

Challenge Your Nervous System with Whole Body Vibration – Tony Molina – #963

Dave Asprey:

You're listening to The Human Upgrade with Dave Asprey. Today we're going to talk about a biohack that you probably haven't heard of. But something that has a long and storied history. It's something that people said I was nuts for talking about when I first introduced the field of biohacking 10 years ago. In fact, they made fun of me for it. But there was so much science that I was willing to deal with it because if it was good enough for NASA and Russia and East Germany and things like that, I wonder if they're all just crazy or maybe they just like to do what works. Yeah, I'm talking about whole body vibration.

I've got a great guest on the show for you today. We're going to talk about what it does to your physiology. What it is, how you can change your strength, your bone density, your circulation, your flexibility, and a lot of other things you might not expect by standing on a platform that does something you wouldn't expect. And our guest is a human performance expert named Tony Molina, who has presented a couple times at Tony Robbins Platinum Partnership on Elite Performance. He was an Amphibious Reconnaissance Marine Team Leader in the first Gulf War during Desert Storm and a Navy Seal obstacle course record holder. And for almost a decade was an elite professional racer on expedition racing. And if you don't know about expedition racing, these are non-stop 24-hour a day, 500 mile courses in remote locations. In other words, Tony's a professional masochist. Tony, welcome to the show.

Tony Molina:

I like that. Thank you.

Dave:

You should have that on your LinkedIn profile just as the headline, Professional Masochist.

Tony:

One of the expedition races we did in the Eco Challenge was in DC and it crossed four, 500 kilometers right there in your home terrain there. So that was 60, 70,000 vertical feet of terrain in five days, 24 hours a day.

Dave:

Jeez. It can be really dangerous. Just the sheer number of rainforest slugs up here, you could slide on one of those and skin your knee. I mean it could be terrible.

Tony:

Yeah, there is a bush called slide alder that is the middle ground between the glacier and the high mountain. And the slide alder is so tough that it almost ripped all of our clothes off while we were moving from the lowland to get to the glacier.

Dave:

Wow. I mean, I've done some high-altitude mountaineering, nothing like you, but it can be rough up there. Things are not what most people expect. And to do 500 miles in five days, that's not even in my universe of how the heck would I do that? You went through all of this, I'm going to call it self-abuse

lovingly, and you ended up as a high altitude and longevity researcher. And you're at Power Plate which is, I'd say the preeminent manufacturer of whole body vibration plates. How did you get into longevity and high-altitude relationships when you come from the background?

Tony:

When I went to my first high school reunion, they had a contest for who looked the most alike when you showed up. They put us on stage and I was voted the most looked the same from 10 years ago. Then I went back at the 20-year reunion and I got voted again as the person that looked the most similar to when they graduated high school. And this kept going and so I started to really look at longevity and lifestyle. And that was at the same time occurring with the high-altitude alpinism that I've been doing for a couple decades. I take people to high-altitude all over the world, South America, the Himalayas, all through Volcano Alley in 6,000, 7,000 meter objectives.

And as a necessity, people wouldn't go and spend two, three weeks to do these things because they have to go to work and they can't just stick around that long. I compressed these types of objectives and these expeditions into a long weekend, which having enough work done in hypoxia and high-altitude, you can't really cheat the system. You'll end up with edema either in your brain or in your lungs and it could be significant. It's not a good version for your survival. That being said, I actually started to piece together the reasons and the vectors around why we're actually having these challenges at high altitude.

Dave:

Each time I got to experiment with my biohacks, and this was early in life, I didn't know what I know now. But every time I took mitochondrial resuscitates, even things like d-ribose which is a special sugar that helps with mitochondrial performance, and other various things including something that Tibetans use at high altitude, yak butter tea. Who would have thought? Why does it work? And it always, for me, came down to mitochondria. And like, wow, how cool is it that we have a chance to do an interview because we can talk about that kind of nerdy stuff and whole body vibration in the same universe. And that's just an unlikely thing.

Because manipulating pressure on the body like you would do with an OxyHealth hyperbaric chamber or mold people who've had serious toxic mold like I have and almost everyone with Lyme disease who actually has mold poisoning and Lyme disease. When you take them to high altitude, they feel better. And there's all these things around VEGF and all these other things going on and you know more about that than I do, at least that's the sensation that I get. Tell me, what is magic about high altitude? Is the pressure? Is it the oxygen? What's the deal?

Tony:

It's a great question. There's a couple vectors going on. You've got the altitude mechanism which is the partial pressure change. You have the temperature change. And you have the actual altitude part. The pressure mechanism seems to be the major one that's the weight limiting step for human function. So you can only cheat so much to address that process. And that's regulated by the hypoxia-inducible factor 1, HIF-1. That's one of the master regulators of human function. It's really the most still research fueled in the world is obviously we deal with hypoxia until the end of our life, so we're looking at this in all different facets.

