



Episode 190: The Easiest Way to Track HRV, Sleep and Movement With the Founder of Oura

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Katie: Hello and welcome to the "Wellness Mama Podcast." I'm Katie from wellnessmama.com, and I cannot wait to dive into this episode because we're going to go deep on sleep and heart rate variability and how I'm using something called the Oura ring to help track my fertility. It's gonna be super fascinating. I am here with Harpreet who is the CEO of Oura Health and the maker of the Oura ring, which is the sleep and activity tracker that I personally use.

Prior to Oura, Harpreet was a portfolio manager and an analyst at a hedge fund for nine years in New York. And like my story, after burning the candle on both ends, he ran into health issues which led him down the path of looking inward and trying to improve his own health. Also, just a quick note, we're going to talk a lot about the Oura ring. For anyone who's interested in trying it, it's the one I use. You can use the discount code [wellnessmama](https://wellnessmama.com) at ouraring.com to save \$50 on any of their rings. And I have it and I love it. But Harpreet, welcome and thanks for being here.

Harpreet: Katie, thanks so much for having me. It's an honor to be on.

Katie: I am so excited to jump in because we are talking about some of my favorite topics. But first of all, I want to hear your personal story because it sounds like a lot like me that you ran into some health issues that led to you basically finding your own answers and trying to delve into health on your own. So can you tell us that part of the story?

Harpreet: Yeah. You know, I guess, upon graduating college, I had a bunch of student debt and I wanted to pay it off. So I remember going to the career center in my college and asking, "Hey, which jobs pay the most because I have a bunch of debt and I want to pay it off?" Well, they said, "Actually, our careers, what we find for our alumni and finance tend to pay the most."

And that led me down the path of honestly investment banking and then eventually, a hedge fund. But, you know, the hours are brutal. I got a job. It all worked out. And, you know, I was a great fund for a long time, but I would say the continual stress... And for me, I ended up trading a lot of stocks overnight, working sort of European hours and Japanese hours. And over time, that really just led to a lot of health issues. I think I gained 30 pounds, 40 pounds in my first year of investment banking. And I'm 5 foot 5 and I weighed about 140 in college. So 30 pounds to 40 pounds is a lot for me. So that actually, I think, started my quest onto health.

And the more and more in time I spend about it, the more and more in time I listen to podcasts, you know, podcast like yours and other people out there in the health community, the more inspired I was to keep learning and keep changing and improving. And I guess once I started down that road, I started to realize, that's really my passion. You know, my student loans had been paid a long time ago, and it was, sort of, what do I wanna focus my life on? And I think improving our health is just something that you keep learning and keep improving on.

Katie: Absolutely. And I love that for you, it almost started with something that takes a lot of us a long time to get to and that's sleep because I feel like it's easy to wanna address the really tangible things that are easy to see like nutrition and exercise. But at least from my own personal experience, I know that sleep is at least as important as both of those put together, if not more so. And it seems like sleep was a big key for you as well. So what started the interest in sleep? Because that's obviously once we start talking about Oura ring, there's a bunch of sleep tracking that happens there. But what really sparked your interest in that to begin with?

Harpreet: Frankly, my first year out of college, when I did investment banking, I think on average, I slept about four hours a night, which isn't atypical for that profession which, by the way, is insane. I mean, I think if you actually look at the WHO, they now classify shift work as a carcinogen because it's that harmful to your health.

But what I start to find out is, you know, I didn't drastically change my diet that much. If anything, I guess I was eating probably less because I wasn't as active. But I just found that I actually started getting gray hairs at the age of 22, which is just mind-blowing to me. And I started just gaining a ton of weight. And the more and more I looked into that, the more and more it sort of led me to sleep.

I knew I wasn't gonna have the time to exercise nor the energy, but I was just wondering, even with, sort of, like paying attention to my diet, eating whole foods and not eating a lot of junk food, I was gaining, literally, it was almost a pound a week. It was pretty insane. So I think that's when I started to realize that there's so much you don't understand about your body and your brain when you sleep. And that sort of what got me fascinated in the beginning.

Katie: That's awesome. Okay. So let's go deeper on sleep. I think a lot of people just think of sleep in general like I'm either asleep or I'm awake. But now, especially through wearing the Oura ring, I'm much more cognizant of the different types of sleep and the different stages of sleep and all the things that go into a good sleep. So can you start by, kind of, giving us an overview about the different stages of sleep and what they tell us about our health?

Harpreet: Yeah, sure. So I think if you take a step back and sort of look at how sleep staging has been defined, it's primarily in two categories: REM and non-REM. So REM is, sort of, when we dream. I like to think about it this way. It's actually when your pre-frontal cortex is turned off. So to think about the part of your brain that's acting like the instructor that's putting everything together and telling your body and everything else what to focus and when.

So REM sleep is this fascinating time when actually the chief or the officer in your army of your body and mind is turned off. And basically, your brain can go wild. So that's when you start dreaming. It turns out most of our memory consolidation actually happens in REM. I would say most of the repair to the brain actually happens in REM, though some of that happens in deep as well.

Deep sleep, on the other hand, turns out actually when probably most of our body is repaired. So for men, most of our testosterone is actually released in deep sleep. For women, there's equivalent hormonal changes going on during deep sleep as well. And then, the other part that's actually pretty interesting is, let's say, the brain does clear itself of toxins all during sleep. But one recent study pointed out about a year ago is that actually, beta-amyloids, which is a plaque that's actually linked to the onset of Alzheimer's, that's cleared away during deep sleep as well.

But those are, sort of, the two main areas of sleep I'd say most people focus on, and so the deep sleep and REM sleep. And those vary actually with age as well. But those are two of the stages along with light sleep, which is basically everything else and then awake which we classify all four of those in the Oura ring.

