Dave Asprey:

You're listening to the Human Upgrade with Dave Asprey. Today's an Upgrade Spotlight. This is where I bring in the creator of an interesting technology or technique or some sort of new piece of thing that is worth knowing about, because it can make a really big difference for you.

The reason I do the podcast is I'm crazy curious about all this stuff. I wonder how it works. But what I've realized is that you care about whether something is real, whether the people behind you are real, and you care about your time and your energy, maybe more than the average person.

I hate to tell you that means you're lazier than average, because that's how it works. I want it to be more efficient, which is I want to do less work, so you could do other stuff. Which might be fun, might not be fun. And what I'm going to teach you about here, and more to the point in what Michael Johnson's going to teach you about, is a technology called Mute from Rhinomed.

And this has to do with getting more sleep, or more to the point, more quality sleep in less time. This is something that I really like. It's called a nasal dilator. So I'm going to teach you stuff about nostrils.

Michael, welcome to the show.

Michael Johnson:

Thanks so much, Dave.

Dave:

Do your kids ever call you Mr. Nostril?

Michael:

No. But they have, since they were very young, had to stick stuff up their nose as part of our R&D program. So yeah, they're quite used to my fascination with the nose.

Dave:

When did you realize that you could have a wearable nasal device that was worth wearing?

Michael:

Well, back in 2013, I got involved with this company. And one of the interesting things they had was this, in a very early version, of what was a nasal dilator, but it looked like a cage.

And when I stuck it up my nose, it was very uncomfortable and that was a bit of a problem. So went back and redesigned the entire technology. And I guess what was really interesting from my perspective was that I had a father who snored like a bulldozer, who'd come home from work and sit on the couch and fall asleep and snore really loudly.

And so I was very highly attuned to it. But when I started having kids and hit that age where you don't exercise as much and your diet doesn't go as well as you want, I was then accused of snoring. So had a bit of incentive, mainly to staying married, that I had to do something about it.

So one of the interesting things about the technology was that we discovered is that it's really a stent. Now, probably a lot of your listeners are familiar with stents as in they go for arterial veins and hearts and so on. So the idea that you could stent your nostril and actually allow you to breathe more, was something that was really, really intriguing to us.

So we then set about designing what we is now the Mute and discovered that, simply by opening up the airway, you can actually really radically improve people's breathing.

Dave:

A typical human hearing this would probably say, it sounds like you woke up in the middle of the night and just came up with this idea and launched a product kind of thing. There's 10 years of R&D.

You joined Rhinomed 10 years ago and you've been the lead author on 50 patents. So this is not a small invention.

Michael:

No.

Dave:

It feels simple. Stick a paper glove up your nose and stretch it. But why is it hard to do? Why couldn't I just put anything that's flexy up my nose?

Michael:

Yeah.

Dave:

And why would I want to do it anyway? But you know what? It's so cool about what you're doing.

Michael:

Well, guess what? What I hadn't realized at the time, and one of the things we've done a lot of time digging into, is just how complex the nose is.

Dave:

And why would I want to do it anyway. But you know what? It's so cool about what you're doing.

Michael:

Well, guess what? What I hadn't realized at the time, and one of the things we've done a lot of time digging into, is just how complex the nose is. And we know that, for instance, the early part of the entry of the nose, the inside is actually skin.

It's dermal and then it becomes mucosal. And so, we had to design something that wouldn't irritate the nose, that would actually be comfortable to wear because even though we all grow up sticking things in our nose, and certainly my kids have done.

Every time you could walk into the room, there'd be a one small child with these finger up his nose or something.

Dave:

Happens to us all.

Michael:

So we're used to that idea. But the idea of actually designing something that you can wear inside your nose took a lot of R&D, a lot of trial and error, just to get it right from a design perspective.

Dave:

Longtime listeners have heard multiple interviews with experts on breathing, where we talk about mouth taping, nasal breathing, nitric oxide. It's kind of been a through line where how do you just get better sleep?

And I've experiment with every kind of sleep technology on the planet, including the Mute and including... Actually, I've tried a metal stent, a long time ago and that was not that comfortable, but it did push things out.

Why is it so important to spread the nose out when we're asleep and why isn't our body just doing it?

Michael:

Well, it's a great question. One of the interesting things about the nose is that it actually, the nasal cycle cycles every 90 minutes. So it'll swap from one nostril to the other. So the body is actually naturally trying to dilate the nostril or retract the membrane in the nose.

