How you're doing so it's like a drug driver, right? Yeah, right especially. Yeah
Perfect example, you know, you're at the bar. You've had six or seven shots. I can drive home. I'm fine and your response is
I know that you think you're fine to drive subjectively objectively trust me
You're not it's the same way with sleep deprivation. Hmm. That's fascinating
So but you're not drunk. So even though you're impaired you don't feel like you're impaired
Just and you probably have a couple of espressos or one of these caveman coffees you feel fine
Right, you get juiced up. You're ready to go and you're trying to accomplish things. You're trying to succeed
Right, you're trying to get ahead in this life. Yeah, I don't need to sleep
And it's and you know, that's completely counterintuitive. It's on the data. We know that people are more productive
Um, you know, and they've we've seen some of these studies in the workplace where you look firstly under slept employees
Will take on fewer work challenges overall
They end up taking the the simpler ones like listening to voice messages rather than actually digging into deep project work
They produce fewer creative solutions to challenges that you give them
They also slack off when they're working in groups. It's called social loafing where they just ride the coattails of other people's hard work
Oh, the less sleep that you have the more willing that you just sort of don't pull your weight
Furthermore, it goes all the way up to the top
So the more or less sleep that a business leader has had from one night to the next the more or less Charismatic their employees will rate that business leader despite them knowing nothing about the sleep of that CEO
It's evident in their behavior. Well because they're short
With the you know, they're they're short with their temper or they're they're quicker to get upset about things
they're less
charismatic and
Social with their conversations. They're just more okay. I got it. I got it. I got it. Yeah
Go to work work for it. Yeah, you know, I'm so less sleep does not equal more productivity
And it's always struck me as strange, you know, why do we sort of overvalue employees that undervalue sleep?
And if you look at your workforce, you know, trust me everyone's going to be looking busy
But it's like stationary bikes everyone's looking like they're working hard
But there's no forward progress the scenery never changes. That's what an underslept Workforce will be for you now. What about the amount of time that people spend at work? I mean, I know this is not related to
to sleep

But I've always felt like people work too much. I feel like
You probably can get more done with less time there
Yeah, so efficiency is what we're talking about here and that's another one of those things with sleep deprivation
And I think many people when they haven't had a good night of sleep that you know, they're looking at this report and they realized
I've just read this paragraph the third time and I still
Can't quite get it because your head scrambled. Yeah
Efficiency, you know productivity
But I would feel like when people are working eight hours a day
I don't think that you could work at peak capacity for eight hours. At least I don't think the average person can't you can't sustain that
Yeah, so you're you're kind of bleeding these people. You're getting blood out of a rock in the last couple hours and it's yeah
It's not, you know, either a creative way to work and creativity, you know
It's supposed to be the engine of you know business and ingenuity
But why would you, you know
Take twice the amount of time to boil up, you know
A pot of water on half heat when you could do it in half the time if you just put it on high
Well, that's sleep, you know, what's interesting though. There are certain writers who use sleep deprivation as a strategy for creativity
They literally don't start like the writers for as sitcom I was on news radio
They wouldn't start writing until like two three in the morning
They would just play video games and fuck around and then late at night
They would really start writing and they would write till like seven in the morning
They would be they would stumble into the set like barefoot delirious hair all fucked up with hilarious grips
And it's like they had used being silly and overtired as a strategy almost like they were doing drugs
Right, but they weren't doing any drugs. I mean it comes back to it. Well, I we don't we don't know in that scenario
You know it has me to sleep but what we have found at least in in our scientific studies
Is that that prefrontal cortex region that we spoke about before that sort of rational logical part of the brain
That's one of the first things to go when you're sleep deprived
So that area of the brain just gets sort of switched off
Right the more that you are sort of lacking in your sleep an emotional deep emotional centers of the brain
Which are normally controlled and kept in check by that prefrontal cortex
They just erupt in terms of their activity. So you're all emotional gas pedal in too little regulatory control break
Which for the most part very bad
But you know one possibility is that if you want to try and get a little bit sort of, you know
Crazy loosey-goosey, you know
Maybe that's not bad for that type of sort of comedic writing that you you know

