Tracking Vital Signs & Optimizing Health with Breathwork Transcript

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Introduction to Precision Medicine

Welcome to the bio optimized summit where we explore the next level of physical and mental health you can achieve through targeted and intentional bio optimization.

I am Dr amy your host and today we have with us? Ryan Lester. He is located in Austin texas and he's a physician assistant. He received his medical degree in physician assistant studies at Rochester Institute of Technology and over the last decade he has specialized in everything from emergency medicine, orthopedic and joint replacement surgery and genomics based precision medicine which we will be talking about today on this precision medicine and how do we do that?

He has studied the science of dietary epigenetic at Stanford University and is a certified epigenetic coach. He holds a certification in the clinical application of advanced peptides which you know of course that I love to use as well.

And he currently works at with the appear on center for human potential in Austin texas. This is a precision performance medical center that leverages the latest in cutting edge genetic and epigenetic science, nervous system assessments, blood analysis, biometric monitoring, hormone optimization and lifestyle design to create a synergistic approach to optimize the human system which of course I love all of that every bit of that.

So thank you Ryan, I am so excited to have you on today and to talk about our niches today on the breath and the heart rate variability. Thank you. Good. So introduce us just briefly to this idea of precision medicine because not everybody will have heard of that term?

What is precision medicine and what would a person expect if they were to go to a precision medicine center? Yes, So I think it makes sense to just start with kind of the traditional medical model, um things are stovepiped, bit narrow minded. We tend to, you know, assess and treat people once they're really with six symptoms.

So it's really in the sick care realm. And so in a precision medicine model, um it's much more comprehensive. We really are focusing on preventative medicine.

We're trying to catch things early, mostly focused on lifestyle design around the fundamentals of health. You know, nutrition, sleep, stress, um, exercise.

Uh and and it's very customizable to the person because we all are different based on genetics. We have a lot of similarities but we all all have some some differences.

And so um it's really through the lens of a complex system which is different than a complicated system. The human system is very complex, so to some degree it is predictable, but it's also unpredictable and it's very dynamic.

And so that's that's kind of where we sit with precision. There is so much that we understand about the body and there's so much that we still do not understand about the body and especially how epigenetic and genetics influences a person's particular need for different nutrients, different breath techniques, def Sleep, different food. My goodness, like there's no end to it.

And so for precision medicine, there's such a role with that when someone is looking to optimize because they're not going to just be able to be given a general template that works, for you know, 60% of the population that's gonna really hinder their ability to optimize well. So let's jump in with breath.

How Breath Affects Physiology

And how does breath um yeah, how does breath affect a person's ability to optimize and their system, their physiology? Why would they need to look at that as part of their overall optimization? Yeah. Great question.

It really affects everything, and it seems pretty, pretty straightforward. You know, we all kind of know how to breathe. We got to this place breath is part of the normal experience, but when you really dive into the science of breath and proper breath mechanics, it really has to do with oxygenation. And so, you know, we're designed, we evolved to breathe through our nose.

And so most people in Western society either breathe too much. So they're over breathers, they're breathing through their mouth. Uh And when we're breathing too fast or too much volume, it actually reduces our carbon dioxide levels in our blood.

And that is what actually determines how much oxygen can get to our brain, our muscles or organs. Most people don't know that they think if I taking deeper breaths two more oxygen equals more oxygen in the muscle and cells, and that's just not the case, it's actually the opposite.

Um So it's really the carbon dioxide levels in the blood that determines the oxygenation. Uh and so that's really the crux of it that's based on the boar effect.

Um And so we first want to identify people who over breathe and too fast or too much volume and we want to try and slow them down right. And and by doing that we'll see better oxygenation. Um And we see a bunch of clients will come in with kind of cold hands, cold feet, kind of classic vessel constriction symptoms.

We we do some we do a psycho physiologic performance profile. We hook them up to a bunch of metrics, but we're looking at respiratory rate. We're looking at um uh H. R. V. We're looking at C.

02 with the nasal cannula. And we noticed that when we get there, so two levels above 35 millimeters of mercury, their hands start to warm up. Um And a lot of things tend to change. So it's it's huge.

It really can be um pretty profound in terms of changing one's experience. And the other thing sorry. Before, before I forget when the C. 02 level is chronically low that the system interprets that is a stressor.

So we constrict our cortisol goes up and it really all all plays into each other and then our nervous system is in this survival state. And so we're gonna have just more of a baseline anxiety because of the message that ultimately our breath is giving us and giving our nervous system that hey, we're in danger. We don't have enough oxygen.

