Bulletproof Radio #728

Announcer:

Bulletproof Radio, a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today's episode is a special episode recorded live at the 40 Years of Zen facility here in Seattle, Washington. Today's guest is going to use these as a test subject to demonstrate a different kind of electrical stimulation than you probably know about. His name is Garrett Salpeter, and he's known as the health engineer and he puts engineering in neuroscience, which are his backgrounds, together. And he makes the electrical stimulation method called NeuFit. And it's based on neuromuscular reeducation of your nervous system.

Dave:

You've heard me talk about how we have these pattern matching things in our body, and that a lot of them happen without our conscious input. And a lot of 40 Years of Zen, we're training the threat detection systems in the brain to realize that a lot of things that you think are threats, like not getting enough likes on Facebook, that they're not threats so you can stop being reactive to them, which saves energy. So that's a big part of the brain neurological upgrade. That's a 40 Years of Zen biofeedback based practice.

Dave:

But what we're talking about with Garrett here is around training the muscles and nerves in the body that aren't in the brain so that they move correctly. And Garrett, what you're doing is the best electrical stimulation that I'm aware of in years of looking at this stuff. And I'm very impressed with your tech and I wanted to have you on the show to talk about it. So thank you.

Garrett Salpeter:

Thank you. It's an honor to be here.

Dave:

Bottom line. I have used your wave forms, NeuFit, to recover faster from injuries, and I'm going to tell some stories here to reverse chronic pain. And if you're not a long time listener, you probably don't understand. I used to be fat. I had arthritis in my knees when I was 14. When I say fat, 100 pounds more than I am now. And I was in pain all the time. I thought it was supposed to hurt when you walk. I thought playing soccer was an exercise in pain tolerance. I felt like there was a candle burning in my shoulder blades all the time. So chronic pain was a huge part of my life and it's generally not anymore. And one of the reasons for that is electrical stimulation. So I want to know why that was and what your stuff does about it. But first off, just welcome. And I have so many questions for you.

Garret:

Let's dive in.

Dave:

Okay. You have a background in neuroscience and engineering. What kind of background we're talking about? What makes you qualified to run current over me?

Garret:

So I was a physics major in college. I had a real passion for physiology, but with my experiences with traditional orthopedic medicine, traditional physical therapy, I just saw nothing but dead ends for myself. And so, whereas at one point I thought about going premed, ended up becoming an engineer. And then I had an amazing experience where, my last year in college, I had some torn ligaments in my wrist. I was supposed to have surgery, be out for a few months, and given my previous experience, I just thought that was how it would be.

Garret:

But, I met a chiropractic neurologist who introduced me to functional neurology, which is the basis for the work that we're doing now. And by doing this work and focusing on the activation of the muscles around that injury and by using a more primitive version of direct current, I was actually able to heal those ligaments in a few weeks instead of a few months, avoid surgery.

Dave:

Does that imply that the other neurology was dysfunctional energy?

Garret:

I would say less than functional.

Dave:

So you use the electrical stimulation to do things that weren't supposed to be possible.

Garret:

I did. I did.

Dave:

So you use the electrical stimulation to do things that weren't supposed to be possible.

Garret:

I did. I did. And then, because I saw the incredible power of how this neurological approach to something that traditionally would just be thought of as orthopedic and structural and tissue based, how this functional approach actually made a profound difference for me. I knew at that point that I just, I felt called to share this work, didn't necessarily know what it looked like at the time. But having this engineering background and then having that experience, I was able to then went back for additional graduate work in neuroscience and have started working with individual people back at home in Austin, Texas in the back of a chiropractic office for doing that for seven or eight years before I finally saw an opportunity to leverage my engineering background and work with another team to create this device. And so it's built on this-

Dave:

So you've got 20 years in this, because if you did that for seven or eight years and you opened your first facility in 2009, and it's 2020s, so this is the two decades of looking at electrical stimulation.

Garret:

Yeah. It's been about a 12 or 13 year journey of being formally professionally involved in this field. And this is built on that clinical experience.

Dave:

When I talk about healing like Wolverine, there's two things that I go to. One, is people will have probably read about in Superhuman, the antiaging book, there's some peptides. These are your chemicals that send signals in. But there's also stem cells and things. But the electrical signal here is so profoundly important. And let me share a story about something that we did together.

Dave:

I've been using direct current stimulation for quite a while. It's very hard to get. The gear is very, we'll call it rustic. Like I just stopped flying with what I had because people thought it was a bomb. It was very not okay. Anyway. I have an injury on my right big toe. Now you could be like, "Okay. Who cares? It's just a toe." The thing is though, Mantak Chia has just been on the show, the world's top Qigong master. And when I did some training with him, it's all about the big toe for grounding. So this is a core system and it affected my yoga practice.

Dave:

And what happened is I was doing a Crow pose where you're bouncing on your forearms, kind of like squatting, but leaning forward. And then I kicked back into plank pose from there, which is one of those things you do to make everyone feel less good as you in a yoga class. So like, if you were willing to have a big yoga, you go, you're like, "Yeah, I was Crow pose." Anyway, I did that. I was out of practice and I landed with my toe straight down and I chipped a tiny fragment off my bone. Right. And for the next two years, the little fragment has been in there making scar tissue and just causing pain and nothing was fixing it.

Dave:

I had it injected, which helped a lot, with stem cells and things, but there was still this nagging pain when I would try to do a squat or a lunge or a lot of the common yoga poses or any of the things for exercise. So I sat down with you. You came to my office in Seattle and I said, "I've had this going on." You're like, "No problem," and you dump out the trashcan. You actually did this. You remember that?

Garret:

I do.

Dave:

Okay. You take my trash can and you're like, "Hey, we'll just dump this in the corner of the office." So I'm like, "Thank god I wasn't throwing confetti in there." And then you put some water in there, you toss a couple of electrodes from the NeuFit machine into the water, put one on my upper leg, and then I start doing exercises with my foot in the water. And the reason you were doing that was to get the current all the way through in all the weird muscles, the small muscles of my foot. And I did a few things like that.