It's a very active spot to begin with. But certainly if you have a cold or something like that, you'll notice that one nostril is more blocked than the other. So that's an example of the nasal cycle working. So what we find, and this just doesn't matter whether it happened because of a sports injury or something, is that most people will have some form of deviation.

And it's just because our faces aren't symmetrical, so neither is the nostril. You'll have some people with slight deviation or just some normal abnormality or deformity of the nose. It's hard for the body to overcome that.

So we recognize that if we can help that opening up with the nose, allow people to breathe more, for the people who have a really very thin nose, just naturally thin nose or

they've had an injury that's caused it to be shrunk or that airway to be much narrower than it has, you can really radically change the way they breathe.

And that's really quite exciting.

Dave:

It is very noticeable when you put them in. And these are soft, pliable, medical grade polymer it's... Thanks for holding it up on the screen for people who are watching the videos. And you put it in there, you adjust it so it's the right size for your nose, you get the right size and then adjust it.

And then you notice that more air is going in. I generally don't snore if I tape my mouth and I have a bite guard in, but I used to snore a reasonable amount. But this is a noticeable, noticeable difference.

Michael:

And the reason behind that is that when you increase airflow into the nose, the body's natural reaction is for that membrane to retract.

Dave:

So the signal comes from sticking in your nose and once it gets a signal of more air, the rest of it just shrinks on its own, via some sort of automated reflex in your meat operating system that you can't normally control.

Michael:

That's right. That's right. And it's important to realize that the upper airway is actually smooth muscle. So it's not just flacid flesh. It's actually a smooth muscle. It's just like any muscle, you can actually get a reaction there.

Dave:

It's actually erectile tissue, isn't it?

Michael:

Yeah, absolutely. Which is actually really interesting when you get down the track into looking at sleep apnea and things like that, it's absolutely fascinating some of the technology that's coming through that area.

Everyone's very familiar, as you're saying, with a whole lot of other parts of the body. But everyone ignores the nose and I find the nose completely fascinating, and I think that's really interesting.

The fact that our device, the way we engineered it... And this is to your point earlier, that we engineered it so the point of dilation comes off the back of the device, which is if you put it in the nose, which I'll do now, when you put it in the nose, it's the fleshy part of the nose.

So you're actually creating that point of dilation from the back where it's less force on the septum, which is obviously the middle bit, which is really sensitive. And then by putting a ratchet mechanism in there, we're actually able to tailor it.

So I have... My left nostril was slightly deviated more to that side, so I can tailor it to actually allow it to get the right fit, but also the right amount of air so I'm equalizing out on both sides, which is pretty cool as well.

Dave:

It's remarkable the difference. And now, I think early on when I was learning about your tech, there are pro-athletes doing that stuff.

Michael:

Yeah. Well if you think about a lot of the pro-athletes, they can't obviously train anymore when they're in competition. You can't do anything more on the field. And so, the key thing that a lot of these folks will think about, especially in the competitive setting, is their breathing.

And not necessarily to try and breathe more, but to really control and be conscious of their breathing when they're in that competitive zone and trying to get into that mindset. And breathing is... And you've spoken a lot about this, is by controlling your breathing you're able to control your mindset, and you're able to have a clearer vision and focus around what you're trying to do.

So certainly in competitive situations, and we've had this feedback from folks who are doing competitive cycling and running and so on, they listen to their breathing, but they also listen to others breathing.

And so they may be going, okay, I can hear that person who's cycling or running next to me or doing an activity struggling, so I'll go for an effort. And it becomes part of that whole control and competitive mindset around going-

Dave:

So Mute is like a silencer for your nose, so you don't give yourself away to your competitors.

Michael:

... Yeah. Well, the product-

Dave:

That's so cool.

Michael:

... It is. One of the interesting things with that particular device, because it's slightly different. I'm just trying to find one. It's... Here we go. So it's called the Turbine and it's

sort of... Obviously it's yellow, because one of the guys who we were involved in early on is a guy called Chris Froome, who won the Tour de France a couple of times.

And so yellow jersey, yellow device. But what we realized with this device versus the one I'm wearing at the moment is that we had to design it so that it would be able to be worn when you're vertical and doing percussive activity.

If you look, you can't really... I'll just hold it up to the camera, but it's actually got a flange, almost an external piece of material on it that-

Dave:

Holds it in.