Katie: Got it. It's been fascinating. I'm looking at my app right now. I'm looking at the different stages of sleep. And the part I love because I'm type A is that you actually get a sleep score, so I can kind of tell every day if I slept good or not and what things I can do to improve it. I have not gotten a 100 yet. Is it possible to get a 100 in sleep score? Because I've not gotten it yet.

Harpreet: People ask us that all the time. I think a few people have gotten a 100. It's really, really, really hard though, but we do have a consisting cohort of people hitting in the 90s.

Katie: I hit the 90s. Like last night, it was a 95 and got over an hour of deep sleep. But it's just fascinating to see because you could actually see a visual graph of what happens as you're sleeping. And I've also noticed patterns like on a good night of sleep, my resting heart rate is in the 50s and I don't wake up and there's a lot of deep sleep. But if I, like for instance, drink too much wine or go to bed too late, even if I get enough sleep, those things all change. So are there patterns that you guys see in sleep tracking that tend to correlate to lifestyle factors at all or is it just...

Harpreet: Totally.

Katie: Okay. So what are some of those factors?

Harpreet: I think generally speaking, it's not just from our own data we see this, but also from tons and tons of studies that have been proven out there done with full polysomnography or hooked up to your brain, EEG test essentially, that basically deep sleep will happen in the first half of the night. You do go through stages of sleep, so most people will sort of go from a light sleep, you'll stay in there the whole time. Remember, the

brain is actually like cleaning itself during sleep. It's something to, sort of, point out that our body has a lymphatic system that we know of.

But actually until recently, people didn't think the brain had a lymphatic system. But there's a recent discovery actually about I think three years ago the first study was put out. And the term was actually called a glymphatic system with the G. So your brain goes through these certain stages and certain orders on purpose from what we can understand. But most people will go into, sort of, deep sleep in the first half of the night.

Typically, depending on how old you have, you'll get anywhere from 30 minutes, but, you know, if you're sort of... Where I'd imagine most of your audience is in their 30s or early 40s. You're probably gonna get closer to 40 to 50 minutes of deep sleep, and that'll happen in the first half of the night. And then, the second half of the night, most people will go into varied between, sort of, light and REM. Sometimes, when we wake up when we feel a little bit groggy, that can be because your alarm went off when you're in REM sleep.

As far as other factors that we see, oftentimes, you'll start to learn what your average is of deep sleep. And you'll start to sort of realize oh man, if I got 30 minutes of deep sleep, you're asking yourself exactly what you just did. What happened? What did I do yesterday? What could've changed that?

Sometimes, you'll get no deep sleep. I found certain times when I'm super stressed, or especially if alcohol is involved, and even frankly, the type of alcohol can vary the effects, too. That might have very low or very little deep sleep. Sometimes, after extremely hard workouts, those days I'll find that actually my deep sleep increases. REM for me, it's been harder to nail. I do tend to notice actually that it appears that I have really high in mental activity, a lot of like focusing going on that I tend to get more REM sleep.

Which, you know, I don't think there's been studies on this proven yet, but one of the theories is our brain is actually pretty smart. Our brain will recognize actually how much of the different stages we need depending on what's going on in our life. I do think it'd be pretty cool to get some studies to show that maybe certain exercises or certain types of strenuous activity actually helps promote deep sleep. I think that's been done, but I haven't seen any good ones lately and then vice versa for REM.

We do know that most of our memory recall is happening in REM. Actually, one of the cool things in REM is your brain will actually speed up certain memories throughout the day by up to 3x. So if you're trying to learn a new task or trying to memorize something, your brain actually consolidates that during the REM process, and will actually... It's working almost three times faster than during the day.

Katie: That is fascinating. And for parents listening, something important to know for our kids is their studying in school. And I know just from personal experience, I can look back and think how much better I did at different times in school if I was sleeping enough and wasn't stressed. That makes total sense. Is there any science about how much of each of these types of sleep we need in a optimal environment?

Harpreet: There is. There's actually a bunch of studies out there that have sort of shown the norms. I don't remember all the data off the top of my head, but basically, when you're sort of under 20, your body is still growing quite a bit so you tend to get the most deep sleep. I mean, I think generally, it's like you'll be getting a little bit over an hour, as high as 2 hours under the age of 20. Deep sleep is normally I guess how we feel a lot the next day in terms of how refreshed we feel. It tends to correlate with that. So I think the term "sleep like a baby" probably comes from that a little bit. You're probably getting a ton of deep sleep.

REM sleep, I would say under the age of 20, I think the data is probably around a little bit more than a third of your night. So if you think about probably a little bit more than two hours, maybe up to three hours. And then, both of those go down with age. That's the interesting thing. So we do know as we age that actually our sleep cycles tend to get quite affected. Both REM and deep sleep tend to go down. I think by the time you're 60, most people are getting on average less than 30 minutes of deep sleep.

So, I know it tends to progress as you age. I don't have all the data in front of me, but I'm sure we can find some studies and post links in the show notes.

Katie: Awesome. We'll make sure to include those. Are there reliable ways that you guys have seen in...I'm assuming you have a decent amount of data now with everybody tracking their sleep. Are there ways that are reliable to like basically increase REM sleep or increase deep sleep that seem to work across all segments of the population or is that more of a personalized thing?

Harpreet: I definitely think there's some personalized things that end up happening. But yeah, we definitely have some data we think and frankly, we're trying to share, gonna start sharing a lot of this data on our social and on our blog going forward about things we do find. I would say one of the most important things is actually consistency of sleep time, like what time do you go to bed every night and wake time. What time you wake up and you first get exposed to light. That tends to actually impact the quality of our sleep quite a bit, not just the duration.