And you know what? My foot felt way, way better than it had in two years, even though I'd had all these injections, even though I was already on the path to recovery.

Dave:

So it's one of those things where it did something that dry needling, that exosomes, that amniotic fluid, that stem cells hadn't done. What did the machine do that all this other stuff wasn't doing?

Garret:

So many times in life, there's things that happen to us and the way we respond to it is oftentimes more important than what actually happens to us in the first place. And so when you have that trauma, like you had in your yoga injury, and when you have that bone fragment in there that's consistently irritating that tissue, there's this original trauma, then there's this low-level trauma repeated over time. And in response to that, the body often guards and protects and braces that. Your body thinks, "Oh my gosh. That big toe could get attacked again at any moment. We might fall out of that Crow pose and get damaged again at any moment." And so it guards around that, and that's productive if you fall right on that big toe and you have that trauma happen again, but it's actually counterproductive for healing, for movement.

Garret:

And sometimes it's just as simple as when all that tissue is bracing and protecting around there, it can literally cut off the flow of blood and nutrients, so you can impede and impair the healing process. And when you're in that state, your muscles can't lengthen to accommodate greater ranges of movement. And every time we walk, we should press off that big toe. That should be the last thing to hit the ground. And so the big toe extension is actually a very important component in gait, walking, or running. And when your muscles are bracing like that, they can't lengthen to accommodate that movement. So you're limited. And that's one of the things that we saw in that first session is that you were able to get more range of motion in that big toe.

Garret:

So, what this does with this unique type of direct current, and you touched on that a little bit, what it does as opposed to traditional electrical stimulation, which is typically alternating current and causes muscles only to contract, this actually can allow us to preferentially reprogram those muscles so that they lengthen, so they're more relaxed, more pliable and more resilient, and that allows us to move through greater ranges of motion. It opens up the pathways physically for the body to actually send the blood and raw materials and resources to help you heal, and it optimizes function in a way that just improves the overall recovery process.

Dave:

Right. I feel like, in this case, my body had learned it's dangerous to bend the toe back. Right? Because in this case, it was making this little tiny shard of bone was sort of damaging the tissue every time. So it just thought, "Okay, I'm a dumb piece of foot." And there's a local consciousness, or at least a local emergent behavior based on algorithms in the foot. And it says, "Okay, so let's see. Can I eat without having full range in the foot? Yes. Can I reproduce the species? Yes. Okay. Foot optional." Right? These are the algorithms of life. That's how it works. So in that case, let's just turn off that ability to bend back because it's just not worth the amount of trouble it would take to do it. And I could have gone to a traditional physical therapist who was like, "We'll just pound it into you over time."

Dave:

Or I guess the body felt enough pain. It learned it had to make a change and it made the minimum necessary change to basically make the physical therapist stop bothering you. But this is what your body does. You didn't choose that. It chose that in the foot, where your brain isn't. And with the electricity though, the body's like, "Oh my god. I just got shown what was happening." The electricity makes the muscles do what they don't want to do. But once the nerves there see that the muscles can do that, like, "Oh. I guess my assessment of my abilities was off a little bit. Maybe I'll just readjust what I'm capable of." And then the gait changed because I mean, it was an overnight change. Is my story there accurate?

Garret:

Yeah. It's actually just like you were talking about here at 40 Years of Zen where we have this alarm response that goes off, even in times when it doesn't necessarily need to go off when we're not facing a true emergency. It comes back to one of the foundational principles of neuroscience, which is our brain's number one priority is survival and protection. Right? Our brain cares so much more about us living to see tomorrow than it does about extending your big toe, or running fast, or stretching further, or throwing a baseball faster.

Dave:

Okay.

Garret:

And so our brains actually limit us. They impose, actively impose these governors and limitations, and reduce output in certain areas of the body. Sometimes it's from trauma, like you experienced. Sometimes there's just bad habits developed over time. And so one of the things that we're able to do with technology like this is send a signal from that area in the body, we can actually scan around and find where that protective mechanism or where that threat is present. And then when we send the signal, we have a chance to progressively and safely and very powerfully load those areas of the body so that the brain starts to see more feedback, more activity there, and it can start to discern, "Oh, this isn't as threatening as I thought. Oh, we can actually allow this to happen." And so it'll take off those protective mechanisms. It's like the brain is hitting the brake pedal and you're literally learning to take your foot off the brake. So instead of you don't always have to get more gas, sometimes you'd have to take your foot off the brake.

Dave:

Okay. I think that's a good description for what I felt was going on in there. What's though the difference? I'm thinking, I was on a trip to China a while ago. This had to be like 8, 10 years ago. And I was staying with a guy that lived in China for 20 years. And he's like, "Dave, you're on a long business trip. You should come to have a home-cooked meal and play with the dogs." I'm like, "This is so cool." And he was explaining how fast the delivery systems in China were.

Dave:

And he said, "Everyone's using electrical stim here." And he goes, "Here, look," and he opens an app. I wish I remembered the name. It was probably Weibo or something, but I don't remember it. He says, "Oh, here let's buy a $2 TENS device." And a guy arrives on a bicycle, an hour later, delivering this $2... TENS is just the cheap electrical stim you can get. And I was like, A, the delivery system is amazing, and B, there's enough demand for there to be $2 TENS devices. And everyone in China was using them.

Dave:

What's the difference between this clinical grade? I mean, this is not a cheap device. This is like what physical therapists or heavy-duty exercise physiologists would use. Why the disparity?

Garret:

That's a great question. As we mentioned, this is direct current, and the benefits of direct current have been known for decades.

Dave:

You're an engineer and you know what direct current is. I'm an engineer, I know what direct current is. Most people listening, they're not engineers. So, direct current versus these other things. What is that?

Garret:

Direct current means it's always going in one direction.

Dave:

Direct current versus these other things. What is that?