Michael:

... Yeah, holds it in. But it's also... I'll hold it right up to the thing. You can almost see there's a bit of a little flange that grips inside the nose so it actually stays in place.

Dave:

But you're not going to be doing percussive activity wearing the Mute in bed…-

Michael:

No, that's right. But it's real... We're right into that. We geek out on that level of detail going, okay. Well how do we design it so it's inside the nose, it doesn't irritate, it dissipates pressure if you're wearing it for a long period of time?

But if you're doing percussive activity and you've got to be running and jumping and doing all those things, how do we make sure it stays in place?

So we understand the nose at that level. We do a lot of CT scans and MRIs. We really geek out on it.

Dave:

... Now, I did not know that level of detail about it. And if you're listening to this going, what the heck? This is how biohacking works. You understand these tiny little details from gathering enormous amounts of data and suddenly you get these new bits of knowledge renew abilities.

And I'm fascinated because we have 10 years of focused effort on shifting the front part of the nose to send a signal to the back part of the nose to make it open up. And you're like, come on, that's so trivial. Except you look at the return on investment of all of the... I don't know, tens of thousands of hours that went into that.

When you figure out that two-thirds of people either snore or have a partner who snores. And that about 40% of people have slept in different bedrooms because their partner snoring was so bad. And get this. 15% of people, so what is that? One in six, if I'm doing my math right, have ended a relationship because of their partner snoring.

So if you imagine you have the most attractive person you're with, but they snored like someone's dying all the time, after six months of that, you're going to feel like you're

dying because you're so tired. So if they have a little transparent thing inside their nose and they sleep quietly, you might be tempted to stay. And these are very, very unobtrusive.

I am a user and a fan, and I recommend this if you have any snoring, even if you don't. If you're going to go to sleep, try it one time. And I go, why does my whole nose feel open instead of just the front? And you just explained.

I actually didn't understand that until this interview. But the feeling is pretty profound. Almost like if you took a hit of Afrin nasal spray or something that causes the mucus membranes to shrink. It feels like you took Afrin but you just had the Mute.

And you can reuse these for a substantial amount of time, right? I don't remember [inaudible 00:13:58] or something? A month.

Michael:

That's right. Yeah, and that's certainly the challenge with things like Afrin and other antihistamines is long-term use, you'll get a rebound effect where the body will no longer respond to it.

So in effect, we're doing something mechanically through engineering that the chemistry's trying to do. And I think that's, from a longer term perspective, probably a lot safer.

Dave:

Just getting a signal in without chemicals seems like a better idea when you can do that.

Michael:

Yeah.

Dave:

How long does a Mute last before you have to change it? And why do you actually have to change it? Because I might not have done that as perscribed.

Michael:

So we designed it so that it basically, it will last at least 15 nights. And it'll last longer because we're not engineering things to make them necessarily totally disposable.

But we do know that the ratchet system will not be as effective over a period of time. And also from a hygiene perspective, as the device is exposed to more and more of your body, it'll start to-

Dave:

You mean boogers?

Michael:

... Yeah, it'll start... we just recommend from a hygiene, cleanliness perspective, it's like a toothbrush. You want to make sure you're washing it and making sure it's clean and then-

Dave:

Change it once a year.

Michael:

... No, no. I reckon probably... I wouldn't be worried about. I think that'd be pretty horrific.

But certainly we have a bit of design obsolescence built in so that it'll discolor after a period of time. So certainly we recommend probably a packet of Mute, which has got three in it, but should last you about between 30 and 45 days.

Dave:

Got it. And I think it's useful to have a packet because there've been a few times where I woke up and I have no idea what happened to it. And then I'll find it in the washing machine two months later. I have lost it.

Is it not tight enough or does that just happen because I like scratched my nose when I was asleep or something?

Michael:

Well, sometimes it'll be because you've rubbed your nose and it's popped out. But it could be because you actually haven't fitted it correctly. So it should fit really snugly and you shouldn't even notice it's there, which is the objective around the design.

But at the same time, there's some occasions where you might knock it out and then you'll find it in the bed the next morning.

Dave:

I have two questions about Mute that no one has probably asked you.

Michael:

Right.

Dave:

Number one, do you use it with mouth taping?

Michael:

Ah, great question. So, I do. I don't tape my mouth all the time, but I do. And I find that it is quite profound when I tape and wear the Mute.

