The Truth About Stress and Heart Rate Variability Transcript

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Introduction to stress and the episode topic

All right, everyone, we're back. And today we're talking to doctor J. We have some cool stuff to go through. Something that I personally need to deal with.

Which is me slowly killing myself with the stress Lord, I've been taking on. People, you know. You know, even when I look in our own office, the way people handle it, the way people deal with it, the the way it's even perceived is so different for different people.

The physiological response, the mental response. So we're going to dive into a lot of that stuff. We're also going to look at heart rate variability and some of the myths that we, you know, think we're getting out of this and some of what we what we need to get out of it that we don't, you know, we're getting out of it.

So first of all, welcome. Thanks so much. Glad to be here, man. So you don't seem stressed at all. Like you, I just I just know how to hide it. That's not.

I can mask it. Well, yeah. So what? Just in a nutshell, what is stress? People misunderstand. Like, what does that even mean? Yeah. Great question. Stress is ubiquitous, right?

It is something that every single person experiences. And I think a lot of times we think about stress in terms of like a mental health problem. And so stress even in itself can become stigmatized.

But no stress is actually much more broad than that. I think the best way to conceptualize stress is that it it has many different sides to it, and I would even argue many different faces.

So the first one would be is that there is indeed true good stress or stress that works to our advantage, can increase performance, productivity and wellness.

What stress really is: distress vs eustress

And then there is stress that can actually work against us and can be deleterious. But in and of itself, stress is actually all about adaptation. And stress really is there to save you.

It is there to help you, not to harm you. And I think that's the problem is that within our modern day society, when we hear that word stress, the first thing that's conjured in our brain is bad.

Like stress is bad. Actually, no. At the core of stress is good. It is there evolutionarily to help you, to aid you. What is stress? It's a warning sign.

First and foremost, stress tells us that we need to check in with our environment when we experience something, especially if it's internalized or psychological stress.

It's a warning sign. But also two stress can come in the form of physiological stress. Well, why do we exercise right? It's actually a form of stressing the body.

We might refer to it as Prometheus or Hermetic stress. It's this small insult to the body, if you will, that can help to make us bigger, faster, stronger.

So to put them into their two categories, the best way that this has ever been conceptualized, is by, Doctor Han. So you a very famous researcher on the human stress response, and he identified two really specific forms of stress, distress, which is what most people think about when they think about stress.

They think about the stress that beats us down, the one that's really challenging, the thing that causes problems. But then there's also you stress EU stress and you stress is the one that can help motivate us, can increase productivity, can really optimize well-being.

That those are things like exercise that's also if you ever heard of people, kind of say that I work best under pressure. Let's actually use stress being effective.

I'm one of those individuals. You put me on a deadline on a crunch, and I perform way better than if I have, like, way too much. Like lingering time. I get too relaxed on things.

So that's kind of the basic overview. But obviously there are a lot of psychological underpinnings, physiological underpinnings, and I'm sure we'll explore those.

But I like to think of stress as number one ubiquitous, number two adaptive and number three, very much so within kind of categories of distress. And you stress.

Yeah, that makes a lot of sense because, our experience with stress, it's not that, all these different forms and use cases don't exist. It's just that we're stuck in the worst version of it.

And that's kind of the majority of our experiences. Don't sleep enough, work too hard, family problems, all the things we do to ourselves until we're experiencing what we see as a problem.

But in fact, you only get driven by the need to do something, and that stress can lead you there, right? So yeah. So we so and even strong strong acute stress that is distressing is not inherently bad.

And that's what again some a lot of people misconstrue stress and even distress as being like more bad than it is good. No actually it's quite helpful. It's useful.

Like you need your distress signaling your sympathetic nervous system to be on full fire. If you're out in the woods and a mountain lion jumps around the corner, you need it. It's going to be helpful.

But it's all about kind of adapting to that environment, utilizing it when need be, and then when it's not necessary, when it's not useful. Knowing that, being self-aware of that and then engaging the parts of the nervous system that can help to combat kind of the deleterious effects of long term systemic kind of heightened distress.

So why do you hear doctors say that? You know, it's one of the things you need to avoid that it makes you sick. It's a root cause of disease. You know, what's going on there.

This is a really good, nuanced question. And the reason that it's such a good question is because the advice that physicians, mental health professionals, you know, health coaches are giving is not inherently bad, because what they're really talking about are not kind of these really large scale, short, acute distress ers.

Why chronic stress becomes harmful

They're talking about the compounding stress that happens day in and day out that people routinely experience. So when we think about what am I talking about?