Garret:

Direct current means it's always going in one direction, whereas alternating current means it's volleying back and forth. That's important for a few reasons. One is, you mentioned in the intro how our bodies run on electricity, and electricity is actually very important for the regeneration in salamanders and salamander-like animals.

Dave:

Or in MS, if you want to grow the lining of your nerves back.

Garret:

Oh, yeah.

Dave:

Same thing.

Garret:

Hugely important.

Dave:

And that's all direct current that we're using in biology.

Garret:

Yeah. Our bodies run on direct current. And so conceptually, we can think it might be important to use direct current if we're trying to use some sort of outside stimulus. And particularly in this realm of neuromuscular reeducation and function and trying to optimize function, it's so important because as

that alternating current signal volleys back and forth, it actually causes muscles to co-contract or fight against each other.

Dave:

And that's what a TENS unit does?

Garret:

Yeah. A TENS unit, if you just have them on at a low level, they can do something. Sometimes they can help reduce pain. It's kind of like an electronic aspirin. When you take it off the pain will come back, but it can temporarily reduce the experience of pain. When you turn it up to a high enough level to really make a difference in neuromuscular function, it will actually cause the body to fight against itself.

Garret:

So, this metaphor of we're driving a car, hitting the throttle and the brake pedal at the same time, I think is right on. Because when you use that type of, whether it's TENS or Russian stim or interferential, those alternating current devices, you end up training the body to resist its own movements like you're hitting the brake pedal as you're trying to hit the throttle at the same time. That ends up shortening and stiffening the muscles, and that ends up getting the body in a state where it's either going to be, at least, having to waste energy to overcome that resistance in order to move.

Garret:

So, it can make us less energetically efficient and potentially set us up for injury because we want to be more pliable; we want to be able to bend but not break and be more resilient. If the muscles are shorter and stiffer, they're less able to accommodate movement, less able to absorb force as we land or decelerate. That's the phase of movement in which a vast majority of injuries happen, is that deceleration phase.

Garret:

So, there's some value in using those devices at lower levels, but there's also a very low ceiling on what you can accomplish with them because of some of those effects. So, direct current... It's actually interesting, in the process of developing this I was able to an experiment where, literally, I would take an alternating current device, like a Russian stim or TENS, put it on one arm, and at 50 milliamps of current it would lock me up, where I'd be unable to move through it. With this device, we were using a prototype at the time, but with this device, I could put that same 50 million amps of current on the other arm. And even though it feels just as intense, even though just as much energy is being delivered, I'm actually able to move through it.

Garret:

And so, of that same amount of energy being delivered, that same amount of electrical current being delivered, more of it is preferentially going into neurological and sensory inputs. Less of it's going to just pure motor output and muscle contraction. And so, it allows us to do a couple of things. One is ultimately to reset the tone of muscles, help lengthen out or relax tissue where there's guarding. And probably even more impactfully or more meaningfully, it allows us to make these input signals into the nervous system so we can identify where those perceptions of threat are. Where that hypersensitivity or guarding is present, and then teach the brain very quickly to change the patterns so that we can change function and give an experience like you had with your foot.

Dave:

Something else that's coming to mind. Quite a few years ago, I had access to the type of direct current you're using here. I was hanging out with Stephen Kotler, who's been on the show. I was the first backer of what back then was called the Flow Genome Project. [inaudible 00:19:06] evolved since then. Stephen's a friend and a crazy human being, just for the record. Do you know him or know of him?

Garret:

I know of him, yeah. [crosstalk 00:19:16].

Dave:

Good deal. So, anyway, I appreciate him on multiple levels. He writes a lot of Peter Diamandis' books, but he also is an extreme sports aficionado because that's his way of getting in flow state. We talked about the hippie speedball, which is caffeine, nicotine, cannabis, and extreme skiing. And that would be a good description of Stephen. Oh, and Chihuahua racing. He has 40 chihuahuas at his chihuahua rescue thing, and he's running down trails. Just an unusual human and I love him.

Garret:

Interesting.

Dave:

But his shoulder was trashed. We're in a hotel room and it's like two in the morning, and I'm like, "I got ya." So I hook the machine up, put pads on him, and I have him do a couple of shoulder exercises through the pain. Of course, he screams like a girl at two in the morning in the hotel. Security didn't come. But afterwards, he's like, "Wow, my shoulder can do stuff it couldn't do." And the next month he's like, "Dave, I can do a full range of motion. I haven't had this in months. This is insane."

Dave:

I think he talked about it when he was on the show, but it was really cool because it wasn't that he was incapable of doing it. It was that his shoulder thought he was incapable of doing it. And it was just, you just had to show it. And that was one thing. Another time, this was also a shoulder... But I'm not a professional, and I know it a little bit, partly because you've shown me some cool stuff. I was running direct current over a Special Forces guy and a long-time follower and a friend who's also... I'm trying to think if I can say his name.

Dave:

I'm not going to say his name without asking him, but the guy has spoken at the conference about going through 40 Years of Zen and just a good human being. He also trains advanced martial arts. So he has a group of these super badasses, all of whom could wipe the floor with me at his house, but one of them, same thing, shoulder injury. So we do the same thing, and I'm turning the machine up, and up, and up, and he's breaking into a sweat and I'm like, "No, come on push through it, just push through it, man."

Dave:

This is how you show someone when they're like, "My muscles, my arm is stuck," and you're like, "No, just push." And then all of a sudden they can do it, and then they can do it. So, he screams, "Oh." And then he's done, he was like, "Wow, I have range of motion," but then he looks at me and he goes, "Dave,

I've been waterboarded." I've been tortured for real. This is what I do for work. No one's ever made me scream.

Garret:

Congratulations, you did it.

Dave:

No, it was direct current did. So what's going on there is this weird psychological conversation where ... I've done this, I'm trying to do a squat or something and you're like, "I can't straighten out my arm," and really that voice in your head is like, "You can't do it," and then all of a sudden you just will yourself through it, just one little time and all of a sudden like, "Oh, oops I can," and then it's like all of a sudden it was like 10 out of 10 I'm going to die, and then all of a sudden you're like, "Oh, it was maybe five out of 10. I was wrong."