I think it actually gets back to the principles of circadian rhythms. So just about actually a year ago, finally, a Nobel Prize was awarded in this. But our body actually operates and our mind around something called our circadian clock. So it's actually, sort of, what governs which hormones are released when, when you should fall asleep, when you should wake up. It turns out that this actually impacts most of the cells in our body. So anything that sort of helps set a consistent time helps keep that clock in check, so just falling asleep at the same time. And we actually are just trying to give recommendations for people when that optimal time is for them because everyone has a different time for that. So we're starting to give some of that information in the app.

I think one of the other consistent things we find frankly is meal timing and alcohol. So oftentimes, we eat pretty close now in today's society, really close to bedtime. From everything we've seen, that's probably not healthy for us. Actually, there was a fascinating work being done by Satchin Panda out at the Salk Institute.

I think one of the things that they found actually is your glucose response to certain types of food will vary upon the time of day. And basically, what they showed is that after sundown, our body's response to sugar like, much, much worse. And part of that is actually thought that our pancreas, which helps regulate our insulin and assuming basically helping control our glucose levels in our body, basically starts to shut down once melatonin is released in the body.

So I would say meal timing, from what we're seeing in our data and what we're finding from research has a huge, huge impact. We generally recommend you shouldn't go to bed too full or too hungry. In reality, this ends up meaning people should probably finish dinner three hours, and I think from some of our data we've even seen four hours, helps quite a bit.

I know there's a recent study done in intermittent fasting and the timing of the window. And what they found is a cohort that actually finished their meals before 5:00 ended up doing much better in, sort of, all metabolic function than a cohort that ended up finishing their meals at 9:00. So I think we're gonna find more and more research coming back to, sort of, what our grandparents used to say of eating early and going to bed early helps quite a bit.

The other one is alcohol. I think timing of alcohol and what types of alcohol we know has a big impact. So I think we have found from our data people react differently to different types of spirits and beverages, so that's pretty interesting. And then outside of that, I would say it's getting enough light exposure. We're in a society today where we don't get the amount of light that we used to.

So most time, if you think back historically, we didn't have light bulbs. We were, sort of, waking and going to bed with the sun. And getting that light exposure in the morning actually helps jumpstart that circadian clock again and sets that schedule every day. So, in today's society, when you're sort of over blown by all types of light including blue light at night, which disturbs our sleep and melatonin release, it ends up having a huge impact on how we sleep.

Katie: I think you're so right and I'm hoping that that's gonna be a new wave of research that we're gonna start to understand. I think it's easy to ignore light because we don't feel the immediate effects like we do when we eat food that makes us feel bad. But I really do think this is gonna be vital to understanding and improving health in the next 20 years.

I know especially now that I can track it, it's fascinating to see if I do stay up late and watch a movie and it's got blue light, I don't sleep as well. And when I do things better, and I get bright light in the morning and keep low light at night, I sleep better. It's just fascinating to actually start to be able see that data that I know how based on my field. And as far as that sense, my personal sleep tips, I know for sure that when I, for instance, wear blue light-blocking glasses or just don't have bright lights on at all at night in our house. And when I have blackout curtains in our room, I sleep so much better.

Is there any relation of temperature and sleep that you have noticed? So I've been sleeping on something called a ChiliPad for a couple of years, and I definitely feel like I sleep better. But I'm curious that there's a temperature component to sleep that's been studied at all.

Harpreet: There definitely has been. That's actually another good one to point out. Sorry. I didn't mention that before. But yes, temperature totally helps how we sleep. So again, if you think, sort of, historically, when men and women were sleeping outside, the earth actually cools at night, right? And same thing, it heats up during the day. So it turns out that our bodies probably have adapted to recognizing that cooling as a sign of when to have certain types of, or when to sleep and honestly, probably responsible for releasing certain hormones when we sleep.

So yeah, what we've seen from our data and frankly, I love the ChiliPad, too. I use it. A lot of our team does as well. And yeah, we have found that it actually makes a huge impact. We will be gathering some more data on that and hoping to release it in one of our blog posts or on social going forward. And I'm actually really excited.

We're gonna be doing a study in the fall or winter this year along with two professors at universities that I

can't mention yet. We will be capturing data on hunter-gatherers in Africa with the Oura ring because, you know, some of them are still sleeping outside or close to the ground. And we know that actually has a huge impact on the quality of sleep.

Temperature control, generally, the cooler the better. I would say 65 to 67 degrees is what we've sort of seen as like an optimal temperature. I think warmer than that, again, some people are different. Some people actually do better in a little bit of a warmer temperature, but that is something we show in the Oura ring. And you can start to correlate that and experiment with, sort of, lower temperatures and see if that helps actually improve your sleep.

Katie: Very cool. I cannot wait to see that data on hunter-gatherer tribes. And before we go any further because I wanna get a little deep on things like HRV and fertility tracking. First, I'd love for you to explain to anyone who's not familiar with it how the Oura ring works and what it's tracking. Because I think there's a lot of fitness trackers out there that track your movement or your number of steps. And, to me, this was a completely revolutionary new way to track things, and I was shocked how much I ended up using it and how much I've integrated it in my daily life. But can you kind of give us the broad level of everything it tracks?

Harpreet: Yeah, sure. I'll take a step back even further than that. Our view is we wanted to focus on sleep over some of the activity metrics that wearables have sort of been known to do because sleep impacts how you feel every day. And, honestly, if you look at the population stats out there, 99.9 percent of the population sleeps every night, but only about 15 percent of the population works out every day. So we just thought it's, sort of, a bigger thing that ends up impacting everyone. So it's something that we wanted to focus on as a company.