And not profound in terms of just breathing, but my sleep is vastly different when I'm doing both Mute and taping. I'm actually doing Feb-Fast at the moment, which is no alcohol, trying to cut down in sugar, all that sort of thing.

And so I'm doing a little experiment at the moment where at the moment this week I'm not doing anything. So I'm not even wearing Mute. Next week I'm wearing Mute. And the week after I'm wearing Mute and mouth taping.

Dave:

Okay.

Michael:

To see... Because I want to get some data just because over Feb-Fast I'm not drinking. I want to see what the change in sleep looks like over that period of time.

Dave:

Wow. So it's going to be pretty big. Drinking is... I mean, all of my data from all 15 years of tracking my sleep says drinking is bad for you.

Michael:

Oh yeah, it is. And it's really as you get older, too, that becomes more pronounced I've discovered.

Dave:

What if you're getting younger? Because I have that. I keep getting younger.

Michael:

Okay. Yeah. Well, one of us keeps... Facetiously say that one of the reasons behind developing this technology is the real way of not snoring is lose weight, start exercise, and don't drink.

So we went invent. Technology's probably another option in that.

Dave:

So what you're saying is if you use Mute, you can drink more? Is that...

Michael:

Oh no, no, no, no, no, no. We're not making that claim. No.

Dave:

You did not say that for the record.

Michael:

No, we did not say that for the record.

Dave:

One of my jobs as a host is to put words into people's mouths, and I just had to do that. It was there for...

Michael:

God, that'd be a real interesting step forward for the alcohol industry if we could make that.

Dave:

No, I don't recommend drinking actually at all, unless the alcohol's older than you. When it's self-regulating and celebratory and you won't do it very much.

Michael:

Very good point.

Dave:

Okay, that was the first question, and you had a really good nuanced answer. So the combination is pretty amazing, because we also know taping your mouth signals at least one nostril to open up more.

Michael:

Yeah.

Dave:

Right? But when both nostrils are getting a double signal, one from the mouth tape, one from the Mute, you're going to have a jet turbine in there and you're going to get more nitric oxide, you're going to get more oxygen in the brain, which means better sleep, less snoring. There's a strong argument for that.

So here's the other question for you. In my new book, Smarter Not Harder... Guys, yes. You can order it anywhere you likes to buy books. If you like the podcast, please get the book now.

Smarter Not Harder. But I talk about things that work better than meditation. I'm a fan of meditation, but you could do it faster. And one of the things that is provably better than meditation is breath work. I talk about holotropic breath work. I talk about all sorts of different breaths you could do.

So do people use Mute in combination with breath work? And if so, what does it do?

Michael:

Well, a bit like... The answer is yes. And I guess a bit like I was talking about the use of the turbine in athletics in aerobic activity. If you have any form of deviation or struggle to breathe through the nose because of structural issues, then the ability to actually have something that's actually going to assist that will obviously help.

The second focus is really about the actual physical stimulation of having something here that allows you to focus on your nasal breathing. And that's certainly one of the things that I find, especially probably more at for getting to sleep.

But by focusing on my nasal breathing, it gets me into that zone quicker than if I didn't have it in. And it's almost that... It's just that physical stimulation of having something there, the sense of the feeling of actually being able to breathe better and breathe more air through the nose.

It's about 38% more air through the nose. That seems to be able to help people get to where they want to get to quicker.

Dave:

I really like that. That's really powerful. Anytime you're going to do breath work... We include breath work at 40 years of Zen, and I've done breath work with a variety of guests on the show.

Joe Dispenza, Dr. Barry, and the list goes on and on. It's really worth your time, especially if you have a hard time with congestion during those. It's worth your time to look at using Mute during breath work.

I think you might find noticeably different and more powerful results like you're talking about.

Michael:

I'll give you an example. We actually had, just the other day, a fantastic dentist in the US, Erin Elliot. And she uses Mute on her patients when they come into the chair, sit in the chair. Because obviously, if you are having work done in your mouth and you have any form of nasal obstruction, it's hard to breathe.

And also as well known, people, if they're anxious, getting any form of anxiety, the focus is if you focus on nasal breathing, it'll help you calm down. So for instance, I'm a reasonably good flyer, but I wear Mute when I'm on a plane because I get... Especially if it's a bit of bumpy and you get a little bit anxious about that, I find it helps me once again to calm down and just zone in.

Dave:

All right. No, I'm bringing in some questions from the Upgrade collective.