Garret:

Yeah.

Dave:

But it's like a light switch goes off in your head. But TENS machines don't have any of that going on. So, if someone wants to do that, there's a rehabilitation side of things, but when you want someone who's going to [inaudible 00:22:31] one's performance, one is looks, but let's do performance better. So what would the application of that kind of thinking be to performing better? You were an ice hockey guy. How would you use NeuFit technology direct Current to do better at a pro sport, or even an amateur sport?

Garret:

That's an awesome question. So, one of the first things that we would want to do is actually the same type of process we would do in a more typical rehabilitation or recovery context because, like you talked about with Steven Kotler, he couldn't move his shoulder, couldn't move his arm past a certain point, and yet in just a few minutes he was able to break through that in a very significant way. And we know that's an impossibly short period of time for him to remodel tissues, or to gain range of motion in the way that we typically think of when someone does a stretching program and gets more flexible.

Garret:

So we know it's too short, far too short, for any tissue remodeling, any structural changes like that. We know it's a functional change, so we know that he actually had that tissue length and that ability there all along, it was just lying dormant. And even if someone doesn't have a symptom, or doesn't currently have pain, we often have these same self-imposed limitations where we might not be able to get that range of motion or that last little bit of strength, or speed, or power, and it's because of that same type of thing, the brain is limiting that output because it perceives that as threatening.

Dave:

Is it the brain or is the body? I feel like it's not something, it's not like you didn't want it hard enough, it's like the body was convinced you couldn't do it no matter how much you wanted it.

Garret:

So it's-

Dave:

Which is it?

Garret:

Well, it's both really, it's the subconscious. The brain is constantly monitoring. There's statistics or some evidence, or psychological writings at least, that show that the brain processes something like 10 million bits of information every second. Only 30 to 40 of those may get up to conscious awareness.

Dave:

Yeah, just layers of filters, and filters, and filters, right?

Garret:

Yeah, and so the brain is constantly monitoring the external environment, the internal environment, and it's passing every little, every one of those inputs through this filter of is it safe, is it threatening, is there something I need to act on now?

Dave:

Will it get me laid?

Garret:

Exactly.

Dave:

Sorry, that's what the brain does.

Garret:

What's the highest priority., right? So sometimes that's it.

Dave:

Yeah.

Garret:

And it's definitely passing these inputs through that filter of, is it safe, is it something I need to address because it could potentially be harmful to me? So, that's part of that mechanism that limits output in the body. And so even though we feel it in the body, it is at least in part in the brain. Sometimes it's the subconscious, or oftentimes the subconscious lower parts of the brain that we're not even aware of. But that's why when you do traditional physical therapy, if you're trying to just stretch your toe and increase that range of motion in a more traditional way or if Steven's trying to press his shoulder through, or do stretches, or do band exercises, that's why it takes so long because you're fighting against that underlying subconscious impulse from the brain that's saying no, no, no, no, no.

Garret:

So, it's like, you're constantly pushing a boulder uphill. Whereas, if you can just find where that signal is present and change it, all of a sudden, it's like you're going downhill instead of uphill. The resistance fades away.

Dave:

So, it's about editing out resistance. So, that means if someone's looking for that final... and I'm going to jump over. I'm just thinking of a strength thing, like I'm going to do a pole vault or something. And it's that final two inches where the brain at some level underneath where you think, where you want, where you desire, at some level it's convinced that you will die if you do that. You will take on damage, but it's wrong because you're not going to take on damage, and that's where you would use direct current to just show the body what it's capable of so then it knows.

Dave:

And that's where you would use direct current to just show the body what it's capable of so then it knows.

Garret:

That's a big part of it. And in the beginning, whether someone comes in with an injury, or has pain, or something more in that rehabilitation realm, or even if we're starting with someone who has more performance-oriented goals, that's the first thing we want to do is find where essentially those dysfunctions are present because those are the underlying things that are going to be robbing someone of performance, or causing them to stay in this cycle of pain and injury, or at least slow down their recovery. So the first thing we want to do is find those weak links.

Garret:

And then once we found those weak links and brought them back up to baseline, then we want to talk about taking the functional capacity of the entire system and increasing it. So that's when we talk about performance, and it still takes work, and the same rules of physiology still apply. So in that paradigm, if we're talking about pure performance training, then we want to talk about ways where, for instance, we could use technology like this to put it on... If we wanted to give you an arm workout, for example, we could put it on your muscles and manipulate the settings on here so it's actually going to create more load or more tension, on the muscles.

Garret:

And then literally, we could have you do two minutes of arm curls without holding any weight at all and get as much muscle recruitment as if you were lifting very heavy, get the benefits of resistance exercise but without the risks of injury, and without nearly as much load on your joints.

Dave:

It is stupidly effective. I tell anyone you can put an inch on your bicep, or get a two inch butt upgrade with this. And in fact, I think we should do that on video. Just to show people what the difference is. Although if you're listening, I'm just going to describe what happens. But before we do that, I have to talk about the butt upgrade.

Dave:

So I may or may not have brought my device to health influencer events that have a poolside component, and I may or may not have offered some of my friends, "Hey, would you like a butt upgrade?" Right? And when I say a butt upgrade, I'm talking, they do two minutes, you put the electrodes on the quads and on the glutes and you do a few squats with some current. And during that time you may or may not squeal or yell. But when you're done, you're like, "Holy crap." Your butt is higher than it was before.

Dave:

Whether you're a man or a woman, it totally works. Although I have to say typically more women are going to take a butt upgrade than a man, I don't know why. But it's a source of humor, but also the difference in cosmetics is ridiculous. And I've thought for a very long time that if Hollywood knew about this... Let's see, I'm always wondering who can I talk about? So Brandon Routh has been on the show and Brandon played Superman in one of the big movies. And he was the Atom for a long time in Legends of Tomorrow and just a fantastic human. But he was talking, I think on the show, about the dreaded shirts off scene.