You become a bit more childlike and I say that affectionately because the last part of the brain to mature in development is the prefrontal cortex. So you revert back to almost a more childlike state. But I wouldn't I honestly would not condone that sort of you know undergoing sleep just based on the mortality and you know risk of Alzheimer's and cancer by itself. You just don't want to under sleep. Even in short doses like you have a couple days a week like here's the if sleep is not a renewable resource. Like what is the effect of say if you have three nights a week where you sleep eight hours and then the next night two hours. And then the next night eight hours. How much of a bump or how much of a dip does that two hours give you in your overall health? It's bad. It's bad. So I'll give you two examples that there was a study where they just took individuals and they just gave them four hours of sleep for one night and what they saw was a 70% reduction in critical Anticentrifying immune cells called natural killer cells. These are wonderful immune assassins that target malignant cells. So today both you and I have produced cancer cells in our body. What prevents those cancer cells from becoming the disease that we call cancer is in part these natural killer cells. And after one night of four hours of sleep that is a remarkable state of immune deficiency. And that's one of the reasons why insufficient sleep predicts cancer. I could also speak about your cardiovascular system though and all it takes is one hour. Because there is a global experiment that's performed on 1.6 billion people across 70 countries twice a year. And it's called daylight savings time. Now in the spring when we lose an hour of sleep, we see a subsequent 24 increase in heart attacks. What in the fall in the autumn when we gain an hour of sleep, there's a 21 decrease in heart attacks. So it's bi-directional. That's how fragile and vulnerable your body is to even just the smallest perturbation of sleep. One hour one hour is insane. Yeah. Wow. That is you're blowing my fucking mind. It's frightening. I mean you can go even further by the way, you know, wow. Insufficient sleep will even erode the very fabric of biological life itself your DNA code. So in one study they took a group of healthy adults and they limited them to six hours of sleep for one week. And they compared the profile of gene activity relative to when those same people were getting eight hours of sleep. And there were two critical results. The first was that a sizeable 711 genes were distorted in their activity caused by one week of six hours of sleep. Which is highly relevant by the way because we know that many people are trying to survive on six hours of sleep during the week. Wow.

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

The second sorry no, please go. I was going to say the second sort of perhaps more interesting result was that about half of those genes

Were actually increased in their activity. The other half were actually suppressed

Those genes that were switched off by six hours of sleep for one week were genes related to your immune response

Many of them. So you become immune deficient

Those genes that were increased or what we call overexpressed were genes that were related to the promotion of tumors

Genes that were related to long-term chronic inflammation within the body

And genes that were associated with stress and as a consequence cardiovascular disease

This is unbelievable. You know, it's really disturbing to me. Um in my youth from age probably

I guess I was probably

18 when I started I delivered newspapers

I used to drive around and throw newspapers out of my car and I did it for years

And uh, I would have to be up at five o'clock every morning and I never

Never went to bed early. Yeah ever and I worked 365 days a year. How old were you by the way?

I think I started when I was 18. It might have been 17 whenever I started driving

I well, I drove at 16, but I don't think I started right away delivering newspapers, but I was trying to find a good part-time job

I think I was like either in my senior year of high school or after I think right after my senior year of high school

So it's probably 18

Okay, and the reason I asked by the way is because as you go through into those sort of later stages of adolescence and sort of

Early adulthood your biological rhythm moves forward in time. So you want to go to bed later and wake up later

Yeah, so even if you went to bed sort of conscientiously at that time

At let's say like 10 o'clock or 9 o'clock you wouldn't be able to sleep because it's biologically impossible

Yeah, no, I didn't sleep and then on Saturday even worse one day a week Saturday night

I'd have to get up at three or four in the morning

Because I had to deliver Sunday papers and the Sunday papers were enormous

And so I had a pack of van filled with because I had 350 people that I would deliver papers to so I'd have to do multiple trips

So I'd start work at

I'd start delivering somewhere around 4:35 depending on when the papers got in and I was done

About like nine

You know 9:30 and then I tried to crash but I was a wreck

Yeah, I mean and it it fucked me up for years for years. I did that and I stopped and think about that now

Um listening to you listening to this conversation like what kind of fucking damage that I do to myself over those years

Yeah, I won't tell you about the stuff with Alzheimer's then and havaloid protein and well, I feel okay

now

It's been it's been several decades

Did I mention that your subjective sense of how well you're doing with insufficient sleepers? No, no

Wow, I'm sure you did and I'm sure that there's a factor there

Um, what's stunning to me is that six hours is so detrimental. Um, I would have thought that would have been fine

The six hours is good. Like you get six hours. That's good. That's normal for me

Yeah, like six hours is normal like you

Literally the minimum is seven. Yeah seven to nine hours of sleep seven you need

Anything under seven is bullshit. Yeah for the for the average really should get eight. There is there is a small

um

Fraction of one percent of the population that has a special gene that allows them to survive on about five hours of sleep

Um, and most people when I tell them this they say, ah

I must have that I'm one of those people

Yeah, the chances of you being, you know, you're much more likely for example to be struck by lightning in your lifetime

The odds of which are I think about one in 12,500 then you are to have this incredibly rare gene

That means you can survive on something around five hours of sleep. Really? Yeah, what is the gene?