And I know many people who have gone in to see their physician because they have, you know, cold hands, cold feet. And the traditional thought has been, well, you have a problem with your circulatory system, It's a circulation problem.

And they're not even thinking of this could be a breath problem and just uh imbalance in the C. 02 and the oxygen levels in your blood. You know, as providers, it could be rain odds, it could be thyroid issues, but a lot of the time it's really just just, you know, breath dis regulation and and poor mechanics and C to regulation?

Mhm. So walk us through, like what would be good breath mechanics and how would a person even know if they might have a problem with their breathing that's contributing to some level of dis regulation disease in their body?

Yeah. So the first step is really just awareness. Just daily awareness around the breath. So things that we want to look for our first of all, your, your hands and feet cold because that's a classic sign that things are clamped up and and probably an increased sympathetic tone.

The other thing is where are we breathing through our mouth or through our nose? And then where is our breath? Is it mostly in our belly? Is it diaphragmatic, right? Which is where we want it to be?

Or is it in our chest do we carry tension and soreness in our in our traps and in our neck and in the base of our skull

or in our face sometimes it's kind of classic signs of we're using too much of these accessory muscles every day.

Um And it can be tough because people kind of get into the thing and they're in work mode and they're focused and and they're focused on other things not so much their breath but just trying to remind yourself you know throw up a little sticky in front of your computer that says you know observe the breath. Just look at it three times a day and that's where it starts right. Um But really it is the small diaphragmatic breaths that are gonna increase the C. 02.

And really want a nice kind of sinew soil pattern and kind of a balanced inhale to exhale. Um Or maybe just a bit more exhale. But but you know it shouldn't be it shouldn't be um uh too one sided in terms of that. And and so that's kind of the starting point I would say for most it's just observation and awareness awareness.

Yeah and I remember for me when that awareness came and it wasn't until people started telling me like hey you're you don't seem to be breathing like you need to breathe because up until then like I had just been such a shallow breather and it was all up in the chest right?

Like nothing was diaphragmatic and then of course they'd bring it to my attention. So then I would overcompensate and be taking the really really deep breath that probably weren't helping me either. Mhm. And so how are you actually measuring?

And can you measure whether a person's carbon dioxide and oxygen levels are off balance?

Breath Mechanics and Assessment

Is that something that you can measure in the blood? Is that just something that you're watching them? How they buy breathe? What? Yeah. What's your approach with the breath? Yeah. So when we do the assessment in our center we we have the client hooked up to several different metrics.

So there's a nasal cannula which really represents arterial C. 02 levels based on respirations. Um We have a a sensor at the belly and a sensor at the chest. So we're looking at movement of the belly versus the chest. We're looking at a temperature of the of the fingertips. We're looking at skin conductance or sweating at the fingertips. If you have increased skin conductance or sweating that's a sign of some increased sympathetic tone.

Um Similar temperature wise if someone's temp peripherally is too low that's a sign of increased sympathetic tone. Um We look at H. R. V. Heart rate and those are those are it.

And then what we do is we take you through a series of stressors both verbal and some mild physical ones. Just some games and things and we see how someone's nervous system really responds to different stressors.

And so common patterns we see our um increased sympathetic tone relative to parasympathetic, right? We can get that kind of coherence assessment based on H. R. V.

Um And then we get a really good uh captain ah graffiti metrics. We can actually look and see what happens with the respirations and their C. 02 levels. Um And then we see that it's common to see this stacking effect. So people will start here, they'll have a stressor, they'll come up and the important part is that we can recover from the stressor, right? This this stress reaction is actually really important. It's part of our evolution.

We need to be able to produce a sympathetic response to perform. But we want to see this recovery and what we see In most people or at least I would say half is this stacking effect where they don't return to baseline and which really represents chronic stress. And we we understand that this is just a small snapshot of you know this 30 minute window. We're just getting a snapshot.

So if someone didn't sleep well the night before they had some type of uh you know emotional event that recently happened, we have to take that into context.

But it can be really useful feedback in terms of where their nervous system is. So then how is this going to affect

someone who's an athlete or they're wanting to kind of push their limits for their athletic performance.

This seems like if it's affecting the nervous system, it's really going to affect their performance and even their ability to recover and be able to get out for another workout.