We're thinking about the compounding stress of finances, of work, relationships, family distress, not engaging kind of the body. Those are two ways that the body is experiencing stress day in and day out that are being deleterious.

And if you think about it, it's these small little compounding things that turn into a large scale, overarching major stressor that then significantly affects physiology.

So if you experience, let's say, one day of work related stress, is that going to inherently change your physiology makeup? No, not at all. Like that's you're going to adapt to it.

But what if you experience it day in, day out, week over week, month over month, year over year, decade, a decade. Now we're talking about systemic compounding damage of stress.

And so that's what people are talking about mainly, is that we need to make sure that we're becoming more self-aware of those small, little acute compounding stressors that turn into chronic, long term systemic change.

Within the nervous system, we need to be more aware of those and affect change to better kind of our response to those, as opposed to we just have a bad day at work.

Or maybe, you know, we have a really bad financial quarter. Q1 for everybody was awful, right? So it causes some stress. But, you know, it's not the singular event.

It's the compounding of smaller events that makes a lot of sense because it's right in line with everything else we're doing wrong. Right? Whereas chronic it's chronic in nature.

It's ongoing, compounding. You can even call it a condition. I have a stress condition. Not that it is because it keeps happening day in, day out. And then the result is these, you know, scholar called the biology of the chemicals that are produced and things that allow you to feel the stress that are meant to be short term in nature, that are meant to drive you towards something, are not constant.

And that constant is what was never meant to be. You know, our our ancestors didn't live the way we live. And so this tool that we have, we're wearing it out, we're overusing it.

And that's what we weren't designed for. Indeed. Because from an evolutionary perspective, we would have absolute times of extreme heightened acute stress responses.

Absolutely. So if somebody is going through, let's say, a time of famine, they don't have access to food because they're hunting and gathering and maybe they're not catching anything.

Maybe they can't forage well, or maybe they're just not coming across or it's bad season for it. Or they have these acute kind of attacks. Maybe there's a mountain lion like I gave the example earlier that jumps around the corner.

The thing though that's very different is that while they experience stressors, there's no doubt about that. And sometimes, maybe even more so, extreme stressors, what they were really good at is not, having or what we have evidence of is that they were really good at not having that system engage chronically, because it wasn't like they had continued compounding effects.

But it's not to say they didn't have that. But what we what we know is that the compounding, small acute stressors that we experience on a day to day basis, that is something that they didn't have, as much exposure to as what we do in our modern day society.

And you compound that with other things within our environment and challenges within our environments. And again, it's not to say that our ancestors didn't experience their own insanely immense environmental challenges.

And, you know, food access challenges and all those other things. But our challenges are different, and the environment we live in are different, and it requires a unique set of skills now that they maybe have to utilize that makes a lot of sense, and it should bring clarity to people.

But the unique we think about. So when we picture stress, we picture about, you know, the mental, the feeling, the the load, the pain of whatever's going on.

We don't think about the rest of our body, you know, separate the brain, environmental toxins, you know, mold. These so are those stressors triggering the same responses and pushing the same turning the same dials?

Absolutely. So one key thing to remember from a physiological perspective, which I think is fascinating, is that one

of the key drivers of our stress response that comes from our body, that sends afferent signals.

So signals from the body to the brain is via our 10th cranial nerve, our vagus nerve. It's kind of the key driver to the stress response. What we know is that the innovations of this nervous from the heart and from the lungs, it's 80% afferent, 20% efferent, which means that if our body is receiving direct signals and sending it to the brain, this is a key driver.

Body-based stress signals and the vagus nerve

This is a really strong signal, or so if we have things like problems with gut issues, exposure to mold, exposure to Lyme disease, all of these other related issues.

And we're sending kind of this direct afferent signal via the vagus nerve and other nerves that come from the spinal cord to the sympathetic side of our nervous system.

Then this can become significantly dysregulated as far as our stress response goes, outside of what's going on cognitively, what's going on within our central nervous system.

So it's really important to remember that these two go hand in hand in tandem, and we can actually know a lot about our body through our own stress response.

And we can measure this through different biometrics. We can measure this subjectively. There's a lot here. That kind of goes unattended. One kind of really great, example of this is looking at the third branch of our autonomic nervous system that dictates our stress response, and that's our enteric nervous system, our gut.

And we know that our gut receives a large amount of information from the 10th cranial nerve, from our vagus nerve, when we have significant dysregulation in the gut, whether it be dysbiosis, whether it be H.

Pylori, any other type of gut dysregulation, then we see our, markers of the human stress response go whack. It goes nuts. A significant reduction in HRV, a significant increase in heart rate dysregulation and modulation of the barrel reflex of the heart, which impacts homeostasis of our, of our blood pressure mechanisms.