We actually chose the ring form factor for two reasons. You know, I would say the first reason we focused on it is because of the signal strength of your pulse. So, you know, it turns out in every hospital sort of uses this for tracking your heart rate and your SpO2 as well. But the pulse from your fingers, if you look at, sort of, the inside of your hands on your palms, is much, much stronger than the pulse from your wrist where your Fitbit or your watch might sit. You know, some of the studies have shown that it's actually up to 50 times, if not 100, times stronger. So that's one of the reasons we focused on, sort of, the ring form factor versus a wrist-form factor or some of the other option out there.

I think the second thing we found is that it's really, really comfortable. Most people don't like sleeping with watches. We actually chose titanium for our gen 2 ring to make the ring as lightweight as possible, so it didn't really disturb anyone when they slept. And we actually also chose infrared lights instead of, sort of, green LEDs on some of the sensors. And the main reason is so that it doesn't disturb your sleep. And all the evidence I would say on infrared light has been shown that it's proven to be healthy for the body not damaging.

In terms of what we track, well, we track a bunch of different stuff. So we track your heart rate. We track every single beat throughout the whole night, and we're sampling that heart rate at 250 hertz or 250 times a second. That ends up being 10 to 20x being more frequent than, let's say, your average wrist-based wearable, and I'm not gonna name names.

So we track every single heartbeat and your heart rate variability or the variability between each of those beats throughout the whole night. From that data, we also derive respiration, so that's another metric we track. We have three temperature sensors inside the Oura ring. So we look at changes in, sort of, your skin

temperature, which funny enough in the finger, tends to correlate extremely well with your core temp. So if you think about if you're hot or cold at night, generally, you stick your feet out of the blanket and same with your hands. And so, you know, our extremities of our bodies help them to regulate our core. So we do see changes in core extremely well. And then, as far as during the day, things we track, we do track, sort of, steps and all the other things that other wearables track as well.

Katie: It's been fascinating to see, and another thing I love is the fact that I could go into airplane mode because that was one concern I had with a lot of the wearables is they're constantly Bluetooth enabled. And so you've got Bluetooth on you all the time even if you're sleeping. And EMAPS are certainly a controversial topic, but it's one of those things that I felt like we don't have all the research on yet. And at least during sleep, it's something I try to avoid. So I love that that's an option. You're the only one I found that has that ability. I know a lot of health leaders are turning to Oura ring for that reason and also because of all the cool sleep data.

But you mentioned HRV or heart rate variability a little bit, and I want to really delve into this. So for anyone not familiar, can you explain this concept, what heart rate variability is and why it's important?

Harpreet: Yeah. I think it's a new metric that people are starting to track that's getting a lot of attention, and I think it deserves it. So heart rate variability is actually the variation of each heartbeat. So if you think about it, if we're sitting here and talking pretty relaxed, our heartbeats might be at 60 beats per minute or 70 beats per minute.

It turns out, though, every single heartbeat within that minute is sort of happening at a different speed. So, you know, if we get really excited, maybe our heartbeats might increase for a few seconds and they're 80 beats a minute or 90 beats a minute and vice versa. If we're slowing down and almost falling asleep, it might actually be slower. So it turns out that this beat-to-beat change in your heartbeat, it's coined, sort of, heart rate of variability.

I have a little bit of a math background, so I like to think about it as a derivative of your heart rate. So it ends up, sort of, that we found that actually these metrics, it correlates extremely well with stress, overall stress and your autonomic nervous system or your ANS.

So yeah, I think there's been a lot of studies out there, sort of, indicating periods of constant stress or chronic disease actually cause very low heart rate variability numbers. And when people are, sort of, in a flow state, they're extremely healthy, they have a lot of energy, they tend to be well-rested, your heart rate variability turns out to be really high.

So it's a little counter-intuitive because a high HRV is really good, and a low HRV tends to be not to be so great. But yeah, it's something that we track. And I would, sort of, argue that the benefit of the Oura ring, it's the easiest way to track that. I think other devices that people were, sort of, using before tend to be chest straps, and no one wants to wear a chest strap to bed the whole night or frankly, even during the day. They're not that comfortable.

And so, one of the things we focused on was being able to track HRV. And quite frankly, we're still learning as a company because no one's really ever gathered that much HRV data for seven to eight hours every night on a large population. So, we're finding new things from it all the time. We're seeing people that when they have,

sort of, athletic events and they're training really well and resting really well that their HRV tends to go up. If they're over training, their HRV tends to be pretty low.

We've had some user stories. Some people have reached out to us and say, "Hey, it's crazy, that something traumatic happened to me," either an accident or the family or something really stressful at work that's happening, and they'll see clear changes in their HRV. And a lot of people are using it now in the athletic world as a metric to train by.

So there has been correlations with HRV and physical performance from some of the new research out there. And so, a lot of people actually, I would say, in the endurance athlete world and, sort of, more on the power side, the Olympic world lifting side are using HRV as a metric to help actually look at and train according with, sort of, seeing that data.

And there's even some, sort of, new research being done on breathing and meditation and the impact on HRV. And that's something that we hope to bring soon in, sort of, a meditation mode within the app.

Katie: Very cool. So is there like a good metric or aim for someone who's tracking HRV or just wants to start tracking it? That is a great...just an average that you're aiming for to know that that's in a good range. You said higher is better which is unlike most health metrics. But is there a number that's a good number or does it really depend on the person?

Harpreet: So I think it really depends on the person. You know, one of the things that we're wary of as a company is trying to classify people. I like to, sort of, think about it like a yoga class or going to the gym for the first time. You know, the goal is just to get better, right? So it doesn't matter who you are and where you start.