Dave:

And so what everyone who's on TV has to do, is they, "I'm going too fast for a couple of days, I'll take diuretics and we'll spray on abs or whatever." And then they're doing a bunch of push-ups before they go on. But I'm like, if they knew what you could do with a NeuFit, you slap the electrodes on to it, it's like Hulk mode. You look profoundly different in 10 minutes of this stuff and you're walking around, granted, I don't know if it's all pumped, but it's mostly pumped. It's crazy.

Dave:

So anyway, at these health influencer events, we all go to a hotel and talk about how do we do a better job of helping people make good decisions? I will offer the butt upgrades and you see people doing squats, poolside going, "Yeah, I like my butt here." And just the humor level that's good. But it goes far beyond just, "I want a nice butt." To anything else you want to make bigger. So if I take this over shirt off, can we do my biceps right now? And just do a before and after shot?

Garret:

Absolutely.

Dave:

All right. And I'll describe what's going on as we do this so that we can narrate through it. And then if you're watching on YouTube, which you probably want to do on this one, we'll see what happens and I'll try not to scream.

Garret:

Very good.

Dave:

Deal? All right. All right. The wrinkling you're hearing now is these very cool electrodes getting taken out of the bag. These are stick-on electrodes, that carry a direct current into the muscle. And we're going to do both sides, I'm guessing? I don't want to be imbalanced.

Garret:

We can do the arms on both sides.

Dave:

Let's just give me some biceps, biceps or triceps, what do you like to do?

Garret:

Let's do both at the same time.

Dave:

All right. Hook me up. So what's going now is, we've got four electrodes, so two electrodes go on each side. One's red, one's black. And which one are you going to stick where?

Garret:

I'll go black on the bicep, there's going to be a little more stimulus there. [inaudible 00:31:02].

Dave:

Okay. Got it. So basically, we've got bicep and tricep on the left. I am now holding both my arms up. Look at those guns. Totally kidding. All right.

Garret:

You must take collagen.

Dave:

Yeah, I do take collagen, that's for sure. All right. What else? And testosterone.

Garret:

Yes.

Dave:

Full disclosure here, anti-aging, physiological levels.

Garret:

So I'm going to turn it up. So can you scoot back a little bit, just so you can literally just bend and straighten your arms. So here we're going to load those muscles more. So this is more of a resistance strength type workout, also potentially some benefits for hypertrophy.

Dave:

So length and growth?

Garret:

Yeah.

Dave:

For the bicep muscle?

Garret:

That's right.

Dave:

I know I can embarrass you a little bit. I can tell by your laugh and I'm just having fun with you at this point. All right. But we will see a longer bicep muscle. That was a real question, as well as bigger, right? Because you want the muscle to lengthen.

Garret:

Yeah. It'll be more full. And when you talk about how it actually looks and feels bigger for a few days, some of that is blood in the muscle in that pump. But a lot of it is actually the movement of extracellular fluid.

Dave:

Lymph.

Garret:

Lymph, like blood plasma, which actually carries a lot of the proteins that we need to rebuild tissues. That actually goes inside the muscle cells. And that's part of the process that kicks off muscle hypertrophy. So it actually is a precursor to hypertrophy and then a necessary step in that process. So that tells us that there's some good things happening.

Dave:

All right, hit me.

Garret:

All right.

Dave:

Ow. Just kidding. I didn't feel anything yet.

Garret:

Let's have you start curling. And we're going to turn it up to the point where it starts to become difficult. It feels like you have resistance moving in both directions.

Dave:

I feel it more in my left arm than my right. Just a little bit more.

Garret:

Okay.

Dave:

It's probably because my left arm is weaker than my right.

Garret:

All right. So we're just going to set this for two minutes here.

Dave:

All right. Two minutes of pain.

Garret:

And I'll turn up your left side. So we're down, all right. Minute 59, 58. Here comes that left side.

Dave:

It's under a heavy load right now.

Garret:

It is. It's under heavy load.

Dave:

I'm going to start sweating in a minute.

Garret:

So you're getting similar levels of muscle recruitment, as if you were lifting very heavy, if you were curling near the maximum weight that you could lift. And if you were going to do that in the gym, you'd do it a time or two, then you'd have to rest a few minutes, do it a time or two, have to rest a couple of minutes, but here you can do it consistently. You can get a couple dozen reps in over two minutes. So you could get...

Dave:

I've done this while watching Netflix.

Garret:

Yeah.

Dave:

Right. I also though did it for 90 minutes watching Netflix. I was a little bit blown out the next day. That was not a good call.

Garret:

That's a little more than we recommend.

Dave:

No. In fact, is there a risk of getting Rhabdo from doing huge amounts of electro stim?

Garret:

That's a good question, because of course, safety is very important, number one priority. People get something like Rhabdo from doing excessive CrossFit workouts, basic training in the military...

Dave:

Yeah, when you're not conditioned. Right. Yeah.

Garret:

And if you're dehydrated or [inaudible 00:33:53] in football, some of that's common. So if you do too much and you get too much protein breakdown and that gets concentrated in the blood and the kidneys can't keep up, there's a risk of that happening. Just like if you...

Dave:

But you haven't seen it with the NeuFit?

Garret:

We haven't. [crosstalk 00:34:09].

Dave:

I didn't get it, but I was like, "I wonder."

Garret:

Oftentimes though, the first time someone does this, two minutes, they'll have the same reaction. They'll be, "No, I could do more." And we'll say, "No, this is the guideline, because you'll do this for two minutes, you'll think you think it wasn't very much. And then a couple of days later you'll have really significant muscle soreness."

Dave:

Urgh. God, what are you doing to me? How much is that?

Garret:

60 now.

Dave:

All right. So I'm having a real hard time. So right now my body says it can't straighten. I'm going to make it do that. With all of my willpower. All right. There you go stupid arms. You thought you couldn't do that. All right, now go back.