You're doing breath work. Do you use the Mute, the one designed for sleep or turbine? Or turbine, however you say that. The one that's designed-

Michael:

Turbine. It's probably better to use the turbine, because... It depends on... If you're lying down, well I'd be using mute. But I think the turbine is more for those people who are probably doing yoga or that type of activity.

Pilates. I use it when I'm doing Pilates. I find it's much easier just to focus with it in.

Dave:

... Okay.

Michael:

So either/or.

Dave:

It seems like the best way to determine your nostril size is just to see which finger sticks in your nostril the best.

Is that the best way to know what size of Mute I need?

Michael:

It can be, but there's actually... We do have, if you go online, you can see we have a really cool sizing guide. And this is one of those weird... This comes from the 10 years of trying to work out how to fit people.

And what we've discovered is that there's the distance from the base of your septum just here outside. It's a natural crease in your nose. That triangle, if you think from there's a triangle from there to there to here, that's how we work out the size of what Mute you are.

Dave:

But if I'm going to order it, I'm assuming I would order the pack that has small, medium, large. That's how I started using it. You sent me the pack.

Michael:

Yeah.

Dave:

And I think I was a large.

Michael:

Yeah.

Dave:

I mean, kind of obvious. Just turn sideways, I should be a large.

But what you do is you just try it all three and I ended up giving the small one to my kids.

Michael:

Yeah, there's a starter pack, a trial pack, which has got small, medium, and large in it. If you get online at Amazon or mutesnoring.com or whatever, your nearest drugstore, they'll generally have the starter pack there and you can try.

As a rule, most women will be small/medium, men will be medium/large. It sort of works out in that basis. The medium has been designed, so it will fit about 80% of noses.

Dave:

Okay, got it. So medium is the guess. When you first get the one, try all three, find the right size.

Michael:

Yeah.

Dave:

Go for it. And if you don't use it every night for whatever reason, they're going to last you for quite a while. And I'm just really impressed. And I never could quite figure out why does my nose feel like it's open all the way up when I'm just doing something at the entrance? And you elegantly answered that for me, so now I get it.

One of our listeners is also asking, probably one with tons and tons of piercings. You know how guys will, or women I guess, will get a piercing in their ear and they put in a progressively larger thing until their ear is as big as a Prius?

Can you do that with these? Can I get progressively larger with my Mute? Is it going to somehow expand my nostril capacity or anything like that?

Michael:

Yeah, so the alar, which is this muscle around the nostril here, that's the bit that it flares. Just like if you think about a horse's nostril flares.

Well, we have a similar muscle there. So you're not going to, through use of this, change your shape of your nose.

Dave:

Okay.

Michael:

That's not going to happen.

Dave:

I think that'd be really cool.

Michael:

But actually, what it does is that because you're not wearing it continually, it's not like something that you're going to be wearing 24 hours a day, the nostril will come back to normal when you're not wearing it.

Dave:

Okay.

Michael:

But it's really at night that we are trying to, I guess with Mute especially, trying to resolve and improve breathing overnight. Because obviously, one of the troubles with not breathing properly overnight is that the long-term impact of that, and this is certainly from a personal perspective with my father who is really one of the, I guess, the drivers behind doing this, was that he ended up with... He obviously had chronic sleep apnea at the end.

And then as long term, he had both cardiovascular issues. So he had a quadruple bypass when he was 62 and then a pacemaker put in when he was 70. And when he died two years ago, he had dementia, vascular dementia.

Dave:

Wow.

Michael:

I didn't have any clinical evidence or solid data to say it was related to his breathing, but I certainly suspect that the decades of poor breathing led to that.

Dave:

So part of it.

Michael:

Yeah. And so I'm a very passionate advocate and evangelical about if we can improve breathing over the long term, it should have an impact on cognitive and physical health. And certainly there's a lot of really interesting, amazing work that's been done with kids. 50% of children with ADHD have sleep disturbed breathing.

Dave:

Wow.

Michael:

Which I just find mind-blowing. And there's an amazing guy out of New York, another dentist, Michael Gelb, and another guy, Harry Hindun, who have been working in that space and showing that if you change the shape of the upper pallet, if you change the shape of the pallet so that you get a bigger airway early on in kids' lives, you can actually really have an impact on that.

And I think that, to me, is really exciting, but also really emphasizes just how important breathing through the nose is for developing brains and aging brains. It's quite amazing to me that we only really discovered that the sinuses were producing nitric oxide, I think, in the nineties.