These get significantly dysregulated. And we can see that when we then affect change, within our gut system and we heal it, then our stress response becomes more resilient, more adaptive, and it heals itself.

So there's a lot of interconnection that people don't make. A lot of people think, okay, well, we need to make an effect. Psychological change. Well, there is effect there.

We know that there's efferent signaling that happens from the brain. But actually most of the signaling is coming directly from the body 80% afferent signaling from our vagus nerve.

So it's a good piece to keep in mind. Yeah, that's powerful because I think people think about, you know, typically it's like we said, the feeling, the exposure to other things because there's no sensorial response.

You may not think about the stress you're putting yourself through versus like, I feel this, my chest is getting tight. I can't handle this lawyer letter that, you know is happening, right.

The rest of it you don't know. So I mean, people listening, I'm sure they're going to say, well, I get it. You're saying stress is good for me and I need some.

And it got to get rid of this. But I don't know how like, this is life. What do I do? Yeah, indeed. I think and it's a really great question that doesn't have a super simple answer.

It's quite complex, right? Because stress is really complex. There's so many confounding variables and things that can be additive to stress resiliency or subtractive and cause an immense amount of distress.

And so putting the nail on that, you know, putting your finger on it, it can be difficult at times. But what I will say is that when you peruse the literature of of stress, resiliency and enhancing your ability to be adaptive to stress, there are two things that I think are primary that continue to come up in the literature and are things that I teach and preach, and they're a part of my company.

So how do health, my health tech company is all about teaching these two things? One would be better self awareness, and then the second would be better self regulation.

So let's talk about self-awareness because that's key. You have to be alert and aware of what's going on in order to make any type of change, because you're not going to self-regulate if you're not self-aware.

It just doesn't make a lot of sense, and it's not going to be nearly as effective. Can you do it? Theoretically, yes. I mean, you could do mindfulness exercises, but not even kind of notice.

How stress is affecting you in life and maybe therefore that mindfulness exercise or that breathwork or, you know, you fill in the blank may not have nearly as much potency as if you were mindful or self-aware of how stress affects you.

So we start with self-awareness. There's different ways to become more self-aware of how stress is affecting you. One would be subjectively so checking in the human brain and humans in general are really good at trying to convince themselves that they're okay.

So we all like to convince ourselves, I'm not stressed. I can push through this like there's nothing that's inherently affecting me or being damaging right now.

And the next thing you know, ten, 20, 30 years down the road, like you've got high blood pressure, like you're, you know, you've had a heart attack, like your blood glucose is significantly dysregulated and you're like, whoa, where did this come from?

Well, yeah, maybe a lot of behavioral and lifestyle changes, but stress was certainly a thing that could significantly exacerbate it. So self-awareness is key.

Checking in, not trying to convince yourself that you're not stress being really, really true and authentic and radically candid to yourself of like, man, this was a rough day.

This is a rough week. This is a rough month. Like things aren't going well in this area of life. Like this is how work is affecting me. Self finances, being self-aware and subjectively checking in is key, but also to and this is a component which I'm kind of most known for in my subject matter field and expertise.

It's checking in objectively. There are absolutely identified evidence based mechanisms for checking in objectively with your with your stress response.

Now, we could go more invasive with checking things like 24 hour cortisol panel looking at, catecholamines, secretion, norepinephrine and epinephrine blood serum levels.

We can look at that. Those are quite invasive. We can go down the you know, the the the stepping, we can go down kind of the ladder here and we can look at things like that are a little bit less invasive.

It's still kind of invasive. Checking blood pressure periodically.

Building stress resilience through awareness and regulation

Like these are things that, you know, can be really good at looking at the effects of stress the way that I prefer and which is really noninvasive, but is a very direct way of, checking into changes of the nervous system and can be quite enlightening to people, can really give them better self-awareness through these objective measures is

looking at things like heart rate and heart rate variability.

And then also I would tie in a respiration rate as well. We know that changes in those three components can be a huge mechanism. And again this is what we do at Honu.

And I don't want to shamelessly plug you know my company. But Hanyu is a wearable company that takes three key metrics as a means of looking at assessing the stress response heart rate, heart rate variability and respiration rate and changes within those domains.

Of those three, the most potent is heart rate variability, and I'm sure we'll unpack this one ad nauseum. But we know that heart rate variability is the single greatest noninvasive proxy for assessing changes in the autonomic nervous system, which is a great proxy for stress and for the human stress response.

So that is one proxy that I use. Amongst many of those objective measures. So self-awareness is key. And then the other piece here is self-regulation learning.