Well, it's a gene that seems to promote sort of, um, again wakefulness

Chemistry within the brain that allows you to sort of maintain wakefulness in a more sustained way

Um, and so we're only trying to understand right now what the actual biochemical mechanisms are of in terms of the consequence of that gene that gene mutation

Um, but certainly it seems to exist that there are some of those quote-unquote short sleepers

By the way, you know, we hear of these business leaders, um, and even actually heads of state

I'm not going to name any names, but I'll give you right now

But I'll give you two examples of the past Margaret Thatcher and Ronald Reagan

Both were vociferous in their statement and their declaration of how little sleep that they would get both them said four or five hours a night

And I think in part it was to paint this heroic ironclad status

Yeah, and many people would say to me, you know, you know, Margaret Thatcher, you know, lifetime

Well, sadly and tragically Thatcher and Reagan both ended up getting Alzheimer's disease, you know

And we now know because of it's during deep sleep at night

That there is a sewage system in the brain that kicks into high gear

And it cleanses the brain of all of the metabolic toxins that have been built up throughout the day this low level brain damage

One of those toxic sticky proteins that builds up whilst we're awake is called beta amyloid

Beta amyloid is one of the leading causes of underlying the mechanism of Alzheimer's disease

So the less sleep that you're having across the lifespan

The more of that toxic amyloid is building up night after night year after year

And I don't think it's coincidental that both of them ended up progressing into a tragically into a

state of Alzheimer's disease

So it's good night sleep clean in that way in terms of of deep sleep

That's critical. That is stunning. Um, are there anything

Is there anything you can do in terms of how you eat or supplements that you can take that could potentially

At least somewhat mitigate the effects of having no sleep

We haven't found any good countermeasures. Have you tried diet pills? So, um

People have tried things like effedrin. Uh, they've had amines amphetamines

Um, you know, I mean caffeine has been used strategically by the military for years and caffeine can Help you get over the basic reduction in your alertness. So basic response times

You can you can dose with caffeine and still maintain some degree of a fast response under conditions of sleep deprivation

What about pro-vigil or new vigil you studied? Yeah, so medaffin l is sort of the underlying chemical there and it's debated

Who actually came up with it may have been the french military who actually ended up being um the the generators of that

That seems to work through a pathway at least right now as we understand it

For a chemical called dopamine and dopamine is principally known as pleasure drug

It's the chemical that a lot of drugs of abuse will target to sort of ramp up

But it also is a basic alertness drug that when you get an increase in dopamine

You tend to actually get an increase in your alertness and your wakefulness

Don't you get an increase in happiness as well? You can too. Although medaffin l tends to come with the alertness component of that equation

And less so with the euphoria. That's why it has a lower prevalence of sort of addiction and abuse

Boy, I know a lot of people who I wouldn't say they abuse it

But they say they have to use it like all the doctor says doctor says I gotta use it

And I'm always suspicious

Because they seem pretty normal other than the fact that they they're exhausted if they don't take this

What what's essentially a stimulant? I've taken it a few times

I've taken it when uh, I have to drive like long periods of time like I'm driving from san diego to california or to

Los angeles and maybe I have a gig

My gig's done at like 11 30. I know I'm going to be on the road late at night

I might take one

And uh, it's fine, but it gives you this weird feeling. It's a weird state and I know a lot of tech people

A lot of silicon valley is on this stuff and they pop it like candy

So much so that tim ferris when he was writing his book the four hour body

He didn't want to include it. He didn't want to include this

Particularly drug because he felt like people were just going to eat it all the time

Yeah, I mean and it's right throughout student populations study drug as well as is adderall. Yeah

Yeah, and adderall, you know, and one of the interesting things is that if you look at the

The the profile of what sleep deprivation is cognitively, you know, reduced alertness

Impulsivity lack of ability to concentrate difficulties with learning and memory difficulties with behavioral problems

If I were to describe those features to a pediatrician and say what disorder is this probably say it's

It's adhd yes

But what we now know is that there is some portion of children out there who are diagnosed with adhd

Who either one or just under slept or two actually have sleep disordered breathing because of perhaps tonsil problems