Dave:

HIF-1 alpha you're talking about, there is a longevity thing you can manipulate. It changes when you get in a sauna. It changes when you exercise. It changes when you do breath work and it changes when you go to high altitude. It's this cool thing, the definition of biohacking, change the environment around you and inside of you so you have control of your own biology. Well, there's certainly pressure. There's gas levels like oxygen and CO2 and stuff like that. And vibration or sound even. Those are also environmental variables. It turns out you're an expert in a couple of those. You're dealing with the pressure of things that happen that change HIF-1 alpha. But then you can look at vibration. Does whole body vibration also affect HIF-1 alpha because it's more efficient exercise?

Tony:

It can. It depends on the length and the frequency.

Dave:

Okay.

Tony:

As you know, if you hold your breath you can influence HIF-1 alpha. So if you're combining breath work with whole body vibration, you can begin to implement the mechanism that way. Having spent so much time at extreme altitude and looking at the literature around it, we don't really want to live at extreme altitude as much as we want to intermittently go in and out of extreme altitude.

Dave:

Thank you for saying that. Intermittent cycling on almost everything seems like it's the way to do it. You don't want to be in ketosis forever. You don't want to be cold forever. You don't want to be hot forever. You go in and out and I've seen a lot of people who live at high altitude run into problems but I feel like a great golden God when I met 18,000 feet or something, like ah. And I might feel dizzy for a day or two. I might suck on some coca leaves or take some supplements or whatever. But I don't know how long that lasts. Is there an elation that you get once you get acclimated? Is it a six-week thing? Is it a three-day thing? I don't even know.

Tony:

It's a great question. It's a range. So it depends is usually the answer. You can look at about a two-week cycle of the morphological changes that occur when you're dealing with high altitude. Then you're looking to time your window around big ascents in that short window. But then there's a crossover effect that carries over for about two to three weeks after you've left the altitude. Whereas you just said, the pulsing and cycling of the altitude seems to be the best version of all these things, not the consistent. Because then you end up with the survival paradox. Now you're driving too much of a survival system and then there's a catch to that as well.

Dave:

Okay.

Tony:

Metabolism is a wild ride. It's like a whitewater river.

Dave:

I feel like we're still gaining an understanding of exactly what levers and knobs and dials to push for what person to get what result. But we know way more now than we did and maybe my metabolism is going to be less responsive than yours. So you might need 20 minutes of stimulation to get somewhere and I might need 30 minutes. And so we're using big data and machine learning and it's a big part of what I'm doing at Upgrade Labs, where just I want to get enough data from people to know, here's how you create change for people that don't want to spend all day in the gym which doesn't seem to work very well.

Tony:

One of the main things with this process and why Power Plate and whole body vibration is so preeminent is that most people, they're not flexible metabolically. So then if they end up doing things like they're traveling to the Himalayas or they're going to Machu Picchu, it's not even that high, it's 4,000 meters. But if their metabolism's not flexible, then they're under the insult even when they begin. So they never really get to have that euphoria that you're describing which is like, that's the idea. And you feel better. You feel a little bit cold, you're a little hungry, and you're a little out of breath, you generally feel a little better, so that's that micro-dosing in a sense, or cycling and pulsing these types of strategies for health.

Dave:

All right. Let's talk some more about whole body vibration because one group of people's going to say, "Is this like those waistbands you see from the 1950s at a hotel spa or something." I remember those from when I was maybe nine or 10 years old, there's some old installation somewhere and they had those at this hotel and like, "What is this thing?" And you hold onto this weird thing. And that's maybe what most people think of. Or they think of the Motel 6 things, you put a quarter in, the bed vibrates. So what is whole body vibration? What's its history? Just walk me through what it is, and since I spent actually 18 years playing around with that, I know some stuff that's really harmful in the industry but I want to know what your take on it is because you work for the top company. Walk me through the history. What is it?

Tony:

I call it the ultimate exercise biohack because it's used by pro athletes like Serena Williams and Rafael Nadal, doctors, biohackers, celebrities like Mark Wahlberg, NFL teams. It does so many things. This biohack helps you burn more calories. It helps you increase strength and reaction time. You can improve skin and circulation, bone density, pain relief, hormonal changes, posture, balance. On that note, it's also a lifelong health and longevity partner in the 10 things around a system I developed for living 150 years.

Dave:

That's it? 150 is your goal?

Tony:

Yeah. I think at this point, I'm pleased with 150 because I figure I'm 54 chronologically and I'm about 34 biologically.

Dave:

That's only 30 years better than our current best and you're already so far ahead of the curve.

Tony:

I'm all open to change. And at this exact moment, that number is fine because it allows me to have some time dilation. Because if I don't set the number then I have a time constriction possibility which is what most people are under. So at 150, I don't even have to think about it. I just kind of set it aside and I can-

Dave:

Got it.

Tony:

... focus on enjoying myself. And I'm starting really my next 50 years right now, that's where I'm at now.

Dave:

I love it.