I think from an overall, just what's interesting and cool to know, what we've seen is some of the pro athletes we have, you know, we have a few cyclists in the Tour de France and some NFL athletes wearing the Oura ring, it's pretty amazing. We'll see HRV numbers as high as 150.

And just let people know, the HRV metric we use, there's two different ways to, sort of, used, or many different ways used out there. But we use sort of a time domain metric that we calculate every five minutes, and it's called RMSSD. It ends up being a mathematical formula which stands for the Root Mean Squared of Successive Differences. I'm not gonna get into the math, but in that case, the unit is milliseconds.

So if you wanna think about it as a way of 100 to 150, that will be how much of average variability you have between beats. It ends up being pretty high. You know, I think on some of the chronic illness side on some people when they have extreme stress, we'll see HRV numbers as low as 10. But again, it's one of these things that we're finding changes with age.

So we definitely have seen from a younger audience that their HRVs will be, sort of, in the 70s to 80s, maybe as high as 90s under the age of 20. But I think as you age, as people start getting to their 40s, it tends to actually drop quite dramatically. So I would say 40s and above, we're seeing HRV averages, sort of, in the 40 millisecond to maybe 50 millisecond range.

So again, everyone is gonna come in at a different level. But if you're below 10, that's something probably to be aware of. If you have some chronic health issues going on, I wouldn't be surprised if it's sort of averaging

20. That can be even chronic issues in the past. And then, I think when we see, sort of, you know, really 1% of 1 percenters at the high end, we'll see numbers, sort of, as high as 100 and above.

Katie: Wow, so definitely a big range. And from what you're saying, things like deep sleep and physical exercise, I would guess like things like reduced inflammation, those can all impact your HRV and improve that number?

Harpreet: Totally. Actually, one of the things that we're finding and I think there's more and more research starting to go into this, so it should be cool to pay attention to over the next few years, that certain types of training impact HRV differently. So generally, we found that bouts of intense activity, immediately that night, you actually tend to have lower activity...or sorry, lower HRV scores.

And so, if you think about this, your body just went through a stressful event, right? It's probably gonna help take some time to recuperate. But normally, two to three days later, actually, your HRV will be sort of higher than your baseline because your body is super compensating, right? It's trying to heal itself and come back just like Wolverine does. So we'll tend to see that with really intense training.

One of the interesting things though is that light intensity like, almost like a mild bike ride, something that gets your heart rate up a bit but not too much, even some low intensity interval work, we've seen actually pretty impressively increases in HRV the next day when some people tend to do a sort of lighter work along with, sort of, some things like stretching or even getting massages.

So, it's pretty interesting to see that actually, it's just important to have those light days of activity as it is there's heavy days of activity as well, and that those light days can actually help accelerate your recovery from physical performance.

Katie: And I can't wait to see the data from the traditional hunter-gatherer tribes, too, because that seems to be a very much more in line with most likely what their activity level could look like with lots of low-level movement, moving around all the time, and then burst of intensity when they need it to. So it'd be fascinating to see if they have great numbers which I would probably expect.

Harpreet: And I totally agree. It's gonna be a fascinating data to collect. You know what's really interesting about all of this data is I think it just is causing us to finally look inward a bit more. You know, one of the things I always try to think about is the average person now, they touch their cell phone 150 times a day. So if you think about that, if we're awake for 18 or 17 hours, that ends up being 10 times roughly an hour.

When we're so busy in today's modern society, so much more being connected all the time that we sort of forget to ask ourselves how we feel or what's going on with our bodies and minds. You know, I think that hunter-gatherer society clearly benefits from that. So I wouldn't be surprised to see a much higher HRV numbers with them, but it'll be super interesting to see that data.

Katie: Yeah, I can't wait to see it. I'm also curious because I haven't...in the past, I've done like extended water fasting just for the autophagy and the different benefits for the body. But it's typically sleep suffers a little bit when you're fasting. So I'm really curious to see the next time I do a fast what the ring reports as far as how my sleep changes and HRV and how long it takes to recover. Do you see any data on that?

Harpreet: We don't. We haven't done organized studies on that yet, but that's actually one of the things that we're thinking about starting, is like, sort of, challenges to our user base of, you know, people who are willing to help us collect some of this data. I mean, one of the things I think...You know, Robb Wolfe talks about this, too, is what he's found is when going in a ketogenic diet, oftentimes, that HRV and sleep will be impacted negatively at first before sort of your body adapts, right.

So I think it's gonna be cool to, sort of, understand how our body reacts during this sort of extreme periods of change when we're trying something new, especially those that are related with longer term health benefits. It is something that we're cognizant and we wanna start collecting. And frankly, we're gonna turn to our power users, people like you, to start collecting some of these data and organizing it so we can share it with everyone.

Katie: That's awesome. Now, I wanna switch gears a little bit and talk about something that's gonna, I think, be really helpful for the women listening which is fertility tracking. This is something I've been tracking for I think 13 years now just I because I thought it's a very helpful metric for health. And unlike men, women's hormones do change on a daily, weekly, and monthly basis. And so, you kind of get a lot of data about your health by tracking that.

But I wanna talk about it specifically in relation to the Oura ring. So anyone who's not familiar with it, there's multiple ways you can track your fertility. It can be through symptoms and how your body is changing at different times during the month. It can be even your saliva and different PH in your body changes different times in a month. But one of the more reliable ones is basal body temperature. So I'd love if you could talk from the tracking side about how the Oura ring can relate to tracking your fertility and what kind of data you're getting.