Can you talk about the breath and athletic performance, definitely, definitely. So we know that athletes that have asthma symptoms um tend to be mouth breathers. And so I would say the first thing when working with an athlete, see if they have any of these symptoms of breathlessness that's not kind of appropriate to their level of exertion. And sometimes they can be, they can be really high performing athletes. Um And so number one, are they breathing through their mouth or are they breathing through their nose?

So I was, the first thing I would do is just say be aware, breathe through your nose as much as you can. And then even during workouts, try and breathe through your nose as much as you can.

Um When you get into the 02 max training, you'll have to start breathing through your mouth a little bit but the more you can breathe through your your nose um the better you'll perform. Typically you increase your SEO to you increase your nitric oxide. Um So and then you can also do breath holds during um during workouts, one of the best books I've found around this is um Patrick Mcewan's book the oxygen advantage. Um James Nestor also has a really good book out recently. Uh And the title is escaping I think it's called breath. And then there's there's there's another bit to it but both really good books. Um But uh yeah so these you can also do breath holds during workouts which increases CO. Two. And that that's actually what changes the chemo receptors in our brain. These are the receptors that track C.

02 and that's what actually drives our respiratory rate. And we actually wanted to make that we want to increase that threshold allow that. So to to build up. So um Ryan this is going to be both for like weight training cardio. What about the high intensity intervals?

Is there a difference with how to use the breath for maximum performance? You will get benefits on all those systems with just breathing through your nose as much as possible. Like I said when you get into high intensity Vo two max training you will have to breathe through your mouth a little bit and that's okay.

But try and go back to the nose breathing when you can um you'll you'll still get those benefits whether it's strength training or aerobic endurance work or more anaerobic high intensity work interesting. And so then in terms of recovery what should a person be doing in terms of the breath to help their muscles help their body recover faster whether it's after an exercise a workout or even after a major stress.

Yeah it really comes back to the fundamentals of of just making sure you're breathing through your nose. Um And I think it's important to just review some of the benefits of nose breathing.

Breath, Performance, and Recovery

Um the nose imposes approximately 50% more restriction to the airstream in a normal individual resulting in 10-2020% more oxygen uptake. Um it warms in humidifiers incoming air, it removes particles germs bacteria um so it filters and then it increases nitric oxide which improves vessel dilation blood flow. Um and then some of the disadvantages of mouth breathing. Um We know that mouth breathing Children at a greater risk of developing forward head posture and reduced respiratory strength.

Um It contributes to dehydration and a classic sign of of mouth breathers particularly during sleep which is a big deal as they wake up with a dry mouth.

Um It increases uh and can cause bad breath secondary to alter bacterial flora, increases acidification in the mouth, resulting in increased dental cavities and gum disease.

Um And then during sleep if your mouth breathing increases the number of occurrences of obstructive sleep apnea. So that's why it's so important to really just try and focus on breathing through your nose and it can be

tough because you get caught up in your own thing and and kind of head down and forward charging.

So just this idea of inter reception is a big part of what we teach to our clients. Just this awareness of their body and their mind and and what they're feeling how how an input affects the system, what they're feeling. Um It's a really important concept.

We try and teach from the very beginning and I'm sure you're using that concept for not just the breath but for other things as well. Absolutely for everything every part of the human experience should be based around this this idea of interception.

Yeah and some of the highest performing individuals out there. Um You know special operators and the military professional athletes. These are the ones that really seem to have some of the highest ability to be intercepted.

Um And it makes a lot of sense when you start to dig into it and let's just briefly touch on cognition and the brain and the mind. You mentioned it before but having the right oxygenation for our brain is obviously essential right?

Because if if it's not getting enough oxygen then it can tend to go into like brain fog and even less awareness of what's going on whether in our body or in our environment.

And so I would imagine that nose breathing is even more important for the protective and nourishment aspects of the brain. Absolutely yeah it leads to increased oxygenation to all parts of the system, the brain, the muscles, the organs, the cells in general.

Um So it's it's absolutely important. Uh And like I said when we over breathe breathe too fast we dropped that C. 02 that is a stressor, right? So we are our nervous system interprets that as a stressor over time with chronic dis regulation.

So increased sympathetic tone um which needs to increase cortisol release. And that that those things change the brain and over time can have a big impact on performance and just your experience. I mean sometimes it gets as bad as anxiety and other um pretty disruptive patterns awesome. Now let's talk about heart rate variability and kind of how this ties into the big picture of precision medicine and why this is an important aspect of your work with people.

Yeah so hearty variability is the variations in milliseconds between um consistent heartbeats. Um It is a indicator of overall cardiac resiliency, cardiovascular endurance, overall health and longevity.