Tony:

So in that, the biohack that we're talking about is the Power Plate. And the Power Plate is the nexus between energy and life. Whole body vibration, it runs off Isaac Newton's second law, so force equals mass times acceleration. You remember that from your physics class. Where acceleration is what's being increased versus mass. And generally, we focus on the mass, whether we do any kind of strength training, we focus on holding mass or dealing with the mass or changing the mass.

With whole body vibration and Power Plate, you're focusing on the acceleration or the speed change. So if you drop two size weights at the same height at the same time they hit the ground at the same time, because the acceleration is the same for a free-falling object which that's 9.8 meters per second square. If two people weighing the same perform squats, one does squats on the ground dynamically, and one does squats on a Power Plate, the person on the Power Plate produces more force. And they produce more-

Dave:

Yeah. Because what's the plate doing? Explain the motion and how that works because I think that's fundamental to what this is.

Tony:

Yeah, it really is. So the Power Plate generates bottom-up training. It's subconscious. It's harmonic vibration while conventional exercise or effort, it focuses on top-down which is conscious. So you're really changing the formula from conscious effort to subconscious. And as you get into the subconscious, the triplanar movement of the Power Plate facilitates it. Mechanical vibration oscillates in three directions on the Power Plate. It's produced by two motors located under the platform's base. And these are measurable oscillations. The plate goes up and down, it goes side to side, and it goes front to back, two to four millimeters.

And there's no other whole body vibration device that generates this. This is called multiplanar movement and it creates an unstable environment. And that's proprioceptively challenging. Basically, the nervous system doesn't know what to do. It says, "Well, am I under a bounce challenge? Am I under a hormonal challenge, cardiovascular challenge?" And so the result is that this total global activation

occurs of most of our systems. And then your central nervous system itself creates an autonomic, subconscious response, super powerful.

Dave:

I like to explain it as you know you're doing a squat but your body thinks you're doing 20 or 30 squats because it's constantly adjusting and it knows that your body's going up and down a little bit so it says, "Well, clearly something else is going on. I have to adapt to this." And so you just get this rapid adaptation that drives hormonal changes to get bone density that you're not going to get if you're just doing squats. You get some amount of it but doing it on a Power Plate, you get a different result. And is it just from the body trying to adjust to the motion three dimensions that's causing it?

Tony:

It's multifaceted, the result that comes from the Power Plate. The same mechanism that the Power Plate elicits is the reflex, tonic reflex activation that occurs if you go to the doctor. You get your checkup once a year and they check your reflexes and they actually knock just under your knee and your knee reflexively extends. That tonic reflex mechanism is what occurs when you're using the Power Plate. And so you can experience this phenomenon. So if you place your hand on your chest and you just lift your index finger up and you just put it back down. Just feel that a few times. This is you doing any kind of voluntary movement, exercise, effort. Okay, now take your other hand and lift your index finger up and just let it snap back down and rebound a couple times. You can feel that. That's the power of Power Plate.

Dave:

Without any effort, it just does something.

Tony:

Right. In the same way Power Plate stimulates this neuromuscular spindle without the need for the brain even to get involved. So you're just setting the brain aside, so it's subconscious. It creates, I call it, cognitive confidence. The nervous system itself is ramping up safety signals so that the brain is understanding what it needs to do without you consciously having to do anything.

Dave:

That's brilliant. You talked about a specific frequency earlier. And what does frequency mean in the context of whole body vibration? What is a frequency and what does it matter?

Tony:

Human beings emit about 60 watts of energy. If we stand up, the human body standing is at about 7.5 hertz. 7.83 hertz is the Schumann resonance. You may have heard of the Schumann resonance.

Dave:

When you say the human body, what are you measuring? Are you measuring electricity on the skin? You're measuring a magnetic field? What's that a measure of?

Tony:

Yeah, that's a measure of on the skin, the actual skin.

Dave:

Okay, so an electrical resonance on the skin?

Tony:

That's right.

Dave:

Okay.

Tony:

These frequencies are called the Schumann resonance frequencies. They belong to a group of natural electromagnetic earth energies.

Dave:

It's good EMF from the planet, not the bad EMF from your cellphone?

Tony:

That's right. That's the stuff we're supposed to be exposed to. They're very important because they induce brain states that help us relax, they help us heal, they help us perceive and experience things on the earth. Our bodies are literally designed to work this way. And Power Plate then is the medium to be unearthed. So you can use this on the bottoms of your feet. You can use this on your hands, on your thighs, on your forearms, stomach for microbiome, improvements in HRV.

Dave:

When you say use this though, and this is a big device and you're standing on the thing and it moves. So you hold your hand on it, you're saying?

Tony:

Sure. Yeah. There's different size of these Power Plate devices. There's one that goes in the back of a car. There's ones that have towers that stand up.

Dave:

Oh, those ones, okay.

Tony:

The platform isn't a drastic balance challenge that's not safe. It just slightly has a tip but the-

Dave:

Yeah, it just kind of vibrates.

Tony:

It vibrates.