Harpreet: We actually posted a pretty thorough post on this, so I'm happy to share that in the show notes as well. Where frankly, our two scientists and another person on our scientific staff went through and actually documented it, but you're totally right. You know, I think when we look at, sort of, the menstrual cycle phases, there tends to be, sort of, two phases we tend to look at. So I think, sort of, the follicular phase or FH and the luteal phase and LH.

So what we, sort of, lay out on the blog is that we know that different hormones are released at different times through these phases, and that those phases actually...you know, when estrogen is released and progesterone is released, end up having sort of different changes in temperature.

And, sort of, what we see when we transition, when women transition from the follicular phase to the luteal phase is that body temperature tends to increase, an increase about 1.3 degrees Centigrade or Fahrenheit, actually. So, we actually go through that change, and you can track it in your Oura ring data which is really cool to see. And then, some of the other data that you can start to track and we start to see correlations from is actually resting heart rate tends to change as well during different parts of the phase of the menstrual cycle phase, and also actually heart rate variability.

And more and more research is coming out there that it's sort of a combination of these three things, resting heart rate, basal body temperature, and actually heart rate variability can help sort of really help people triangulate when a change is happening, and when these different hormones are being released as they go through the menstrual cycle every month.

Katie: I'm so fascinated by that because I've been familiar with the temperature connection for a long time and I love that I don't have to track that with a separate thermometer so it's already built into the data. But the HRV side, I feel like that's a much newer side of fertility tracking that most people aren't even aware of yet. And it's so fascinating to actually see those patterns. I really was blown away by how reliable that seems to actually be.

And so I know for me, I've gone from years ago, tracking all these on paper, and it was very inefficient, to now, between the Oura ring and some apps, I feel like I have a really, really thorough grasp of that. And it's great for women, I can say from the women's side, to be able to look at it and say, like, "Oh, okay, well, that would be why I'm feeling hormonal today," or "That's why I feel like I need extra sleep today<" because you know what your hormones are doing ahead of time. And also, you can then support your body when you know you're gonna need extra nutrition or extra calories or extra rest. You can already build that and then plan on it.

So basically, inside the data in Oura ring, I wish I could you show it to you guys while you're listening, but I'll put some pictures in the show notes. You can literally just track your patterns and trends of all of these things we've talked about. So you can look at your trend of HRV throughout your monthly cycle and see it change, and you can look at your temperature and how much it changes. And it really is just drastic to see that, so it's really cool.

Do you have any tips for someone who's maybe new at this on the best ways to start integrating the data they would have from something like the Oura ring with fertility tracking?

Harpreet: Yeah. This one's hard for me to speak about as a guy because I don't have firsthand experience looking at my own data in this. And so, it is something I wish I could speak more to. I do think when you start using the ring, you'll start to see...the easiest way is probably to check it is in the Trends section of the app. If you go to the Readiness section within Trends, you can see sort of your body temperature. And you can look at a change daily or, sort of, weekly as well and start to look at some of those trends.

And when you start to look at the data after you collect them a month or two, it'll start to become more obvious of when those changes are happening. Frankly, I think the research in this category is still ongoing. I do think also the ways that we've even tracked this historically as a society have been pretty crude. I know some of the top apps out there that people use whether it's Flo, I think Glow and Clue are two popular ones as well, that people, sort of...they'll ask women to wake up every morning. And I think at the same time, check their temperature with a thermometer.

And if you just think about that, it's sort of a big pain. And there tends to be fluctuation with temperature in your room to some degree as well, so that can help throw it off. No one wants to sit there and write down, sort of, every day if that number is changing.

So, you know, I think being able to track that data with, sort of, an average that we'll get throughout the whole night from your temperature change ends up being a more accurate way to do it. And actually, also especially on the finger, I think, like I mentioned, when your body tries to cool itself or honestly, heat itself, your extremities tend to change temperature first. So what we found from data that we've collected is that ends up being a better place to collect data from than the rest.

But I think we're gonna continue to collect more and more data. We probably will at some point actually try to work with some of the other third-party apps out there to help integrate. So you could use all the functionality of, let's say, those top menstrual cycle apps that I mentioned and automatically have, sort of, your Oura data just in there. And so, I'd be curious to hear sort of which apps your audience likes the most because I think frankly, we're gonna want to partner with all of them.

Katie: That would be amazing to be able to see them all together. It's obviously so much more amazing now just having them all in that app versus handwritten. But I know I use the Flo one and Clue pretty often, and I also have, I think, Life on my phone. And those seem to be the three that I hear the most from other people as well. That would be amazing to be able to see those line up.

And then, such a great point on the temperature thing, too. Because even when me and I've been tracking my cycle for that many years, that was the part that I always had the most trouble actually consistently doing because of that. Because if you get up to go to the bathroom and forget to do it first, if you accidentally drink water and forgot to take your temperature first, it kinda messes up your reading. And then, you kinda don't have reliable data for the whole month. So at least with the ring, you can't really forget. As long as you're wearing the ring, it just does it automatically which has been super helpful.

Harpreet: I think that's actually one of the benefits of wearables is that collecting that data actually all throughout the night ends up being, sort of, a more accurate way to measure an average, than just collecting it at a single point in the morning. As you sort of mentioned, like actually, temperature will change, right, at any given time throughout the day, right? But even with your body, like if you have to use the bathroom, if you're more stressed than not, your temperature could be changing.

Just looking at a single point in time isn't as accurate as gathering that temperature data all throughout the day and night. So I do think it's one of those things that like longitudinally, we're gonna start to learn more and more things about data that we find from our users and from studies that we'll conduct, then just, sort of, the old way of just checking your temperature once every day in the morning at a certain period of time.