This is really... This hasn't been around for a long time, this knowledge. This is what I love about the nose, it's untapped territory in what we really understand it's true impact is.

Now obviously ENTs and those specialists will say well, no. We've known about that for a lot. But the vast population doesn't understand how important nasal breathing is and the impact it can have over the longer term.

Dave:

Well, I think you've done something solid with Mutes and all the patents, 10 years of research and the level of, I'm going to call it nostril nerdiness, that you put in. That's why I wanted to have you on the show to talk about it.

And if you guys are interested in checking this out, you know anyone who comes on the show, especially for our spotlight, I'm going to get you a discount. So if you go to mutesnoring.com, mutesnoring.com, use code Dave 10, they'll give you a discount.And they'll actually send it to you in Australia with free shipping as well as the US and Canada, which is unusual.

So I got to say, there's a lot of sleep technologies out there. I cover all of them. I've tried all of them. That's part of the plan. This is one that's remarkably easy to use. It takes all of five seconds to stick it in at night before you go to bed. And then you get the signal into your mucosal passage and then you sleep better. And you snore less and probably your spouse and maybe your dogs sleep better too, because you're quieter and that just seems like a good return on investment.

How much is Mute anyway? Does it vary by country? Can I ask you that?

Michael:

Yeah, so in the US it's around between $16 and $20 depending on if you're using the starter pack or the size pack.

Dave:

Okay. Not a huge amount of money, lasts for at least what? 45 days.

Michael:

Yeah.

Dave:

Or thereabouts. So if it improves your sleep, even by 10% every night, this is just a no-brainer. There are some things where you're going to... I've talked to you about systems that costs, well, $20,000 for a mattress. We've had those guys not talking about all the things you do to a mattress.

This is not a huge expense. And so, if snoring is your jam, you can probably undo it for the cost of 1.3 lattes at the current price of lattes. So, it's probably worth it.

Michael:

And it's one of those things, Dave, that we often... When we look at people buying a lot of... Spending a lot of money on a mattress, and that they snore, they're not going to sleep on it.

They'll sleep on the couch because their partners kick them out. It's pretty crazy to us that you go, well, if you're spending that money on a mattress and you're never going to sleep on it, dude, just bloody try. Just try.

Dave:

Yeah. It's worth a try for sure.

Michael:

Yeah.

Dave:

And I'm seeing comments from the Upgrade collective. One of our regular members here, Todd, says that his HRV, his heart rate variability scores, when he wakes up are better when he uses the Mute. It's like it raises his baseline HRV.

And for long time listeners, heart rate variability is the number one measure of how well you recovered the night before. So there's something meaningful going on with Mute and with this thing that you've discovered, that you don't have to stick something all the way up your sinuses to hold it open. You just need to trick it into opening itself.

I think that's an elegant biohack. It's super cool. I just want to remind our listeners, you go to mutesnoring.com and that's where you get all the information about this and use code Dave 10.

But overall, man, this is affordable, takes almost no time to use, and provides consistent effects with tons of research backing up. Perfect biohack.

Michael:

Wonderful. Well, we're actually in about... World Sleep day is coming up in March and around then we're going to release a major bit of research that we've done in the UK, Australia, and the US that looks at the amount of snoring and sleep and the key issues. And we're partnering with that, with WebMD, which is pretty cool.

Dave:

Wow.

Michael:

But it's a pretty much comprehensive bits of research with users, with people who are struggling with sleep and snoring every night. And I think it does point to just the sheer number of people who need to buy into this biohacking concept to actually need to understand that snoring and sleep is a modifiable behavior and you can change it.

It's not something you just have to put up with and live with. You can actually change it. And as you said, it might be through diet, weight loss, but it actually might be through finding a solution that actually helps as well.

Dave:

Interesting. All right. I'm sold.

I've actually been sold for a couple years. I just wanted people to hear the story of 10 years of research to get a little signal to the body.

For everything you hear about here, there's probably 500 other researchers around the world working on other signals for other little parts of the body that you just could never do until we had modern tools. This is the Renaissance for biohacking. It's super cool.

All right guys, this was Upgrade Spotlight, and thank you for listening. Thank you for checking out Mute if it's going to be a service to you. And if this idea of biohacking's interesting to you, go to my new book, Smarter Not Harder, where I do talk about sleep as one of the most important hacks. This is one for you.

See you on the next episode.