What are those things that we can do to effect change. Because data without action is essentially useless, right. Like if we give people data, but there's nothing actionable that they can do about it or there's nothing that they can really, if it's just purely like I learned something about myself that's great.

Like it's really cool, it's great and it's informative. But what's the next step? How do we close the loop and closing the loop from a stress response perspective is absolutely self-regulation.

And you know, we can piece of part all of the key components. But we know from research self-regulation is tied with things like breathwork, biofeedback, meditation, exercise is probably the most single greatest component for stress resiliency.

There's probably been nothing published out there that's, been demonstrated to be more effective than really high quality, consistent exercise. Then we have things like changes in nutrition, affecting changes in relationships, affecting changes with work.

Like all of these things tie together. So that was my way of saying like it gets really complex. That's very like 30,000ft view. But if we want to get granular, like we can do it, but there's a lot of things.

Yeah, yeah, yeah for sure. And it's I think, you know, starting with the awareness because unless it becomes a goal and an objective for you, you're not going to do anything, you know.

And that starts with really stepping back out of your shell. And looking at it from the outside and saying, here's what's all going on around me, in me.

You know, here's what I can work on. And it sounds simple when you say it, but people don't do it. Yeah, it sounds simple, but you actually need to start and do it.

And this is where, you know, guidance is important. Something like how you can make it happen a lot faster. So the wearables, are you using, existing wearables or a great question.

Okay. Yeah, absolutely. Yeah. Great question. So we are utilizing, work. We're collaborating with another company to make the wearable device. So we are really a software company, right.

But we are we're making a device. This is actually made, with, the company Scosche, which is actually, most known for making, wearables that are really high quality and looking at heart rate and heart rate variability for athletes, especially cyclists, swimmers, runners, triathletes.

But we're collaborating on a device that's really specifically designed to help track and then provide alerts when people are stressed, and then also provide good closed loop conditioning and feedback that's that tailored self-

regulation so that we always come and provide a solution to the problem people are experiencing.

And the great thing about it is that you can use it anywhere. People don't have to know that you're using it. It provides you really good haptic vibration alerts, like when it senses that you are experiencing something that looks to be stressful and then provides you kind of with a tailored platform or program to say, okay, now that we've seen that something's a little bit off, like, would you like to do a minute, two minutes of breathwork or some meditation, or maybe get up and go for a walk or get out of the environment you're in.

So it always gives you kind of like this multitude of solutions. But we are building on existing, hardware that's uses pbg sensing. So that's light wave sensing, but also to, for people who are on our platform, you can also connect to polar if you want that really high fidelity egg, from a really easy to use chest strap, you can use a polar H10.

Okay. Yeah, I'm excited about trying that when it's ready. You know, I, I find that, even within our team. So we're, we're in a startup environment. So a lot of action, a lot of stress.

There's a different problem every day that we weren't anticipating. Some of them can get pretty severe. And I know the feeling that I'm right there with you.

Yeah. And I've been through times where, like, I wasn't sure if humans could live through what I was feeling, you know, from the level of stress. And what we found is that, you know, from when we look at things genetically and how we're wired, that we experience the stress even amongst a team, in a very different way.

So I'm more reward seeking. I drive towards taking risks and just getting things done, and I can't rest until every tick box is checked off and things are complete.

And so the stress I feel is more this like, drive towards things and like inability to rest and get it done. Then we have, you know, team members that are more call it on the, less reward seeking, but more tunnel vision that they're really good at what they do, you know, and so they have more of like of an anxiety stress response.

It's like, this is weight. This is a burden, you know, so running towards it or running away from it. But both of those people need a tool that will guide them to to the middle, right where we're both on the extremes, living in that stress and that being our sort of driver versus, you know, being able to be coached through with intelligence how to come back to the middle and handle this thing more functionally.

You know, and like you said, one of the key markers is heart rate variability. That's where you've done a lot of work, right. So with the current tools that are out there, are we getting the right information or what should we be looking for?

Yeah, it's such a good question because most people are quite familiar with heart rate variability, especially in the health and wellness optimization space, because it's built in to basically every wearable now.

And the good news is, is that a bulk majority of the wearables that are out there today that are measuring heart rate variability during tonic and static states, and when people are sleep are pretty dang accurate, like they're really good.

What I would say is, is that you get good, accurate data, but unfortunately for most of these devices give you incomplete data. Most of them are only providing you with a want with one singular score.

And that's called, for them. Most of them, they don't even show this. It just says heart rate variability or HSV, whereas, with our device we show you a ton of different biometrics.