The other useful application too that we see this for is frankly when people are getting sick. I haven't been sick, knock on wood, for three or four years. And I finally actually got a cold about two weeks ago. And it was really cool for me to be able to see that data happening. You know, I felt like I was getting sort of a little bit of a scratchy throat, and I sat next to someone on the plane from New York to San Francisco who's just sneezing the whole time. So I feel like that's where I picked it up.

But as soon as I saw my temperature increase a little bit, I totally overdosed on vitamin C and zinc and a bunch of ginger and lemon honey tea. I definitely think that helped me get ahead of that as well. I actually think temperature is gonna be one of the most fascinating things that we start to collect data on. And we also know temperature has a lot to do with changes in the thyroid, so I know some people that have pretty extreme thyroid issues. One of the metrics that doctors will often ask them to look at when they're changing their dosage of thyroid is their temperature.

So I think that's like another use case that we wanna look into. There's so many cool things that we're starting to learn from data that we're collecting from devices like Oura and other things out there as well.

Katie: And on the extreme ends, we have some cool data about extreme heat and extreme cold and heat

shock proteins and the various ways that affects the body. Even like you said, just small changes in temperature and how drastically they can impact our health. On a selfish level, I'm curious to ask that about temperature is ,what temperature can I wear the Oura ring in? I've always taken it off if I was in really hot water or really cold water just because I didn't know if it was gonna be able to handle that. But can it be worn in those cases as well?

Harpreet: Yeah, totally can. We're a Finnish company so there's a huge sauna culture. And oftentimes, if you're out nearby a river, people jump from, sort of, the sauna right into the river and even during the winter when there's like ice over it which is sort of nuts. So yeah, you can definitely use this in all types of temperature.

I was in a sauna the other day. That was almost 190, 180 degrees. It's really hot and it's totally fine. So I think some people might be more sensitive to the heat. And you might feel the metal heating up a little bit, the titanium. So just be careful on the lookout for that. But for the most part, I would say most of our team does wear it in the extreme weather conditions.

Katie: Good to know. I'll keep it on then. Will there ever be tracking within the app that you can foresee that will take into account the like extreme temperature changes and see how those impact sleep, or will that just be something to pay attention to as a user? Like, for instance, knowing if I'm gonna be in a sauna and a cold tub back and forth and then seeing what it does to my sleep.

Harpreet: It's definitely something worth thinking about doing because exactly as you said, just being able to help people correlate that and honestly doing the largest sauna studies out there would be pretty cool. But now, that is something we're looking to enabling during the day. I mean, it's fascinating.

Honestly, just the data you can collect from temperature even if you think about after you exercise, your body temperature might stay elevated for longer. Maybe, that's indicative of you worked out really hard or too hard. And frankly, even things that we found from certain types of food and just meals. They call it the meat sweats.

So I think the more and more data that we can start to share with our users as we start to find some of these correlations on things that'll be helpful for people, we'll look to do that. But yeah, I think we're gonna start creating these challenges in our user base and maybe yourself, Katie, and some people in your community might be some of the first people that we ask to help us collect data on, sort of, a sauna challenge.

Katie: I'm in. I will definitely do a sauna challenge. Are there plans to eventually integrate as well with like a food tracking app or to be able to see changes like notice a pattern if you ate this food multiple times and your sleep was affected every time you eat it? I know that will be complicated.

Harpreet: No. Honestly, these are all the things that we have sort of in our roadmap that we're all looking to do. We definitely know there's correlations between certain foods, when you eat them, and then how your body reacts. I think there's even been some good work out there with, sort of, correlations between heart rate variability and fasting glucose levels. There's a gentleman out of UK, Alessandro Ferretti, he's put some good information together on YouTube on this.

And frankly, when I got a continuous glucose monitor, I was actually comparing...I was trying to do...I mean,

this is real citizen signs. I don't recommend this, but I was actually trying to see myself if I could see big changes in HRV along with glucose. So for a period of two weeks, I sort of let myself go wild and experiment. But I was doing things like eating desert pretty late right before going sleep. And saw immediate changes in my CGM from the data I was getting there alongside changes in my HRV from data I was getting in the Oura ring.

So, I do think we wanna start integrating with more and more partners. So, you know, we're all ears and trying to talk to as many people as we can frankly, and eventually, making this data more taggable and more accessible to our users. We definitely think that just collecting data is gonna help people learn from each other.

So we do want to enable, sort of, these correlations and note-tagging within the app so we can help people, sort of, find correlations whether they ate a late dinner or ate desert or had an early dinner and see making it easier to, sort of, spot the correlations and trends that end up changing with that. So we will be releasing some of that, I would say, in the fall and in the winter in the app.

Katie: That's great news.

This episode is brought to you by Perfect Keto. I have heard from a lot of you who are trying the keto diet right now. And Perfect Keto has several products that make it so much easier and tastier. They have keto-friendly sports drinks with zero additives, zero carbs, and only high-quality ingredients. And I've gotten so many questions about this. They also have exogenous ketones that raise blood ketone levels up to 1.5 millimoles per liter. So that would be simulating a fast. A lot of people use these exogenous ketones to increase mental performance, and energy production, and fat burning without the need to do extended fasting. And Perfect Keto really just helps make ketosis available to everyone, everywhere, all the time without the need to do extended fasting, like I said. You can check out these and all of their other products at perfectketo.com/healthymoms. And if you use the code HEALTHYMOMS, all uppercase, you can save 20% on any order.

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Katie: And I feel like the more research I read lately too, the more I'm convinced that the future of health for all of us is very personalized and very much varied. And based on so many inputs, it's like...first of all, it was all these different dietary dogmas. And now, we can kinda look at it and go, "Maybe, we were all right," or "Maybe all of these things have their time and their place." But the key is to be able to see your own data and how they're impacting you personally because that varies so much from person to person.