Garret:

And you do on it on the other side too, because you're a mean bastard.

Dave:

Ah. This is much worse than lifting heavy, and I'm not injuring myself. Okay. I'm starting to sweat. Oh, that's good. Now give it to me again on the other side and make me strong. God, that hurts. Okay. Here we go.

Garret:

So for the record, first time on the machine and we don't want to push people this hard, but Dave has a lot of experience with it.

Dave:

Okay. Left arm.

Garret:

You got it.

Dave:

God that hurts.

Garret:

There you go.

Dave:

Right arm. Oh man. I don't know if I can straighten these. All right. Arms.

Garret:

So think you're doing a tricep. You're trying to push as hard as you can. Engage that tricep. You're having to overcome resistance in both directions.

Dave:

You couldn't do this with weights. Because you would shred stuff. Right arm done.

Garret:

Good. And that left was more sensitive. So when it set that same level, it's even more challenging on the left, yet you're still breaking through it.

Dave:

All right. Back me up. All right. I did 80% of my biceps, which are small muscle, not a big one. I feel like I proved my worthiness.

Garret:

You did.

Dave:

Okay.

Garret:

So for the record, that was for effect and because you have a lot of experience with it. Normally we wouldn't want to go to the point where you can no longer move through it.

Dave:

I know. I was being just for... You want to go to the point where you think you can't, but then you can with excessive work. Really, I should have stopped at 70, because I could push through 70, but 80 was a bit much.

Garret:

Yes.

Dave:

So now I'm going to pull these off my arm. Look at the difference in the size and definition of the bicep and tricep there. I went from decent. I'll turn so you can see it in the light. I went from decent to like that's not bad. So if I was going to go on a movie set, would I want to look like this, or I want to look like I did before. And same thing on the other side, where I'm a little bit smaller. Most people are asymmetrical unless they're bodybuilders. So there you go. And all right, that was good. Let's turn this thing off because it's noisy.

Dave:

And one of the things that's in this box that comes with the NeuFit. This is a practitioner thing, but you have these crazy silver gloves. What's up with the gloves?

Garret:

So the glove allows us to do some interesting things. If you were working on something for your hand or wrist, some sort of injury or pain, carpal tunnel or trigger finger or something down there, we could put the glove on your hand and put the other electrode on your body. And the current would actually run through the glove. Just like if you had your hand in the water, like you were talking about having your foot in the water.

Dave:

So like a finger injury you...

Garret:

Yeah. So it can spread the current through the fingers, through the hand and wrist. So you get that effect in all those small muscles. And there's so many nerves in the hands and feet too. It's very neurologically rich, target rich. So again, we can disperse the current through there, whether through water or with the glove.

Garret:

And the glove also allows us to do something where, if I wanted to work on you, if I was trying to do some tissue work to help reset the tone on your neck and your scalings, for example, I could actually put an electrode on me and have the current go through my fingertips. So if I was trying to get those muscles to release and reset the tone, for example, sometimes I'd have to push really hard and hold it

for a fairly long time. With the unique properties of this current, I can press less hard, hold it for a shorter period of time and get the same or more benefit.

Dave:

It's actually really cool. And I've found that you can, if you're a trained practitioner, or you're not that trained, you put an electrode on someone and then you hold an electrode in your hand, you have a wet finger, whatever, or the glove. You can move your finger out and you can feel the pain where there's resistance in another person. So it's almost like you're extending their nervous system. So like, "Oh, when I touch this part of your bicep or your quad or your neck," you feel pain or I would feel pain when I'm touching someone else's neck, "Oh, that's the spot." And then you can put the electrode there or you can just hold it. And it's super cool, the first time you do that, you're like, "Wow, I'm actually sensing what's going on in someone else's nervous system because of this electrical connection."

Garret:

I think that's such a robust area for further study. A lot of this that we've been talking about in terms of the brain wanting to protect and have these compensatory patterns of guarding, embracing in the body. You know, a lot of that stuff, we know pretty well. I think this plays really well into the intro and the body electric and using electricity and manipulating electrical signals. The body of salamanders do it naturally on their own, to trigger that regeneration, where when you're doing that with your finger, you're feeling changes in electrical conductivity and resistance within the body of the person you're working on.

Garret:

And so there's both these neurological functional effects and there's also these sometimes subtle changes in the electrical system. And the things that we are tapping into with something like acupuncture, that we're tapping into with this. And I think that's one of the areas where I'm certainly excited to see what more we can learn and how we can take that knowledge to use this in even more exciting, more profound and powerful ways.

Dave:

Have you ever put both gloves on and given a massage to someone you're intimate with?

Garret:

So honey, if you're watching this at home, I think Dave gave us a good recommendation that we could do try.

Dave:

You've never tried this? Seriously?

Garret:

I know I've heard some stories from some people who have, and I've given some recommendations, but...

Dave:

Okay, what are the recommendations?

Garret:

What we're trying to do is provide neurological stimulus and that stimulus can be the same pathways as mechanical touch. So any sensitive areas you might touch on your partner's genitals, for example...

Dave:

Wow. You really are an engineer, aren't you? [crosstalk 00:41:02].

Garret:

So if you were going to massage any of those, you could try that with electricity. You could have a pad, one of them somewhere on your wife's body and the other one connected to the glove. And if you're touching certain areas, that would increase the stimulus on those pathways, and potentially if it's at the right settings and everything, potentially increase her experience of her stimulation.

Dave:

Got it. So when we say certain areas, you can literally on a lower setting, not that like, "Oh my God, I'm pumping myself up." You can literally run your hand up and down someone's spine. And it's like, it's tingly and it's beneficial and it's healing and it's good.

Dave:

And I have it on good authority that it's possible to put an electrode on one person, an electron on the other person. And then the current would flow between them, wherever there's contact.

Garret:

Wherever there's contact it would happen.

Dave:

Right. So, it could be contact through a finger or through any body part really.

Garret:

Yeah.

Dave:

Right? And it might tingle where that body part was touching other said body part.