Where they're not getting sufficient sleep and when you treat their sleep disorder when you do a sort of, you know, remove the tonsils

Um, they start sleeping normally and the adhd disappears. Wow. So there is an issue here

I think within that sort of the explosion of adhd not all people are, you know, sort of privy to this sort of sleep

Problems simply masquerading as adhd. Some people are the one of the other problems, too though is that adhd kids tend not to sleep very well and

What we end up giving them is a drug that is a stimulant which will combat sleep and fight back against sleep

So I think we need to have a bit more of a strategic approach as to when we think about at least the dose of that medication

In terms of when sleep should be

Sort of expected during the day because you know taking it in the middle of the day in the evening If it's a stimulant, it's a wake promoting drug. We need to be very careful sleep is part of that

Well, it's that's terrifying because I don't know if the people that are prescribing these things have the sort of deep education

And sleep and the necessity of it that you do they don't and you know, it's not their fault either You know, and in fact, I've started to try and lobby doctors to start prescribing sleep

And don't make the mistake that that's me suggesting

You know prescribing sleeping pills. That's a separate story sleeping pills are associated with Significantly high risk of death and cancer and and I'm happy to speak about that too

It was the one chapter in the book that I think the the legal team of my publisher took took a very long long look at

But I think doctors come back to your point

They on average only have about two hours of sleep education in the medical curriculum

So one third of two hours one third of their this podcast has been two hours. Yeah, that's that's fucking crazy

Isn't that frightening? That's terrifying and I bet you probably have laid things out better in this podcast than you would get in those two hours of education

I I don't know about that, but I think I'll give you that credit if they could

If they could increase that, you know, I'm and I'm desperately appealing for this, you know, it's a third of their patient's life

But they only get two hours of education in but the other problem is the medical industry itself, by the way

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

You know their residents that data, you know junior residents working a 30 hour shift are
460 more likely to make diagnostic errors in the intensive care unit relative to when they're working 16 hours
If you have elective surgery, you should ask your surgeon how much sleep they've had in the past 24 hours
If they've had six hours of sleep or less, you have a 170 percent increase risk
Of a major surgical error such as sort of organ damage or hemorrhaging
relative to that same surgeon if they had been well rested
And then the irony here, by the way, is that when a resident finishes a 30 hour shift gets back into their car to drive home
There is a 168 percent increase risk that they will get into a car accident because of their underslip state
Being ending up back in the same emergency room where they just came from but now as a patient from a car crash
You know, it's we need to radically rethink the importance of sleep in education
In in business in the workplace and in medicine too. Why do they do that to residents?
It's a fascinating story. So there's there's a chapter here in the book on this too. It's a guy called William Halstead
And he set up the first resident surgical program in the United States at Johns Hopkins University
And he was known for being able to stay awake for these heroic lengths of time days on end
It's incredible like superhuman strength
Turns out that in later years after he died, there was a dirty secret that he was actually
A cocaine addict that son of a bitch and here's what happened. It wasn't his fault
Early in his career. He was examining the
Anesthetic capacities of cocaine. So, you know, if well, I'm not gonna say, you know, you may have heard from
Perhaps colleagues that when you snort cocaine, you get a numb face
The reason is because it's it blocks nerves. A lot of how you said from colleagues
My colleagues have told me I've actually never done cocaine
But I've I've known quite a few people who have and they will, you know, they'll have this sort of numbness
It's the reason it's because cocaine is also a nerve-blocking agent. Yeah, like lidocaine lidocaine exactly
We talked about this yesterday ironically on the podcast and about doctors becoming drug addicts
The initial doctors that started doing lidocaine Halstead was one of them. And so he became an actor
And so he became an accidental cocaine addict. Wow. And then that's why he's up for days. He was up for days
and
He structured a program where he expected his residents to match him to go toe-to-toe with him
Oh my god, that sounds like a cokehead. That sounds like what a cokehead would do. Come on, man.
Stay awake
Unbelievable and I think the story was that he actually knew that it was a problem
he went to rehabilitation checked in under a different surname and one part of the