I think things like the Oura ring and just having this wider ability to track data on an instant basis versus having to get labs or having to go see a doctor that that's really gonna, over the long term, help so many of us take our health back into our own hands and to be able to make small changes day-to-day, versus having to make massive health changes when we get a health problem later. So it's so cool that we're now able to even talk about tracking all these things.

Harpreet: Totally. I think honestly, we're big believers at Oura in N of 1. Everyone's different and frankly, I know while users have requested, that's why we haven't released a lot of the average data on certain people and, let's say, certain age cohorts. We will be doing more of that in the future just so people have a better sense of where maybe they should be. But I do think N of 1, your own data is really what's gonna help you improve and cause behavior change.

It's sort of seeing how you react to something, and the way your friend reacts is likely gonna be different most of the time, which is part of the challenge. For all of us, sort of, helping to improve our health, because it's different strokes for different folks. And we do see this from our own data. I mean, one example is actually blue light-blocking glasses. While it helps most people for sure, we have found cohorts of certain users where actually, they're not as light-sensitive and they tend to release melatonin just okay. You know, I wish I was one of those persons. I'm not.

But I think honestly, the more and more we start to find out with data, what things are working for certain types of people, the smarter we're gonna be as a society and exactly as you said, taking health back into our own hands.

Katie: I love it. And as we start to wrap up, I can't believe this hour has flown by already. But I'd love to ask if there's any advice or pieces of advice that you feel like you wish you could share far and wide or that's misunderstood, specifically in your area of research.

Harpreet: I mean, I think frankly, the biggest thing I like to share is it's about what we're just talking about. It's about what works for you. Not everything is gonna work for everyone. People are at different points in their lives. My girlfriend has Lyme disease. Her HRV is lower than mine will be, and it's really frustrating for her. And I think in the beginning, she was just comparing to mine a lot.

You know, I think that's sort of not the right approach because it can often lead to frustration. I think the key is to sort of learn what works for you and be able to use things like Oura and other devices and other things, other tracking apps out there to really understand and have a more holistic picture and look inwards, right?

Like I was sort of saying, I think in today's modern society, and I'm a big believer in technology obviously, but it definitely has had its downfalls. And so, I think we're more hyperconnected as a result which is great. But at the same time, we're sort of being pulled in 10 different directions every hour. And I think honestly, that that doesn't give us much time to think ourselves, look inward, and reflect.

And that's frankly one of the big things behind Oura is we wanted to make, sort of, the invisible, visible again, right, of what's happening inside your body and mind and be able to show and look at some data so people can start to understand. And we're gonna make that easier in the app screens over time. We know probably your audience and other people out there that are bio-hackers are pretty sophisticated and know how to

understand this data. But frankly, my mom or my dad they don't. And so we are aware that we need to make this sort of more accessible for the masses.

You know, the big thing is I would say is learn what works for you. It's your own journey on health and start looking at some of this data on things like Oura ring and other devices and apps out there to help learn because it's really all about learning from where we are and not from where someone else is.

Katie: Absolutely. And lastly, is there a book that's had a big impact on your life that you would recommend? It does not have to be related to everything we talked about.

Harpreet: I would say a really interesting book that I think had a big impact on my life was "Ishmael." It's by Daniel Quinn. The book is actually...it's about a talking gorilla which is sort of insane concept to begin with, but it's extremely well-written. And this gorilla ends up conversing with this human and they end up sort of talking about a lot of issues just in life as a whole.

It's had a big impact on me because I think one of the things they talk about is, sort of, first order change and second order change. It's the idea of, sort of, you have to be in a place of, health and even wealth for yourself before you start embarking and able to help others. And it talks about in this journey of trying to help other people, how sometimes we actually hurt them and I think some of the idioms come back, too, some of ideas of giving a man a fish versus teaching a man how to fish, the same concept with first order change and second order change. It's a really fun book.

I think it's really easy to read, and it's something, sort of, atypical that you won't hear from, I think, most entrepreneurs talking about, sort of, business books or some book as far as just about sleep. I will say that one other book I really, really love and I think someone has done it really, really well is "Why We Sleep" by Matt Walker. He runs the Berkeley Sleep Lab, and I think he puts, sort of, probably the best and easiest book to read on all the different things and fascinating things that happen to our body and our mind when we sleep.

So, if you wanna dive further, I'd recommend that. But if you're looking for something just to maybe what might seem like a step off the beaten path, I'd definitely check out "Ishmael" by Daniel Quinn.

Katie: Those are both new recommendations. I've added them both to my list. Thank you so much. And for any of you guys who are listening, I definitely recommend trying out the Oura ring because, like I said, I am shocked how much I've integrated it into my life and how much data it gives me. And there will be a link in the show notes of course, but you can also just go to ouraring.com, that's ouraring.com, and use the discount code [wellnessmama](https://ouraring.com).

And Harpreet, thank you so much. I know it's busy to run a company and all the things that you have on your plate, and I really appreciate you being here and sharing the research and the data with us.

Harpreet: Katie, thank you for having me. And honestly, thank you for everything that you've done. I think it's people like you frankly, and others that are helping to share all the information they've learned, making it easy in access, free for a lot of it to get, and accessible in the forms of podcasts and blogs and social for people to continue learning about themselves. We're all in this journey together, and it's people like you that frankly, make it a lot easier.

Katie: Thank you. And people like everyone listening, thank you guys for listening, people who care about their health and are willing to make changes and take control of their own health, you guys make our jobs awesome. We appreciate you. We appreciate your time in listening, and I hope to see all of you guys next time on the "Wellness Mama Podcast."

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