Garret:

Yeah.

Dave:

I've heard that.

Garret:

Like if you're shaking hands.

Dave:

Yeah. And in terms of just, I'm talking about some out there stuff, because I'm always interested in how do I get superhero muscles in a short period of time? How do I exercise when I don't want to exercise? Et cetera. But you have FDA clearance. What are some things that the FDA has said that your device does?

Garret:

That's a great, great question because it is a regulated device and that stuff is important. So the biggest one is neuromuscular reeducation. And when we talk about the work we just did on your arms, we can't say this machine builds bigger biceps, because that's a claim. And so if I'm talking about it, I have to come at it from the perspective of neuromuscular reeducation. So we're training you to recruit more muscle, which, whether you do that with this machine or in the gym, that extra recruitment is going to get stimulus on more muscle fibers and have a greater trigger for hypertrophy and growth during that recovery period.

Dave:

That makes good sense.

Garret:

And then some of the other things are increasing blood flow, reducing spasms, which is important for bracing or guarding after injuries like we talked about, but also for people with MS or spinal cord injuries who have to deal with spasms. So that's, it can be a big deal for someone's quality of life.

Dave:

I don't know if it's an FDA claim or not, but having more electoral capacity increases mitochondrial function as well, which is necessary for fighting MS, as far as I understand things.

Garret:

Absolutely. We've seen, we have actually been very blessed and honored to work with Terry Walls. She's been on this show, right?

Dave:

Yeah. Terry is a good friend. And in fact, she won like an achievement award for Health Influence. I presented her the award on stage at JJ Virgin's event. And yeah, I was hoping that you'd mention her, I didn't want to drop her name. When she first came on the show, she was using very old school medical grade electrical stimulation. I heard you were working with her. I think this is the best thing I could think of for someone with MS. You have to have enough fat in your diet. You have to stop having toxins, all that kind of stuff.

Dave:

But if you want to cause nerve fibers to myelinate, they have to carry current, which is a signal for myelination or insulation, this current carrying stuff. It is bad ass. People just saw, it works.

Garret:

Yeah. And it's so interesting because when someone who has MS is following the Wahls Protocol, which-

Dave:

W A H L S, if you guys are interested in MS or all, she has good books on that.

Garret:

She has this very powerful protocol or program to help people stop the progression of their auto immune disease. Funny enough, there's a big overlap between the Wahls Protocol and Bulletproof.

Dave:

Yeah. We agree on about 90% of things.

Garret:

Imagine that.

Dave:

I'm like, ditch the nightshades already, but she's like, eat more colors. I'm like, only eat the colors that don't mess with you. Otherwise it's almost perfect correspondence.

Garret:

And so following these principles nutritionally, and in terms of lifestyle, are so powerful for stopping the progression of the disease and slowing down or stopping auto-immunity. And once you've done that, which is the first step, you don't want to go past that step. That's very important. Once you've done that, then the question becomes, how can I possibly regain any function that has been lost due to the disease?

Garret:

And that was the hole that was missing in her program. And when she herself had her, was at her lowest depths because of MS and she was in a wheelchair, she was, it was back in the early 2000s before she and I met, before I was even doing this as seriously. And she was using more traditional e-stim, and she would have to have it on 12 hours a day. So she'd have it on while she's researching, while she's reading, while she's writing papers, while she's doing emails, whatever she's doing.

Garret:

And she now is able to use this for one or two 30 to 45 minute sessions a day and get the same or more benefit because of some of these breakthroughs in the technology and some of these advances

Dave:

Being a weird biohacker, is there a useful setting where I could just sleep with this on?

Garret:

That's possible. If there's a particular pathway, whether you're talking about wanting to overcome MS or just reinforce your strength [crosstalk 00:46:08].

Dave:

I want to have higher heart rate variability. I want to recover faster. I want to get better sleep. I want to exercise when I'm asleep. Can I get any benefits from sleeping with this on? Talk about free time.

Garret:

Possibly. Of course, you want to make sure it's at a low enough level where it's not interfering with your sleep.

Dave:

Yeah. Low level.

Garret:

But if you're able to get that type of stimulus, you could do a couple of things. You could, if you were recovering from an injury or a surgery, for example, you could have it on at a low setting that's going to be drawing blood flow and healing materials and resources to that area for all six to eight hours that you're sleeping.

Dave:

So you put one electrode on either side of an incision or an injury, and just run it on like 15% or something?

Garret:

Something like that could be a very powerful approach.

Dave:

This is all theoretical, and no studies, blah blah blah blah blah.

Garret:

And that's something that definitely has some merit to it. And then if you wanted to help an area recover, or you wanted to reinforce some sort of pathway, or yeah. If you wanted better heart rate variability, we have one program that I know, we've done a little bit here at 40 Years of Zen, and that helps reset the parasympathetic or help increase the function of the parasympathetic nervous system.

Dave:

In fact, let me talk about that for a minute.

Garret:

Yeah.

Dave:

So I recently, about a month ago, maybe once or twice a year, I do special programs where I will come and I'll do training, I'll give lectures and sometimes do the training itself with people who come through, usually advanced, people who have done more than one 40 Years of Zen.

Dave:

But I wanted to do something really special for them, because I'm here, it's more expensive. Getting time with me is hard to do these days. So I had a NeuFit practitioner come in and spend a week here. So when people were not doing this really intense kind of exhausting neurofeedback, she was able to come in and run some of the protocols, not for further stress with the body, but more for recovery.

Dave:

And one of those things was, I think you called the bowling ball, is that? Or what do you call it?

Garret:

I call it the master reset.

Dave:

Master reset. Okay. But some other thing. But anyway, the head is like a bowling ball and you do some sort of thing. Tell me what that is. Because we actually had the whole week, people loved it when it was here. It was a special add-on.

Dave:

But anyways, so what's the protocol that we were doing and what does it do?