We're talking about 15 plus different biometrics that's derived from heart rate and includes heart rate variability. So the score that most people are including is rmsd, which is the root mean square root of successive differences of heart rate variability, which is a mouthful.

Right. And nobody's probably going to understand what that is. But what that is actually looking at is it's looking at difference is between individual heartbeats and looking at the root mean and averages of the of the amount of time that comes in between heartbeats.

That is a really good short term. It's the best short term measurement for heart rate variability that looks at the input of the parasympathetic nervous system better than any other one is out there.

So that's a good sign right? Most wearables have that. The problem though is that it's a bit incomplete.

Wearables, heart rate variability, and better stress data

And the reason that it's incomplete is because we actually can get very microscopic when it comes to heart rate variability. So a lot of times people think of heart rate variability as one singular number.

It's not there's actually a lot of different metrics that can tell us a lot about the status of the nervous system from these metrics. So one great example of this is that rmsd is what we refer to in this field as a time domain indices.

So it's actually looking at the time differences between adjacent RR intervals or heartbeats. And we, we in the heart rate variability research. And in this field we look at that in terms of milliseconds.

Now there's another whole domain of heart rate variability data that goes unattended. In every single wearable that's out there now but will not going unattended in our wearable.

And these are what we call frequency domain variables. What a frequency domain heart rate variability variable is is it's actually just it's synonymous with filtering EEG brainwaves.

So if anybody has ever seen a real EEG, it just looks like a ton of little squiggly lines. What we can do is we can take that through what we call a fast Fourier transformation.

It's an algorithm. Or we can use an AR and auto regressive, algorithm. We can filter that data so that we can look at the individual wave components that are being, provided within brainwave states.

And that's how we derive things like alpha, gamma, theta, beta, delta. We can do the exact same thing with heart rate electrical components. We can take the raw EEG data, sorry, EKG data.

We can filter that through a FFT or a fast Fourier transformation. And we can derive component values that we can. It's just like throwing white light through a prism and seeing all of the color domains.

And we know that each of these domains, these frequency domains can tell us something about the granular nuance changes of the nervous system during the time that it's being recorded.

And so we don't use alpha, you know, beta, theta, gamma, delta when we look at, like, like EEG does, we use what's called very low frequency, actually technically ultra low, very low low frequency and high frequency.

And each of those frequency domains again tells us a little bit about the status of the nervous system in a very granular, high fidelity manner. So that was a very long winded answer to your question, which is that, yes, a lot of devices have great, ability to provide accurate data for that one domain, Rmsd.

But we at Honu provide a much more complete picture. Yeah, I hear what you're saying. Essentially, you're looking at it more functionally, meaning that, you know, when you look at what people don't realize is that the heart is like another brain.

It has its own electrical system. It's the organ that you can actually cut out and put on ice. And it will keep pumping, you know, because it literally has its own signaling your brain. You don't need to tell it what to do.

So what we're looking at is and this is the same correlation between like medicine and functional medicine, it's like look at the heart rate or the, you know, the actual beating of the heart, because that's medically what we consider the heart is doing at a functional level.

There's so much more that creates that beat. Right? The the electrical. What's going on? And so you're, you're taking it back to like, hey, and if I think about this in genetic terms because that's how we think, it's like, do you have braska, which means you have a risk of breast cancer.

Well, we still don't know why the breast cancer happened. Or do we look at hormone levels and estrogen toxicity and inability to clear toxins and the things that actually cause the cancer.

And then it doesn't matter if you have the good Brac or not because that just repairs tumors. It doesn't actually cause the right. So you you're looking at things the same way like here's how this organ actually works.

The outcome is the heartbeat. Yeah, right. That's really cool. And I've never heard of anyone doing that. So I'm even more excited now to try this out and figure out what I made of, you know?

Yeah, indeed. And the good thing is, and what we've done is that, you know, a lot of people, if they were to look at what we utilize in order to formulate these numbers.

So when again, when I say things like a fast Fourier transformation or auto regressive algorithm, just looking at that, especially if you saw something like a power spectral analysis, people would be like, what is this like?

I have no idea what I'm looking at. So what we do is we provide the data nerds like myself with the data, but then we simplify it and then we make it practical and we say, this is how this applies to you within this context, within this situation.

And then here's what you can do about it. And I think that that is the most powerful thing, right. Because we can provide all the data in the world. But if we don't make it actionable, we don't make it practical.

It's basically useless because then it just becomes like numbers, sort of like, yeah, it's interesting, but I don't know what to do with it. Somebody has to interpret.

It is just dumb data sitting there. Yep. And that's what you're doing. So. So how do you like because what you're doing is so novel. And this, this is what the way people should be thinking.