Dave:

One thing I've noticed, I have a family member who shall remain nameless. I'm like, "Look, you need to get a Power Plate. Good quality with the right kind of motion." And he was like, "Yeah, I found one for \$300 on Amazon." And it was a kind that rocked back and forth. And every time I've ever stepped on one of those, I always get massive low back pain and it wrecks your hips. And I'm like, "You need to not do that." Of course family does what family will do and eventually he replaced it because it did exactly what I predicted there. What is it about rocking from one leg to the other that is not good for people versus the triplanar movement that clearly ... I mean, Power Plate has so much evidence behind it. What's the difference between those two?

Tony:

There's the teeter-totter boards you're describing.

Dave:

Yeah, those are horrible.

Tony:

Those are pretty much contraindicated. There's some good literature work that's been done that shows that potentially the corpus callosum is potentially influenced negatively from that.

Dave:

Yeah, the connection between the hemispheres of the brain, that little thing, we don't want that to be-

Tony:

Yeah.

Dave:

Okay, got it. So those are just bad news.

Tony:

Yeah. When you're into whole body vibration, you're doing Power Plate. And you're doing it because of-

Dave:

Power Plate's the thing.

Tony:

Yeah. Because it's harmonic vibration which is authentic to the body. And it's that triplanar movement that's predictive so that the brain actually ramps up these safety signals because it understands that it's going to be consistent. It moves either at two millimeters of travel which is the low frequency or it moves up to four millimeters of travel and that's the high frequency. Depending on your goal and depending on what it is you're looking to stimulate, because you can place this in a bunch of categories. You could be looking at heart rate variability and you're going to be in a low frequency setting. You can be looking to drive growth hormone and testosterone, you're going to be on a high frequency setting. It just depends on what exactly are you doing.

On that note, the total allostatic load, our total physiologic stresses that we manage environmentally through the world, that process itself you can improve with whole body vibration and Power Plate because there's a resonance that occurs from using the Power Plate. That's subconscious, you don't have to focus on it consciously. And you start matching your breathing to your heart. And that occurs from only the triplanar vibration device which is Power Plate.

Dave:

Interesting. I noticed something else when I started using it, it is my flexibility. I didn't use to be able to touch my toes. I was not a flexible person other than dislocating a few joints, not joints, just one joint. My knee used to always dislocate after an injury. But I was not a flexible person at all in gym class. And I am biologically 38 I mentioned, and chronologically add about a dozen years to that, slightly less. I cannot just touch my toes. I can put my ankles behind my head. And I do think that whole body vibration made a huge difference in flexibility. Of course I eat a lot of collagen. I made it into a billion dollar industry. But how much flexibility comes from whole body vibration in just a normal person who's not a crazy biohacker like me?

Tony:

It is significant. There's two paths to the flexibility. There's the reciprocal inhibition which is a mechanical pathway, we'll go over it. And then there's posture, and that's your somatosensory cortex. That's basically activating just harmonic feet. Most people they are running around and they don't have even the ability to flex their ankle. To stand up, you need 90 degrees of flexion at your ankle just to stand. To run, you need 110 degrees. Most people are running around running and they can't even stand. So we end up with this process that really affects us involuntarily all the way up the chain, back, neck, shoulders. So with the Power Plate, because of the reflexive nature of it, you're able to instantly improve your neurology. And so all you have to do is just turn it on and you get the improved flexibility because the mechanics of the inhibition, it's overridden.

So when you have tightness, it works like this. If you are weak in an area, then your body doesn't let you go there. So if you're trying to lean forward let's say, just stretch your hamstrings. So the muscles on the front of the body are limited. So they have a way to inhibit the muscles on the back of the body to not allow you to go forward because you're not safe, the brain registers that you're not safe. So with Power Plate because it's subconscious and it immediately goes to the motor cortex, you get the signal, the brain tells the muscles, "Oh, we are able to go ahead and contract to the need that we were able to do." The brain then go ahead and it releases the hamstrings within 15 to 30 seconds. And you're immediately able to go down and touch your toes because it's reflexive. It's that tonic reflex response.

It's brilliant, so you don't have to spend your time stretching. When you talk about stretching, you really got to talk about posture, because posture is why we have tightness. Posture is your eyes, your major sensors, your eyes, your jaw and your feet and your skin. So the Power Plate becomes the segue to improve posture, which will equal improve flexibility. So you can do different postural [inaudible 00:26:30] exercises with your eyes while on the Power Plate. So then you're addressing two of your major sensors. You're addressing your feet and you're addressing your eyes and that's 75%, 80% of your posture. Flexibility then comes as a byproduct of improving posture.

Dave:

How much time do you need to spend on a daily basis on the Power Plate in order to start seeing that kind of a change?

Tony:

Two minutes.

Dave:

Two minutes. I would've thought you'd say close to five to 10.

Tony:

120 seconds. Because it's subconscious, because it's reflexive and because the brain registers safety, it's ramping up. It's a predictive signal that doesn't change. That's why using the rocker or the other types of plates are something that's kind of bad business, you just want to set it aside. So you commit to the Power Plate and really you want the Power Plate, it should be one in your kitchen, one in your car, one in the office. And based on how-

Dave:

Which one is in your Car?