Garret:

For that, we're actually running current, you're lying down on a table. And if you were doing it, you'd have some electrodes at the base of your skull, back of your neck. That's a very neurologically rich area. We're thinking the brainstem, cranial nerves, including the vagus nerve. And then the other electrodes are actually down under your feet. So the current's running through the length of your body. So you're getting this tonic, fairly gentle stimulation, throughout the body, and in that very neurologically rich area here.

Garret:

And so, again, under this realm of neuromuscular reeducation, part of the nervous system is, of course, the autonomic nervous system, and we have the sympathetic and parasympathetic for the fight or flight and rest and digest. And we've seen that, based on using different wearable devices like Oura Ring or Biostrap, these different things, we've seen that we can actually... Doing that particular program can help people increase their heart rate variability, sometimes 30 to 70%, sometimes incredible, to a very significant level.

Garret:

And that, if you're doing that during a grueling five days here at 40 Years of Zen, or if you're doing that as a professional athlete, the night after your first game when you have back-to-back games, that gets you in a state where you have more parasympathetic activity. That's like ramping up your recovery, so you're going to be recovering better. So for that same amount of time that you're sleeping, that you're resting in the hotel room, or whatever it is that you're doing, you're going to be getting more recovery per unit time out of that.

Dave:

Okay. I found that it was a really good protocol for that. And so I do that at home sometimes, because fortunately, magically, I have one of these at home, because I have all the cool toys. Now, I noticed that after you ran that relatively heavy load over my now bulging biceps, A, it made me hungry, which is normal because there was just a huge draw, I've also, when I wear a continuous glucose monitor, if I do this for 10, 20 minutes, I will see a drop in my blood sugar. It's sucking all of the glucose out of your blood. It'll even drop your ketone levels. If you're monitoring ketones, they don't have a continuous ketone monitor yet, but those will drop as well. The body's like, "I just sucked all the energy out of the system, could you give me more?"

Garret:

So feeling hungry, I think is a very good thing, because that autonomic nervous system is getting to a point where you're shifting into recovery mode, your brain is telling you, "We're ready to process nutrients, eat." And I think that's something that we see a lot. We also see people sleep better after this because that's when the body's recovering, remodeling, restoring.

Dave:

On that note, this has been a fascinating and fun episode, Garrett. I'm going to ask you the question that I've been asking a lot of guests lately. You're definitely into biohacking, you've been doing electrical stim for a long time, you understand the electricity or bioelectric nature of life. So knowing all this stuff, having your Oura Ring and everything else, how long are you going to live?

Garret:

Well, I have the advantage of having gotten to read Superhuman in my mid 30s. So-

Dave:

Plugged that up so smooth, barely noticed. Thanks.

Garret:

I've heard you set the bar at 180.

Dave:

And you're younger than I am.

Garret:

Yeah. I'm thinking with the benefits of discovering this stuff earlier on in life, being able to reduce those death by a thousand cuts, being able to reduce some of those cuts in time, maybe 181.

Dave:

I love that answer. All right. High five on that one. Perfect. And I would like for the record to say that I'm at least 180, so you should be at least 181. Don't put a ceiling.

Garret:

Yeah, that's right. We can't and shouldn't limit ourselves.

Dave:

Now, we've talked a lot about NeuFit, your device, and all that stuff. And I know that for most people, this is like a therapist, clinical grade, Garrett, this isn't the sort of thing most people have at home. But a few people do, like me and, there's some biohackers out there, some professional athletes who've been on the show who have a whole setup, like upgrade labs in their homes. And I've consulted with them on it.

Dave:

I suppose some people will buy those, but most of the times, when we find a professional who can run you through this once a week or help you get over whatever weird place your body's stocker at won't do, do you have some sort of, how do you find a practitioner, a link, do you want to make one up?

Garret:

We do. We have a link on our website. We'll put everything on a page, Neu.fit/dave.

Dave:

So it's Neu, N-E-U-

Garret:

N-E-U, like neurological.

Dave:

... .fit/dave?

Garret:

Yes.

Dave:

All right. So Neu.fit is the URL, /dave, and you put a... How do you find a practitioner or sort of things, because there's just people who've purchased a unit. And if people want to purchase a unit, either to become new practitioners, and there's a whole bunch of training, you have to go through five days there or some online training and all that kind of stuff. IF you want to become a practitioner or you want to get one at home because you're a crazy biohacker like me, you're going to give them a deal.

Garret:

Yeah. We'll put a special deal up on that URL.

Dave:

Okay. Good deal. So you've figured out what that is. Offer something nice, I mean, hundreds of thousands of people just suffered through me screaming when you tortured my biceps. So as a way of saying thanks, take good care of them. I appreciate you doing that.

Garret:

We will.

Dave:

And guys, if this sounds like, "Wait, was that just like a stunt, what's going on?" Look, I have used electrical stimulation, I've used neurofeedback, I've used biofeedback, magnetic stimulation for two decades on myself. This is real science. And go back 20 years, people say, "Oh, that's just that weird stuff. You've got the AB Blaster Pro or whatever." This is the history of this stuff, but it's also been used by the Russian space program, the East Germans, to win the Olympics. They would knock themselves out with surgical drugs and bite on sticks and run current to get their muscles stronger. So there's a rich history of this that's probably not in your consciousness.

Dave:

Just understand, this is new, but it's built on a rich history. These wave forms, the way you mix them, the direct current versus alternating current, my biceps are bigger than they were at the beginning of the thing, and I've had profound neurological improvements from this stuff. And I don't have MS. And the fact that Terry Wahls is out of a wheelchair from electrostimulation plus the right diet, I think this is part of the future of exercise. And I'm grateful that you've put two decades into learning this stuff and that you've been doing this since 2009 and that you've got improvements and patents and just cool tech that the world needs. It's all true, authentic. Thanks Garrett.

Garret:

Thank you. It's been a pleasure.

Dave:

Neu.fit/dave to find someone. You just want to try this one time, you really do, trust me. And maybe you want to get a unit or whatnot, but that's it. Neu.fit/dave.