Um regiment for him coming off cocaine was to prescribe morphine
And at the end of the rehabilitation program, he came out with both a cocaine
Addiction and a heroin addiction. Oh my god. And so now there's rumors, you know that he would
get his
Shirts laundered in Paris, you know in France and you know, they would come back and it wasn't
just the white starch
You know shirts that that were in the box that were other white substances too, but that's you know
You ask a great question. Where did that come from? Where's that history?
The legacy seems to date back to William Halstead who was an accidental cocaine addict and there
We have then maintained that inhumane practice
in medicine which is like
So critical to be awake and aware and to be sharp. You're cutting people open
You're operating on people and think back to what we said, you know about being awake
You know, you would never accept treatment from a doctor who started, you know
Looking at your child who's sick with an appendicitis at 3 m in the morning who then swigs some
whiskey and says
Yeah, I'm gonna do the operation. It's fine. You would you would go ballistic. Well, why do we accept
treatment?
You know after 20 hours of being awake you're as impaired as you would be if you were legally
drunk
So unfortunately, we placed young residents in this position of you know acting and operating and
decision making
under conditions of insufficient sleep
One in five medical residents will make a serious medical error due to insufficient sleep one in 20
medical residents
Will kill a patient because of a fatigue related error
One in 20 that's crazy and right now, you know, there are well over 20,000 medical residents
So if you have a hundred of them five are gonna kill people accidental deaths
Think about that number. That's insane
If we were to solve the sleep loss epidemic in medicine, you know, we could start saving lives
And I don't know what it is. Is it just a you know, an old boy's network where we said, well, we went
through it
Yes, so you've got to go through it, you know, and the data now is so prolific
You know, I write it all about that and try to make a build a an evidence-based, you know,
emotionless cold case
for sleep in medicine a sleep prescription for medicine as it were
Well, most people don't realize the requirements that residents have no
And and they are they are literally, you know, beyond human capacity thinking that, you know
hubris and some degree of hours on the job is going to be able to allow you to sort of, you know, cut
short
What took three and a half million years to sort of, you know
Get in place, which is an eight hour night of sleep. That's just thick-headed, you know
It's and I think the medical profession it may be at the stage where it's my mind is made up. Don't

confuse me with the facts

Wow

that

That this has blown me away

I just don't understand how the very people that are working on

the health of patients and fixing them and

Repairing injuries and taking care of diseases. Those are the people that are ignoring one of the primary factors of disease and errors

and cognitive function

It's it's impairment. It's a travesty. I have a friend who's an ophthalmologist and he tells a story about during his residency

He was uh, it was his back in the 80s and he had a pager

He was on the toilet with a tray of food on his lap because he didn't have time to eat and go to the bathroom

So he's eating food and he fell asleep

And then his pager went off and he's like fuck my life

I mean, how many warnings how many warning bells do you need to tell you that you're in a deleterious state?

If you're falling asleep with your trousers around your ankles with food all over your face

And yet you're in the deepest stages of non-rem sleep and he's the guy who's working on people's eyes. Yeah, it's crazy

Yeah, I mean and it's you know sleep is equally absent for the patient in the hospital

You know setting we know that somewhere between 50 to 70 percent of all um, icu alarms

Are either unnecessary or ignorable

You know and the one place where you desperately need the swiss army knife of health that is a good night of sleep

Is the one place where you get at least which is on a hospital ward

We could we could exit people out of hospital beds earlier. The data is already there for the neonatal intensive care unit

They used to leave bright lights on 24 7

Right and that would prevent sort of the signaling for sleep and wake and sleep and wake and that cycle is critical

If you regularize sleep, sorry if you regularize light in the neonatal intensive care unit

Those infants ended up having higher levels of oxygen saturation because they were sleeping better

Their weight gain was dramatically increased and they ended up exiting the neonatal intensive care unit five weeks earlier

Whoa simple things, you know

Why don't we do something like this in medicine when you come in onto a hospital ward

You get this on an international flight travel for free earplugs face mask

Even just that by itself could help people to start get better sleep

Next on the hospital admission form. Tell me when you normally go to sleep and when you normally wake up and to the best of our ability

We as doctors will try to sort of, you know

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

Manage your health care around your natural sleep tendencies if we could do that, you know sleep is the elixir of life

It is the most widely available democratic and powerful health care system

I could ever possibly imagine

Why aren't we leveraging that and taking it that's one of the greatest hacks that medicine could actually, you know

inflect that is stunning

How is this being received like by doctors? Are they reluctant to listen to you?

I mean, what what is happening with all this data and your your passionate?