Tony:

There's one called the move, which basically doesn't have a big platform attached to it. It's smaller, weighs about 75, 80 pounds. But I mean, let's say you're going out to dinner with friends. So you don't have one at the house, it's in the back of your car. So you set it up, you plug it into your car, you step on it and you just stand on it for two minutes. You do two, three minutes on the plate and you've set a pre-prandial mechanism before you go in and eat. So now you're influencing blood sugar and all you had to do is stand on the PowerPoint.

Dave:

Oh yeah.

Tony:

So you don't have to-

Dave:

By the way that works. I've done that so many times at home when I use my levels blood glucose monitor. By the way guys, levels dot links slash Dave gives you like a get to the head of the line on that. I do that, if I get on my Power Plate and like you said, just two minutes, sometimes five minutes before the meal, you could eat a lot more carbs and you don't get the spike at all. I mean, it is ridiculous and it's so much better than doing 10 air squats beforehand. All I'll do is I'll hold a chair pose on the Power Plate for as long as I can, during that two to five minutes and then you just eat and you're fine. It's better than going for a walk.

Tony:

It is, yeah. It's really like an inoculation. And you just said it great, you don't have to jump in a cold punch for 60 seconds. You don't have to drop down and do 30 seconds of burpees. You just stand on the Power Plate and you're inoculated. So it's really part of the, I call it the fabric of this longevity programming, so humans can feel good and look good and function. One of the good stackers with the Power Plate is with

the red light. I think that, that is one of the key stackers really combined is red light with the whole body vibration with Power Plate. And that could be used in a bunch of different facets based on the goal.

Dave:

So the Power Plate, what frequency is it running at?

Tony:

The Power Plate has low and high frequency. There's 30 to 50 contractions per second that occurs. And you either set it at the low amplitude settings, which is a two millimeter of travel or four millimeters of travel and that's the high amplitude settings. It's a simple shift of a button. Some of them have remotes that you can dial it in. And it's not really more is better, it's depending on again, what's the goal? What are we looking to do? Humans we're designed for frequency and vibration, that's life. So the process of setting the Power Plate is dependent on what it is that's going on. As of 2010, there's been something like 150 to 200 peer reviewed articles annually done at whole body vibration.

Dave:

I first blogged about whole body vibration at the end of 2010. And people are like, "Dave, you're dumb." Literally people poured so much hate on it. And then 150 studies over the last 12 years. What's your favorite of all the studies that you're like, "I told you so." What was that one?

Tony:

The first one, well, 1958 out of the journal of aviation medicine.

Dave:

Nice. I like this one. Tell me about it.

Tony:

Yeah. Again, looking at aviators and the challenges of the anti-gravity aspect is looking at bone as well. And so they took these pilots and they were assessing whole body vibration. And then the rate of the change in the altitude shift, and these guys, they're dropping out of significant altitudes in matter of just few seconds. And their ability to stay awake because obviously the Gs are so huge, right? So just using the whole body vibration, these pilots were able to withstand increased Gs. And that's kind of started them on a path towards really breaking open this whole body vibration mechanism as a research topic.

Dave:

That's a serious measure of resilience, right? Like, oh yeah, I didn't pass out when I was on the rocket, and the other guy did. That's kind of hard to mess with. My favorite measure though is heart rate variability, that if you wake up in the morning, you know your average heart rate variability throughout the night, that kind of tells you what's my nervous system doing for recovery. Do people see HRV changes when they do Power Plate?

Tony:

Yeah. Because I would say it's free meditation. It's harmonic in nature. So you could go to a Tai Chi class or a meditation class or work in something like yoga, it's conscious. You can make gains, there's a skill acquisition aspect to it. So you have to acquire the skill. There's a limitation because your prefrontal

cortex is involved, right? And our first brain is our gut. So when you step on the Power Plate, your first guts does the work, it takes over. And then you're able to actually elicit subconscious changes. This is how we focus on things like nervous system dysregulation trauma.

People that have nervous system dysregulation in our society now, it's looked at a little bit, it's a bit of a challenge. We kind of don't know what to do with it or like someone says, "Hey, I just survived this car crash." And sometimes we have judgment on these things socially, why weren't you able to handle that? Why is this so special for you? Either way the person's dysregulation places them in different states. And so there's the dorsal vagal state, that's where people are dysregulated, they're immobilized, they're kind of disconnected from society. Then there's the sympathetic level, right? That's where someone's mobilized. And mobilized doesn't necessarily mean right or wrong or good or bad. And then there's the ventral vagal and that's where you're safe, you're social, you're connected to others. You can use the Power Plate to influence vagal tone that's based on the polyvagal theory.

Dave:

There's probably been five or six episodes about that, including the father of polyvagal theory, Stephen Porges was on the show quite a while back talking about trauma and the role of the vagal nerve. So longtime listeners are super familiar with it. But if you're new to the show, the vagal nerve is the biggest nerve in the body that controls your autonomic and your fight or flight response and your rest and recovery response, is this one really big nerve in different parts that do different things.