Um It can be so for athletes it can be a great indicator of recovery um and repair. And we found so there were big into data appear on and so we love tracking biometrics.

We encourage all of our clients to have some type of biometric device. Um We really like the garment phoenix series. We really like the ordering bio strap.

Um The group seems to have a good algorithm. Um And we don't always focus too much on the absolute value of the HR. V. But mostly the trend. Um So right so if if you're working out and you're working out hard you have a high intensity workout. You notice based on your trend that the next day it's lower than where it typically is that just, that might mean that you're not as recovered as you, you could be, you might want to skip high intensity workout that day, focus on something more restorative, some mobility, some flexibility.

Um uh so yeah, that's kind of the ways we think about HIV Yeah, I remember when I started using it and I would wear my monitor to work and was very mindful then because it would give me a message of when I was coming out of coherence and it was amazing to me how much this had just been a normal part of my life, a normal part of my day and was not in my conscious awareness before until I had a monitor, you know, telling me, hey, you're out of coherence.

Um and so I was using the heart math, the one that you put on your ear and you know, I talk into my back pocket

and it would give me different lights for whether I was incoherence based on my heart rate variability.

But with time. Yeah, yeah, it was, it has been very helpful with time. I was able to then notice those subtle signs myself and didn't need the monitor to give me a red light saying that I was out of coherence, but until then that was just my normal and I and I had no idea that it was something one that I could measure and one that was affecting so much of my resilience my health and so it became a really awesome tool to yes guide my day in terms of how much exercise I was going to do that day based on the pattern that I saw in my in my heart rate variability and the coherence.

I think it's important to dive into that term of it coherence. Right? So coherence really means that your your respirations and your HR V are in alignment with one another.

So when we inhale our HR V should increase. When we exhale are HIV should decrease. And so when those two things sync up we see a nice sign inside a wave pattern and that's really what coherence is, that's what heart math um measures.

We really encourage a lot of our clients to use that desktop pro version because you can gamify it and really get some good data. But the mobile the mobile product is good too for reasons that you just said um and the the data and the feedback you get really is helpful.

Heart Rate Variability and Coherence

It also gives you some insight into house how your body is interpreting different working environments. So a lot of people we meet say you know we talk about stress like I'm not that stressed and then we put on you know we actually use first beats um heart rate monitoring over over three days and so what we'll see is that we'll see these massive stressors that they don't interpret as stressors, but they're really sitting down to do email or work and we haven't filled out a journal while the first beat devices on and we can see these massive stressful events, which is fine. Once again, that's okay.

But we want to see recovery and then you also want to build recovery sessions into the day. The more the more stressful sections that we see on that on that that data.

Mhm. What I also noticed was that there was a correlation with my food and diet and that's also how I was able to pinpoint some of the foods that were causing me more inflammation and gut problems was because then I would see this downstream effect on the heart rate variability and the coherence, which was fascinating too right. That and I hadn't, I hadn't anticipated that it would give me that type of information, but when you're looking at the complex system and how everything really is interrelated affecting each other, then it makes sense that you're right like this over here is going to influence on some level to some degree this. And if you're measuring this, then you can deduce, hey, something something was um you know, introduced to the system that it didn't like. That was not a good fit and and be able to yeah, really have fun with the information that you're able to get from the body when you're actually measuring this stuff Like the heart rate variability.

Yeah. Yeah definitely. Well I'm just curious what were some of the foods that were surprising to you that we're having an impact on the system. Some of them were ones that would never have even crossed my mind.

That would be problems for me. Um Something like pumpkin seeds. And I would start to have cravings for pumpkin seeds um at a certain point sometimes in the afternoon on different days and so I would go and I would get some and I would notice the decrease increase um in that variability after eating pumpkin seeds And then of course things like you know sugar and dairy.

Those were things that at that point I had not fully cut out yet thinking that you know I would still be okay and that helped me understand the effect that it was having on the rest of my system when I ate those. Yeah.

That increase in heart rate. Exactly. Yeah. And then one thing I've noticed on the ordering after higher carbohydrate meals I'll definitely notice my respiratory rate go up.

Which is interesting. Um which certainly is changing my C. 02 and probably related to the acid base balance of of certain foods. You know and then being able to tie this into um either performing better at work right? Like and understanding the stress at work and understanding how these different factors are going to affect your performance at work and then any athletic performance as well. It can help guide a person to know, hey, this is how stressed your system is at baseline today.