And thank you for teaching us. Like this is how you look at your heart, with everything else that's going on, you know, sinking into other platforms and connecting, and how do you take this new thinking where there might even be pushback, where doctors say that that's not how things work, you're measuring the wrong stuff, or we don't even look at that.

Are you getting that kind of resistance? Yeah, a little bit. You know, it's really interesting because in the field. So the closest field that would utilize this data clinically would be cardiology and cardiology utilized heart rate variability for the longest time as a good proxy for recovery.

And this would be recovery status post like a myocardial infarction. So someone would have a heart attack and then they would utilize RVT as a really good proxy on a 24 hour basis to know whether that individual was at a super high risk for having another myocardial infarction or, if they were compromised, or, or if they were pretty good, like, their health actually was recovering well and when they didn't have as much of a high risks.

So cardiology understand as the field of heart rate variability. Now because of the nuances of technology that has been made, and because cardiology typically is okay with being a little bit more invasive, heart rate variability tends to not to be as much of a metric that they use that much anymore.

From a from a clinical standpoint. Now, it will be if someone wears, let's say, a Holter monitor for 24 hours where

they're they're really examining the nuances of, of what the heart is doing.

But it's just not as prevalent as, as other technologies. So in other fields, especially because of the advent of all these wearable technologies, a lot of the medical physicians that I talk to in this field see relevance.

And they don't have as much pushback, but because it's not within their clinical framework, then it tends not to be things that they adopt super easily.

Which it makes sense. Right. Like when you're when you're a hammer, everything you see is a nail. So it's really hard for people to change their paradigm.

However, the great thing about it is that a lot of physicians, especially, they really have a hard time with subjectivity. And what I mean by that is that when someone comes in and report something that they feel or that they experience, or if it's tied to emotion, that can be difficult sometimes for people to conceptualize.

When you have a very data driven perspective, a very objective perspective that can be difficult, whereas if we can take something and we can tie it pretty closely and say, look to see how their objective measurements, like heart rate variability, is starting to marry with their subjective experience.

So they're like, man, yeah, I feel, you know, really stressed today. Like it's really hitting me. And that coincides with objective data. Well, now that objective data is starting to hold even more merit because it's like, oh, it's starting to marry up with like what the person is feeling like.

That's a really, really good sign. And that's a key thing with honey, right? Like we want people like with their experiencing stress to be able to look down and then they can kind of like confirm it with their device.

It's not an easy task. It's a really difficult task. But, you know, that's what we're aiming to do at honey. So I think that there's a lot more, acceptance of something like that when we can start to see kind of those two things marrying with one another.

But it's going to take some time and we need more and more research. The great thing about heart rate variability is like we have, you know, hundreds of thousands of studies on this.

And even in the field of biofeedback, biofeedback, which is more how can we use it practically to affect change, how we use heart rate variability? We see, you know, tens of thousands of studies in this domain as well.

You know, looking at the past, you know, 50 years or so. So there's a lot of great data on there. It's just making it a little bit more mainstream, which is kind of what we're trying to do.

That's really cool. Yeah. So then I mean tie it all together. You have. So we've talked about stress. We talked about heart rate variability. You know that's like you said this sort of the easiest marker to track right.

And now there's tools coming out that can track it. What you're describing in terms of that functional approach that's not yet available. Right. That that's that's what you're building.

Yeah. That's what that's what we're building. There is. Yeah. What we saw was a gap in the market there. Was having that functional, tailored approach.

I think the biggest pitfall to wearables out in the market today is that they give good data without any context and without any tailored solution, personalized solution.

And that's really what we're going for at honey. So honey, we say two things. We're focused on stress, like the we are a stress wearable. And right now there are no wearables right now that are in the market that are stress focused, that are like, this is what we do.

Like we monitor your stress. Like we say, we're a stress coach, sorry, we're a stress monitor and radar throughout the day and we're a stress coach all in one.

So continuous all day stress monitoring continuous all day stress coaching. So we are really stress focused.

How the stress-monitoring wearable works

Number one the second key differentiator is indeed kind of this ability to completely close the loop. It's really that focus on how do we take something like good data which is out there in wearables, but make it more granular, make it high fidelity, make it tailored to you within your own context, and then provide you with the best treatments, the best therapeutics, the best options that can be done anywhere, any time, without even the need of having your phone on you and looking at something.

So for instance, we provide like paste, breathwork or biofeedback that you'll feel with small vibrations to help pace your breathing on the inhale and exhale.