Cry for extra sleep or more sleep or the proper sleep. I should say it's starting to happen

I mean when the book came out, which is sort of the hardback came back out in back in october

And and some people started to give pushbacks sort of in the medicine realm

You know, there was some concerns about continuity of care that if you keep switching residents out every 16 hours

That you wouldn't have continuous patient care and that was a problem

Well, there are other medical training systems. For example, france sweden new zealand

They do this all the time. They do not allow their residents to

Um undergo anything longer than either a 14 or a 16 hour shift

They train their residents in the same amount of time or less

And if you look at the rankings of their medical health systems around the world, they rank far higher than the united states

So you can't tell me that longer work hours for residents, for example, are necessary to train good doctors

The evidence just isn't supportive. So I've had some pushback there

But for the most part, I think people are receptive once they know the information and I think I'm the I've been the

Someone who's been to blame here. I've known this evidence for, you know, I've been doing sleep research now for 20 or so years

We are with sleep where we were with smoking 50 years ago

We had all of the evidence about the deathly, carcinogenic, cardiovascular disease issues

But the public had not been aware no one had adequately communicated the science

Of, you know, smoking to the public the same I think is true for sleep right now

That's part of the motivation for why I wrote the book why I've been doing or trying to do a lot of publicity

I'm a very shy person and I don't like being in the spotlight

But I feel as though there is a mission that whose voice has not been actually gifted yet

And I wanted to try and help and be a sort of a sleep diplomat

I mean, that's why I chose the handle on social media trying to be there as an ambassador for sleep

And now once people start to understand the science as we've spoken about for two hours

Then people start to actually realize it's not the third pillar of good health alongside diet and exercise

It's the foundation on which those two other things sit

You know, for example, if you're dieting

But you're not getting sufficient sleep

70% of all the weight that you lose will come from lean body mass muscle and not fat
Your body becomes stingy in giving up its fat when it's under slept
So once you get this information out there things are starting to change
I've started to have some discussions with the world health organization
They seem to be very interested now in getting getting to grips with sleep
I'd love to speak to first world governments though. When was the last time you saw any first world nation have a government supported public health campaign around sleep
I don't know any we've had them for you know, drink driving for risky behaviors, you know for drugs for alcohol for healthy eating
Sleep should be a part of that equation
You know, I want to lobby governments to start to instigate this and it will save them millions of dollars the rand corporation
Did an independent survey two years ago on the demonstrable cost of a lack of sleep to global economies?
What they found was that a lack of sleep costs most nations about two percent of their gdp of the gross domestic product
Here in America that number was
411 billion dollars caused by insufficient sleep
Solve the sleep less epidemic you could almost double the budget for education and you could almost halve the deficit for healthcare
Wow
What studies if any have been done on people who live in the northern hemisphere?
In the northern hemisphere where they experience these long days like Alaska and Siberia places like that
It's really tough for the regulation of the circadian rhythm. Yeah, and what they a lot of people
They're not all but a lot of people will suffer from what's called
Um seasonal effective disorder, which is the winter blues. Yeah, and you know, it's an unfortunate acronym
You know sad your doctor comes along you say look i'm not feeling good. It's the winter time. Well, you're sad
No, i know. No, no, i'm sorry. It's a medical so it's called sady seasonal
It's called seasonal effective disorder and that data is is quite powerful too
And you end up having to use melatonin strategically
To help you fall asleep to sort of signal darkness in the summertime when it's really light
All almost all day and then in the winter time you reverse engineer the trick
And in the morning you sit and you have your breakfast or you're working at your terminal
And you have one of these big light boxes that sits next to you strong lux power light
To try and sort of fool your brain into thinking that you're getting a lot of daylight when it's you know
It's not going to be light for the next four hours. So they have to undergo treatment
Do they have to do vitamin d supplementation as well some of that too? Yeah because of lack of exposure for the skin
Wow to uv light

[Transcript] The Joe Rogan Experience / #1109 - Matthew Walker

Listen man, you I think you just opened up a lot of people's minds. You certainly did mine
You mean this this podcast blew me away. I thought I knew a little bit about sleep. I knew nothing
Thank you so much. You're very welcome. Tell people how they could read your book. Where can
they get it?

What's your website?

Yes, so um, I'm all over the social media and the web pages by sleep diplomat dot com
um, and uh, the book is called why we sleep

Uh, and it is out now on amazon and all major booksellers and that's probably the best way that they
can learn all about sleep

And frightening the living day lights out of them. Thank you so much matt. I really really appreciate
it. This was awesome

Sleep well, thank you. You too. Thanks

That was good, right? I didn't lie

I don't lie. That was a fucking good goddamn podcast

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Whoo, that's it. We did it

Goddamn that was an important podcast. I really really enjoyed that. I mean that guy fucking blew
me away

Important stuff

All right, uh, that's it for today. We'll see you soon. Bye. Bye