And that you're saying the Power Plate manipulates the vagal nerve because it senses vibration throughout the body. Do you have to set it on high frequency or low frequency to get the vagal nerve? Or do you have to lean your face against it? I know you're not supposed to do that. How do you intentionally get vagal tone out of the Power Plate?

Tony:

Vagal tone happens automatically, instinctively and reflexively due to the tonic vibration mechanism from the whole body vibration and Power Plate.

Dave:

Does it work if you sit on it, or do you have to stand?

Tony:

You ideally can sit. You can stand. You can kneel. It can depend on what your state is. Similar to emotional animals, people have different animals to help with emotional tone. The Power Plate is a nexus to that as well. Because again, if it's set on low frequency and you're there using it as an autonomic anchor, you will feel what frequency it needs to be on. It won't be something that is an insult to your nervous system. Your nervous system will guide you. And I would say this is where we start to kind of go this way for health, which is trusting our body's intelligence versus externally looking for items in different facets to elicit a health response. The Power Plate becomes that medium for this. It could be done barefoot. You can have socks. You're connecting to this resonance and this frequency from vibration.

Dave:

I tend to do it barefoot or in Xero Shoes or something like that where there's not a lot of padding. Is that a good thing or should you be wearing typical running shoe kind of things.

Tony:

I think it's best that people can move back towards ... obviously our goal is to touch the earth, right? We need that frequency from the earth. Because we don't touch the earth as much now. And we sit, which lowers our frequency just by sitting, those two processes mean when you're using the Power Plate, you can work yourself towards removing your shoes, removing your socks, because there's a pad as well.

Let's say somebody has a peripheral neuropathy and they've got significant pain in the lower extremity. So they may need to keep a shoe on because their pain system, that's their nociception system, the pain system, there's neuropathic pain and there's the neuropathic pain and the nociceptive pain. And so if their nociception, their pain reception is high yet they're going to want a shoe on just because they have to transition their nervous system from this reaction state to feeling like it's actually in control. So that may take a bit of a process.

Dave:

I've been doing a lot of work on rehab for my feet and just learning all the micro muscles. There's a lot of complexity there and just more semantic training and things. And I like to do that on my Power Plate, right? And it feels like when I'm spreading my toes and learning how to move each other, then I'm doing it while I'm vibrating that I'm getting some kind of other neurological benefit. Is that all placebo? Is there something going on there when you're doing functional movement while vibrating?

Tony:

The somatosensory cortex is what you're describing and that's what's activated from the feet. It goes up into Brodmann's area in the brain. And that is the master regulator of motor function. This is where we get to the voluntary exercise let's say version or corrective exercise versus whole body vibration and Power Plate. You win every time with Power Plate because you're addressing the actual nervous system itself and the control mechanism of your motor system. That's how proprioception goes up.

So the brain knows where the body is in space and time subconsciously because you're using the Power Plate. So by default you win, your reflexes go up, your IQ improves, your reaction time improves, your ability to propriocept allows your posture to improve. So now you're breathing better. We're looking at this posture process and the feet. If you're able to influence your feet to the brain subconsciously, then you're actually shifting the brain's ability to regulate total homeostatic load, so that's allostatic load. Allostatic load drops, your stress and strain on your system is less. And all you're doing is activating your feet on the Power Plate.

Dave:

Okay. I get it. There is something that's not placebo and the results that I feel like I'm getting. One of the other things that I noticed when I started using Power Plate is I feel like I get leaner very quickly, but I've had a lifelong problem with toxic mold and with autoimmunity, so I tend to carry a higher inflammation burden than the average person. In other words, you give me some wheat and some dairy and some kale or whatever, I'm going to wake up the next morning with muffin top and sore knees probably. But if I use the Power Plate, then I don't have muffin top when I'm done. There's an interesting study about inflammation and whole body vibration. Can you talk about that? I think that explains why I noticed it.

Tony:

Yeah. The Power Plate elicits hormonal changes, it elicits also appetite suppression and it elicits inhibition of adipogenesis, which means the body's ability to create new fat cells. And so this process occurs because the lymphatic system is activated, right? So whole body vibration with Power Plate

improves the lymphatic system. When you improve the lymphatic system, you improve circulations. So as that process goes up, cardiac output equals heart rate times stroke volume. So you can either improve your heart rate, increase your heart rate, or you can increase stroke volume, the amount of blood that your heart is pushing through. Power Plate does both, it influences heart rate, which has essential nervous system sympathetic side to that activation. And it also improves stroke volume. So as you do that, the circulatory system is activating the lymphatic system. So then inflammation is able to be down regulated.

Dave:

This is a very noticeable effect even in one session. Later that day you're sort of looking in the mirror, you're looking and saying, "Oh, look, I can see now just my abs. I've got a hip there and it's quite noticeable." But it's not just in guys. There's an interesting study out there about menopause and Power Plate. Tell me what they've found about whole body vibration and menopause in that study.