That gives you the opportunity to do it. Like if your hands are on the steering wheel in your commuting, or if you know you're writing emails and like you can't look down at your phone, but you want something that's kind of there to help pace your breathing and enhance heart rate variability, which we know is going to enhance stress resiliency.

So there's nobody out there on the market that's doing that right now. And that's what we're doing with our device, which should be out in the market.

It's available now for preorder. Honeywell.com a shameless plug. But also it'll be out there in August. No, it's great people. Everybody wants to know. So let's you know, go ahead and plug the. So that's awesome that I've never heard of that sort of sensorial.

It's kind of like having your personalized coach because you're this literally can feel how you're supposed to breathe. There's things that are hard to learn and hard to teach.

Right. Because they're not there's no metric for them. You know, if you're standing there with somebody, they can say, slow down, speed up, like a yoga instructor or qigong type person, right?

But you're literally saying this device sensorial, you can feel the pace. You got it. Which is so cool because the outcome is effective. Like immediately there's no variability in terms of right or wrong.

That's really cool. And then, yeah, so while we were all waiting, what are some simple things we can do? Today, I know you talked earlier about some items, but things like, you know, when you talk to people in this sort of space, the two big buzz habits that we hear these days are sleep and fasting.

Right? That's what everyone's talking about. So how important is that in terms of stress response maintaining a good stress response. But also, you know, managing right.

And I ask this because when I experience high stress like that acute problem where, you know, things start to go numb and like, oh, I don't you rethink your whole life, I need to sleep.

It knocks me out. There are so many options and opportunities but sleep is a key component. And we say that you can do basically everything right behaviorally.

But if you have really crappy sleep, if sleep is significantly affected, then your ability to repair the nervous system, your ability to recover, and your ability to have enhanced adaptation and resiliency to stress is always going to be significantly inhibited.

So I always tell people that a good first step, regardless of exercise, regardless of and these all work in tandem. By

the way, I know now most people know that, but they all work in tandem.

But a good steppingstone, a place to start is making sure that you optimize sleep. So you optimize sleep for time and for obviously quality and good quality sleep.

And that I think that starts, as soon as you wake up and I tell people like your sleep starts in the morning, like you set your sleep up all throughout the day, starting in the morning.

And I think that one thing that we know from good sleep research and how it enhances stress, resiliency, is that routine is so key. And that's not even just night time routine like like pre bed routine.

But it's actually routine throughout the day. And it leads and it bleeds into nighttime routine. So stress is extremely extremely important because if we have dysregulated architecture if we have dysregulated inconsistencies because of lack of good scheduling of sleep times, both go to bed times and awake or arise times like these things can really, set a poor stage, if you will, for nervous system, the nervous system to not adapt pretty well.

Like the nervous system likes consistency. So I think sleep is really, really a key component. I know that I can we could derail and go for hours on how people could a really good sleep quality, but I think environment and timing are absolutely key.

Those are really good. And setting sleep, you know, sleep should be on your mind as soon as you wake up. Not like, oh man, I need to go back to sleep.

But I mean, how can we really enhance recovery and nervous system resiliency throughout the day? So that then we can have really good sleep? So yeah, that's that's a really big one.

The other one that you mentioned is fasting. And fasting is a fascinating one because we know that fasting timing and depending on athletic status, gender, metabolic flexibility like these all play into nervous system resiliency and nervous system change in general.

What we see is that short term fasting, maybe we call it intermittent fasting. You know, short scale. We're not talking like 24 hour plus fasting. We know this can actually be quite enhancing, enhancing for the nervous system and can increase heart rate variability and decrease heart rate in the short term.

There is a point in time, though, that when that the body starts to, relinquish parasympathetic control and output and flow and the break comes off and then we see more sympathetic engagement.

And that's because longer term fasting, extended fasting can indeed cause a stress response. Now, is that acting as a hormone stress response? And maybe the reduction in V and increased heart rate is not necessarily a bad thing. I would argue that that's probably the case.

Sleep, fasting, and recovery for stress resilience

What we know is the body's going into a stress response because from an ancestral environmental, perspective, and then also to just from a physiological perspective, we do start to turn the gears from we can go in a good intermittent fast to now when we extended our fast that we are, the, the brain's receiving signals of like, oh, should I prepare for the potential like, problem of there not being food around and, you know, maybe we're going into starvation mode, and it's not saying that we're yet in starvation mode, but.

The body knows that there are preparations that need be had for that. So that's so I would say again, there's nothing against extended fasting, but we know to not be afraid to too much.

If metrics biometrics, especially for the heart rate, starts to change after about a 24 hour period. But you actually see enhancements, in stress, resiliency and heart rate variability metrics during like a 12 to 14 16 hour intermittent fast.