Probably best not to add a super amount of stress with the physical exercise. Yeah, absolutely. It it's uh it just starts with with looking at the data and having a good biometric device to be able to reflect on um we really haven't even delved into sleep. I mean, as you know, sleep is really the foundation of the house, right? You can't build a house on sand and sleep is where it starts. And so sleeps one of those, those things that's tough to subjectively report, we see a big, we we see a pretty big sleep state misperception um with the people that we've, we've we've worked with over the years and so having a device that looks at sleep data, um, and being able to review it with somebody who's experienced and looking at those numbers is is incredibly helpful.

So, can you give us examples of a few people that you've worked with and kind of where they came from and what you've been able to help them accomplish in their life as it relates to their health and kind of again walk us through an example of what someone would be looking at doing if they came and and did something like precision medicine and really honed in on the specifics of their physiology and how to optimize it.

Yeah, sure. One that comes to mind. So our clients either have typically the garment Phoenix six, which is the newest one or the ordering. Some have both.

I have both. And so I I like to compare the two data sets. And so I noticed one of my clients, he was um he's about 45. He's a male, really, you know, healthy guy, metabolically high performer um uh you know, as the founder of a startup that's doing really well and runs a little hot, you know? Um And uh so I noticed on his garment that his um His body battery numbers, we're not really getting back to 75 at least 75-80%.

And the body battery is really just a metric that indicates recovery at night. So you want to see the battery um get back to 100% when they wake up in the morning and I just noticed it wasn't consistently getting above about 75 or so.

I looked at his ordering data and he had good time in bed. So he was he was getting enough time in bed. I really really tell people to try and get that 8 to 9 hour sleep opportunity in the sheets. Um And he seemed to be sleeping um His sleep time was was was quite good.

Sleep, Biometrics, and Optimization

Um His rem sleep was was pretty good an hour to an hour and a half. Um And his deep sleep though was on the lower side consistently. It was 30 minutes, 45 minutes tops.

We really like to see um ideally, you know a combination of about three hours of rem plus deep and I started to dive into this a bit more and I noticed that his his core body temp was not lowering at night, it actually was going up one or 2/10 of a degree.

Um You know, ideally our core body temp drops about two degrees in order to really get us into the more most deep restorative phases of sleep. And and so I started to talk to him about this and and it turns out that I mean it was just too hot in the room. His wife likes it hotter and he likes it colder and he just kinda you know, they try and meet in the middle but it's still, I think his room was like 73 or 74. Um And I said are you hot at night?

He's like no I don't really feel hot at night, I'm like do you wake up sweating like, no not really. And I said well your your data is telling a different story, you're really not dropping. So um I had him get the cooler from chili pad and which is just a you know, a pad that goes under your sheets, A cooling pad. Exactly, really effective and efficient dropping the core body temp. He got that and within, you know, a few weeks I saw his his um core body temp numbers come down one or two degrees and his deep sleep start to go up by 2030 40%. Sometimes his body body were recovered at that at that point too. This is amazing Ryan, right?

Because so many people think and give me the answer of yes, I get enough sleep at night. I, you know, am in bed for eight hours. And they think that that means that they're getting the quality sleep and that's not always the case. And there's so many factors that go into quality sleep, temperature definitely being one of them a major one and And that the need to cool the room down. I think if I remember right and correct me if I'm wrong, I think that the ideal temperature for the room is anywhere between like 65 and 69, like it's much cooler than what you would think. And I noticed a huge difference in my sleep quality meaning how I woke up in the morning once I learned that and started cooling my room down quite a bit at night. But most people aren't aware of these different things and think that they're getting quality sleep just because they are getting the quantity of sleep and by actually measuring it like that's the, that's the key. That's the value right there for precision medicine is okay. Like I understand that you think you're getting great sleep awesome. Let's see what your body has to say about that.

And then we'll work with that because without that monitoring, without that ability to actually measure something, it can be very subjective. Yeah, exactly, exactly. To take that one step further, they'll say, yeah, I get good sleep. And then we look at the sleep data and they're like, you know, it's okay. But and then we start to dive into some daily symptoms of sub optimal sleep. So, you know, fatigue, brain fog, difficulty getting up in the morning, needing, you know, caffeine in the morning yawning in the afternoon.

People just think that these things are normal. They actually start to believe that these things are part of the normal experience. And although that might be they might describe that experience is good. It's like, well what is great look like and do we want to get there? Most of the people that work with us want to be great wanna experience greatness. And and so that's a discussion we have with them and saying, yeah, you're here now. But what's on the other side of the fence?