Tony:

Whole body vibration and menopause is looking at hormonal changes as well as microbiome influences and the process of the tonic vibration mechanism elicits this change, this influence in the [inaudible 00:41:38], the neuromuscular essential nervous system ramping up the nervous system itself. As that occurs, then women are able to make shifts subconsciously without having to endogenously take something. So really the Power Plate becomes an exogenous stimulus, it's invasive without having to actually take something to make those shifts. The Power Plate promotes this fracture healing aspect because bone is an LED semiconductor. There's an immune system improvement just from using the plate. And that's what-

Dave:

You said LED semiconductor.

Tony:

LED semiconductor, right.

Dave:

Explain that a little bit more.

Tony:

The process of bone runs through Wolff's law. Wolff's law is mechanical stress, which includes vibration, activates collagen, it deforms collagen. So then this piezoelectric effect is what gets occurring. And the piezoelectric effect is a biphasic signal. So it uses collagen to direct the signal. And if the signal is positive, it triggers bone absorption. If the signal is negative, it triggers bone growth. Activating the piezoelectric effect allows the bone mechanism to actually be improved. That's how you're seeing those changes in postmenopausal women with Power Plate.

Dave:

Piezoelectricity simply means that when something moves, it creates a current. When you put pressure on it or bend it a little bit, it makes a current. And it turns out our cell membranes are all piezoelectric to a certain extent. And collagen, which is in the cytoplasm, the goop inside your cells is piezoelectricity,

which is why your cells are piezoelectricity. So people don't understand this. The poor man's much less efficient version says rebounding. We've all heard about that from the seventies and it kind of works, but you have to rebound 50 times a second to get the same effect, which would be kind of hard to do. I can't rebound that fast, I don't know about you.

But we don't talk a lot about that electrical effect inside cells inside the body, but it's fundamental to improving. And it's probably tied to our earlier conversation about when you go up to high altitude, your cells are changing because there's actually a change in pressure. And like you said, you go in and out of high altitude, what happens? There's a piezoelectric effect as well as a bunch of other things. I think you nailed something there when you talk about that, even with menopause, everything else. You're turning electrical signals on and off in your cells and you're causing bones to grow, changes in bone morphogenic protein, and it's kind of very effective for the time it takes to do it.

Tony:

It is super effective. I mean this piezoelectric mechanism, you're saying it is the way by which exercise simulates mitochondrial biogenesis. And so that process of making the new energy, the new mitochondria is also how your skin processes and stores pressure, heat, light, mechanical vibration to use energy. So as you know, there's the piezoelectric, which is the conversion of the pressure and the mechanical into an electric charge. There's the pyroelectric, that's the conversion of heat to an electric charge. And there's the photoelectric, and that's the conversion of light into this electric charge.

This all occurs in this piezo generator, which is collagen. So that brings this back to this frequency and vibration is that mechanism that's essential to life. Right now I'm sitting down right now. My hertz drops to about four to six hertz. So if I stand up, I move up to about 7.5 to 7.83. So just that standing seated shift in our body's ability is why we generally don't want to be seated all day.

Dave:

When I do a pulse wave analysis to measure my arterial stiffness, and I do Power Plate, I want to make that clear. It says I'm 22 years old. I have arterial stiffness of just finish my teens. And I don't know how much of that comes from eating collagen or from Power Plate or from doing Power Plate and eating collagen. What is your opinion on that stupidly low number? I mean, it's less than half my chronological age, my arterial stiffness score.

Tony:

It's great. The process of increasing circulation will directly influence your arterial stiffness. As you're increasing either your stroke volume or your heart rate, circulation goes up and this increase oxygen to the tissues or this oxygenation, increases nitric oxide. What you are demonstrating sounds like is increased endothelial and nitric oxide, which is important for our health because we need our endothelial tissue. That's our critical junction for us to function well. Combining that with the collagen mechanism and having that in good supply, that equals the result that you're experiencing.

Dave:

It's really cool. It's hard for me to know if it's nitric oxide induced. I don't normally test super high when I use a test strip, unless I'm using a lot of my red light therapy devices, those will raise the number. What I find people don't know about nitric oxide is that there's three flavors of it. There's the kind that we know about that's associated with erections and things like that. We'll call it the recreational form and the endothelial form. You're talking about eNOS. But there's also neural nitric oxide, which can be good for your brain.

And then there's inducible nitric oxide, which creates proxy nitrate, which is one of the most toxic free radicals in the body that's really bad for cells. You give me beets and beet products, I make almost all inducible, I think is genetic. And then I just get like a headache and want go to sleep. And it's not a good feeling. Any evidence or any knowledge about creating specifically endothelial nitric oxide from Power Plate, the good stuff or the brain stuff versus the bad stuff.

Tony:

Yeah. The nitric oxide production with the Power Plate is the endothelial and the neuronal.

Dave:

Rock on, so you only make the two good ones, you don't make the bad one, but beet extract or whatever can make all three.