And just going back to something about said about sleep where, you know, nervous system resiliency. So I understand and I think everybody understands that your recovery happens in your sleep.

So it's the the outcome or the effect of the stress from the day before you recover from it in your sleep. So make sure you do that. But are you also saying that, you know, developing the resilience for the next day?

Meaning is it? To what degree do I feel stress? Or is it more my ability to cope? Or is it my ability to get stressed by something? Or is it all of those? It's all of them. Yeah.

Oh it's really it's really all of them. So good quality sleep is a great primer for the rest of the day on everything that you just mentioned. It, it helps us, to start the day at a better, more resilient and adaptive state.

It also is something that helps us the when, when we do encounter stressors, inevitably, because that's just a part of human life, is that every single day we're going to encounter some level of stress, maybe some days more than others.

But it helps us to be more resilient so that when we do encounter it, yes, it affects us physiologically. It affects us mentally. It's going to happen.

But then to recover from that is a lot faster. It's a lot more pithy, which is really what we want. I mean, that's kind of a key component. I always tell people, it's not that our whole goal in developing stress resiliency is so that stress doesn't impact us.

Stress is going to always impact you. You are always going to see, changes in heart rate and deductions and heart rate variability, changes in perspiration, like, these are things that are naturally a part of our human physiology.

How fast you bounce back from it. That's resiliency. Right. How long does it take you to recover from it? Does it linger on for hours like you get stressed and oh man, now HIV and heart rate are changed for hours or is like you experience it and then boom, you're back at it 30s later like, which would be very fast, but it will depending on the stressor.

But but but you kind of get my point there. But yeah, sleep is the primer for all of that. Yeah, that's really cool. And I feel it myself. You know the the ability to cope, the ability to even want to do things, you know, like, I'm not working on that nasty stuff today because I just don't feel up to it.

You know, your body just can't do it that day, right? So that's that's really cool. Absolutely. Before we wrap up, one last shameless plug, I want to make sure people understand that it's not a waiting list, but it's a preorder.

It's a preorder. Yeah, yeah, it is a pre is a preorder. And we should be shipping out in August. And so what should people expect. There's a device. But are they also expecting coaching or I guess the software itself is doing the coaching.

Yeah it's a great question. Yeah. We wanted to develop this so that when a user, you hook themselves up into the device, which is just putting the device on, that sounds a lot more extensive.

If you're someone do anything, that's what I would do, like clinical biofeedback with, you know, medical grade EKGs. But for this, it is a it's simply you put on the device like you would any other wearable.

And you it's kind of plug and play. So from there there's kind of a lot of things that you're looking for. So we have a composite stress resiliency score.

And this composite aggregate score which is from 0 to 100. It fluctuates and modulates throughout the day depending on your biometrics, which is very different than other wearables. Right?

A lot of wearables, you'll put it on at night time. You wake up in the morning and you get a readiness score, or you

get a recovery score, and then it's there for the day.

And what one of the big problems with that is that it can be a self-fulfilling prophecy for people to say, oh man, the metrics weren't very good. So therefore, like, my day is not going to be great or I'm not going to have great recovery, or I should limit my exercise or whatever it may be, whereas AR is really is going to take into context time of day changes in biometrics.

Are you exercising by doing your let's say, breathwork or meditation or actually exercising all of these things factor in. So the coach is indeed within the algorithms, the coaches with indeed the trainings that we all offer, whether it's resonance, breathing.

Breathing or boxed breathing. Or you can customize your breathwork pattern. All of these things help to really kind of tailor in and increase that ability to, be more resilient and more stress adaptive.

So, so there's no, like, access just yet. Maybe down the road there's no access to any, like, real life coach. But we utilize our algorithms and AI to be that for you and to really Taylor.

Taylor, an approach, that's meant for, for kind of where you are in your status.

Closing thoughts and product preorder details

So just, you know, so everyone knows I had no idea we were going to discover this today and be clear, like, I'm truly and sincerely like, excited and waiting to try it.

So it sounds awesome. And I think everybody should. So thank you. This was awesome. You know, in terms of taking this simple thing of stress and expanding it to this degree and understanding what it truly means and how it benefits you, what how would the problematic stuff, how you can deal with it, and knowing that there's a solution.

But it was awesome. Thank you. Absolutely. Thanks so much for having me on. It's always a pleasure and a joy to talk about, of all things stress. But really the intention is to help people with it.

And then also to, dispel myths around stress that it's not that it's not that actually stress is really good. It's compounding stress. It's not so good. Yeah. And I think we know that today.

That was awesome. Thank you guys. Absolutely, man. Thanks so much for having me.