What's possible? And unless you actually have that discussion, um people really won't, you know buy into the data and and committing to the process of reflecting on the numbers and starting to dig into their process a bit more.

So um yeah, we, you know, we think of the health spectrum and kind of four phases unbalanced balance or homeostasis optimized, which is really pushing the the um the the innate physiology of of of of oneself and then there's enhanced and that's where you can get into peptides and hormones and other performance enhancing chemicals um you know, brain stimulation, neuromodulation, things like that, to really enhance the system past their their their innate potential. Um but that's the way we think about it.

And so we're always trying to explore that what's what's great look like, you know, and sleep is a big part of that. Sleep is a huge part of that and actually being able to measure it really helps the person understand and get motivated to make a difference when they can see that when they change something, it actually does improve objectively the numbers on their monitoring device. Because without that it can it can be hard to maintain that level of motivation if you don't see results.

But with the monitoring, like you're able to see such subtle changes that are going to make a big difference in your body, especially when we're looking at that level of taking good to great or optimizing or enhancing its its its those, you know, it's we're working in that top 10 5% and you're not always gonna feel feel the difference immediately, but being able to actually measure it and see that a difference is being made in your physiology is huge, awesome. So if a person has not been being aware of their breath and they haven't been tracking their heart rate variability and coherence or tracking their sleep, where would you even recommend a person starting Ryan? I would um I would have them start with a really honest discussion with themselves and say look at each of the four pillars as we like to call them of sleep, nutrition, stress tolerance and exercise and just kind of do a review of where they think they're at scale 1 to 10, keep it simple, 10 being the best it's ever been, one being the worst it's ever been for them and just have an honest assessment of where they are, I think it starts there um past that, I think you'll have the most uh efficiency and kind of the biggest bang for your buck if you really start with sleep.

Um just really focus on getting an 8 to 9 hours sleep opportunity um you know, those first two hours right before you want to get to sleep are like the golden hours.

Those are the hours where you really develop good sleep hygiene, you really get into a sleep routine, the brain loves consistency and routine around sleep.

So those two hours, you know, really protect those and I understand people have families and kids and it's, it can be tough, but there's ways to improve from the current state.

Um and so whether that is throwing on some blue blockers, you know, a couple hours before you want to get to sleep to reduce blue light from devices which affects melatonin production, which is the hormone that indicates our body.

It's time for sleep um cooling the room at night and we're ready for bed dropping.

Starting with the Fundamentals

Just dimming the lights in the most people don't know this, but most, you know, most lights in our our houses give you know in our rooms, they give off blue light as well. So dimming those, putting on some relaxing music, light a candle, some non caffeinated warm tea, something that indicates to the brain and the body.

Okay, The next 9-10 hours. My only priority should be optimal sleep exactly is recovery. So I think it starts there and then I would just go through each of those and really just do an assessment about nutrition um next you know, and uh you know what food am I currently eating? What do I feel like on a day to day basis?

What are my bowels like? I mean people don't really focus on that enough because I can tell a lot um exercise. You know, how much am I moving? What is my, what is my system feel like?

What are my aches and pains? You know what what imbalances do I have? And so I would uh I would kind of just start with an honest conversation like that and I really like how you start with rating it on a scale and it's a very subjective scale, right? But but that's fine.

That's a good place to start of compared to how I've always felt before. Where am I now? And recognizing those areas in which you could have the greatest change and and starting there starting with sleep is huge because sleep is everything right? Like that is the foundation as you say because it's our reset button, it's our recovery button. It's it's our body's ability to get up and do the next day well. And so if that is off that's going to affect everything to such a large degree. I tell people when I took this from Matthew walker to sleep scientist. But um I love, I think he said sleep is our safest performance enhancing drug and our cheapest insurance policy and it really is and I'm probably gonna make sure it's at some point. So I'll send you one perfect, awesome thank you. Good. Well thank you Ryan, I appreciate you being willing to share your expertise and knowledge with us today.

And again, like I love everything that you're doing it. It is so aligned with what I have found is truly helpful in taking people's health to the next level. Like we have to get uh to the individual level and look at their physiology actually measure it objectively, there's definitely room for you know subjective experience.

But being able to actually look at the physiology and see how we can optimize it is so awesome. And I love that you are doing this well, thank you and I appreciate you giving me the time and I enjoyed the discussion, awesome. And thank you for joining us today together.

Let's take that next level of health and aliveness.