Tony:

Yeah, that's right.

Dave:

So you don't have to take beet extract, maybe do put your true lights all around your Power Plate. You get some red light therapy that helps with the endothelial and you get the Power Plate helps with endothelial. And what do you know? You kind of like your life.

Tony:

Right. So you combine septum breathing with your Power Plate and you got the trifecta circulation. You got [inaudible 00:48:34].

Dave:

Septum breathing being just tape your mouth essentially.

Tony:

You can do that or you can use a functional activator, which places the tongue. The jaw is all about the tongue. It's the position of the tongue, it's not the anatomy of the jaw. So you focus on the tongue itself. When dealing with septum breathing for a lot of people just taping the mouth isn't necessarily enough because the tongue-

Dave:

Okay. What do they need to do? When you're using the Power Plate, where does your tongue go? Walk me through that.

Tony:

The tongue would go to the top roof of the mouth, it's called the spot, which is just back behind the teeth. So you're not really touching the teeth, but it's just back behind the top of the mouth.

Dave:

It's like one millimeter behind the teeth or five millimeters behind the teeth.

Tony:

Yeah, one millimeter behind the teeth.

Dave:

Okay.

Tony:

Right. And then the jaw itself that the TMJ, people that had TMJ, it's a brain map, so it's tough for them to be able to handle that. And your teeth are only supposed to touch 12 minutes a day. When you're on the Power Plate, it's not going to rattle your teeth, that's those rocker boards, the triplanar movement and the harmonic vibration will allow you to place your tongue in the right position. Then you can drive the nostril septum breathing. Sometimes alternate nostril breathings needed if the person has-

Dave:

The [inaudible 00:49:41] kind of stuff.

Tony:

Right. Because maybe a sinus rinse is required because maybe they're not able, you move something like a liter of sinus fluid every day through your sinus. It's a massive mechanism that's limited, right? The mouth is for eating and the nose is for breathing. So if you combine the septum breathing, the tongues of the roof of your mouth and you're on the Power Plate, you've got what you need. Cardiovascular hormonal and lymphatic activation.

There's a nitric oxide sequence that I created on the Power Plate. It takes you three to four minutes. It's great to do at 10:00 AM. It's good to do at 3:00 PM, kind of the times where we seek out other substances to increase our energy production. You need four or five movements. Each movement takes you 30 seconds and you can increase ... you're telling your brain it's time to feed, it's time to grow, it's time to breathe. This process happens in just three, four minutes. So that's a great system let's say at an office where everyone's running to figure out how to stay awake at three o'clock. We can have the Power Plate, nitric oxide dose while you're focusing on the septum breathing and the Power Plate's doing the subconscious reflex of tonic work. And you go back to your more productive self.

Dave:

Okay. Talk to me about growth hormone and testosterone, because you've seen some interesting Power Plate results from that. What's going on with those?

Tony:

If you look at Power Plate from a hormonal standpoint, the high amplitude settings with high frequency, with static contractions elicits some of the highest numbers in growth hormone up regulation, upwards of several hundred percent. So you're looking at Olympic level weight lifting type movements, but you're only using reflexive vibration and your body weight and static movements to drive these changes. It's super accessible and doesn't require a lot of time. And if it's done consistently, you're actually increasing those growth factors testosterone and growth hormone.

Dave:

Anything else that people ought to know about Power Plate, about whole body vibration, where it's going or did we hit all the good stuff?

Tony:

There's so many parts to the Power Plate story from the post and pre-prandial influences to this native energy production, metabolic flexibility aspect, heart variability, the autonomic changes, hormonal bone strength improvement. It really is again this nexus to like energy in life. I think that we're in this arc now where we're done with ... all truth goes through three phases, right? First phase is violently opposed. Second phase, it's challenged aggressively and the third is self-evident. So with the amount of literature that's there with Power Plate, it's the most heavily researched exercise device in the world. It's here, it's time.

Dave:

You could have made a case a dozen years ago. That's too fringy, even though there's research going back to 1958 and NASA uses it. But at this point you just have to be kind of a jerk to like, no, that can't work, therefore it doesn't. It just means you haven't used a search engine other than Google to look for something because you can't trust Google to find anything for you anymore. There's just abundant evidence. It's 150 studies. I mean, there might be effects we don't know about. Heck, there might even be negative effects, just to be perfectly honest, I haven't found any. Just don't shake your brain and you lock yourself up and stuff.

But this is a powerful, powerful way of saving time. And the whole field of biohack is like, look, mother nature might not be able to get that signal in fast enough for your body to do what you want, so let's use some tech. And this vibration at the right frequency and the right triplanar movement from Power Plate, I think you've earned your spot as a really valid biohack. Thanks for doing the work and thanks for being on the show.

Tony:

Thank you so much.

Dave:

If you guys need to hear the URL one more time, powerplate.com/dave and save yourself about 700 bucks and get another couple hundred dollars in value, so it's a great deal. And you'll like how you feel. See you guys on the next episode.