

BFR Bands with Kusha Karvandi

Detox, Lyme and Health Podcast by Dr. Jay Davidson

[00:00:00] Welcome to the Detox, Lyme and Health podcast. And now, the man that simplifies the complex, your host, Dr. Jay Davidson.

Dr. Jay Davidson: [00:00:13] Hi this is Dr. Jay Davidson and I'm with Kusha Karvandi. He is a personal trainer and he's trained over 10000 hours of one on one sessions with over 20 nationally-recognized certifications and unique specialty and neuroscience. Kusha's ability to transform his clients is unlike any other coach in the fitness industry. Although considered the eternal student, Kusha describes his coaching philosophy by the Latin word *docere*, which implies coach as teacher. Kusha is the creator of the BFR bands, designed for research-backed form of training known as blood flow restriction training, which helps you gain muscle and strength without lifting heavy weight. And I have to say, I was being filmed by our good friend Jono, Kusha, for a docuseries, and you were being filmed right before. It was at the end of your interview when Jono was like, "Hey Kusha, do you mind taking your shirt off and get a couple of shots," and you're like, "OK." And you took your shirt off and flexed. And I was like, "What do you do to work out?" I mean it was literally like you had grapefruits for your chest muscles. Your arms were massive. I'm like OK, whatever that guy does, I'm going to listen to that. And so first of all welcome to the podcast and I'm super excited to interview you.

Kusha Karvandi: [00:01:43] Yeah, thanks for having me.

Dr. Jay Davidson: [00:01:44] My audience--I'm in the Lyme disease world, so it's definitely those that struggle with chronic illness. I know there's the quote unquote bio hackers that listen as well that are just interested in functional medicine. I want to make this relevant for both of the audiences: those that can't really exercise or workout and then of course those that you know just want to go to the next level or maybe save time and increase efficiency. Can you give us a little bit of a background on neuroscience and then especially the blood flow restriction for us?

Kusha Karvandi: [00:02:23] Yeah, absolutely yeah. As a personal trainer, when I used to train with clients back in the day (about 10 years ago when I started), I was accruing all these certifications and all these nationally accredited certifications all kind of said the same thing. They were all really kind of looking at mechanics. So they look at the body like a robot and they look at biomechanics. A good example of this is like you go to a Roadrunner Sports, what do they do? They put you on a treadmill; they look at your gait. They look at how your foot in your heel strikes on the treadmill. They use cameras to analyze those mechanics and then they prescribe some type of insert into the shoe to help correct your form and your running mechanics and such. And it wasn't until I'd say probably five six years ago that I kind of stumbled upon this idea of functional neurology, which kind of has roots in chiropractic. This functional neurology really kind of opened my eyes to how you know the biomechanics is important, but you have to also look at other things, like the vision system and your vestibular system as well as your proprioception, which is the body's nerve endings, and looking at how these work together to help facilitate mobility, strength, speed, endurance, and such. So you know as I started diving deeper into neuroscience and functional neurology, I realized that the brain is the CEO of the body and it governs all these different bodily systems. And when you take a brain-based approach, you can overcome a lot of the issues, and in my case, a lot of the limitations as a trainer. I had a lot of clients that had maybe shoulder pain or back pain or they had certain exercises like squats or whatever it may be that they would plateau. They couldn't get any stronger on and I didn't really know what to do. You have a certain limited number of assessments: overhead squat assessment, maybe a functional movement screen, all these different biomechanical assessments that you can deploy. After you know maybe

half a dozen different things, you kind of get stuck, and then you kind of have to refer them to someone else... which is not always the worst thing, but in my case, I really wanted to be able to help a lot of different people and I didn't like the fact that I felt really limited in my skill set. So as I dove deeper into the neurology you know I started you know utilizing dozens and dozens of other types of assessments looking at things like their peripheral vision, looking at their ability to converge the eyes, looking at their vestibular system and how well they can keep their eyes fixed on an object while their head's in motion. All these kind of neuro-hacking type of type of things. And what I've found is that it allowed me to really kind of broad my horizons and help these clients knockout pain, breakthrough strength plateaus, and just overall get more effective and efficient results with their fitness. They were able to get a lot more from their workouts with without as much time or sometimes effort, because it was just so much more precise and just so much more efficient with the neuro hacks. That's kind of where it all began really with the functional neurology and then applying that to exercise science.

Dr. Jay Davidson: [00:05:38] The neuroscience is very intriguing. Can you talk to us about occlusion training? It's something I'd heard about years ago. I saw there was a device from I think it was Japan and it was a couple thousand dollars. It basically pumped up an area and kind of occluded it. And that's how you worked out. And I was like, "Wow, that seems a little expensive." It's kind of neat but I never went down that route. Can you define what occlusion train is or what blood flow restriction training is?

Kusha Karvandi: [00:06:10] Yeah, it sounds counterintuitive to a lot of people. They think why would you want to cut off blood flow? That can't be good for you. But it's actually been around for a long time. I first discovered it in the journal Strength and Conditioning. I was reading one of their studies around blood flow restriction training to gain size and strength. I think it was specifically a bench press study at the time that I was looking at it. I was just astounded by how wearing some bands on your upper arms and lightly putting compression on your arms while you're training with light weight can help you gain muscle and strength as if you were lifting with heavier weight. So I became really intrigued, and as I dove deeper I realized what it's doing is... when you're doing it correctly, you're putting about what you know essentially what feels like 70 percent pressure. So on a scale of 1 to 100, 100 percent feeling like you're not having any blood flow to the limbs, you want it to feel a perceived-wise like 70 percent pressure. So when you put on some bands and it feels about 70 percent you train with really light weight. And I think a lot of the studies were around 20 to 40 percent. But you know I've seen as low as 20 percent of your one repetition maximum. If you can squat 300 pounds, you may be using 60 pounds, which is almost the bar basically, for high repetitions... maybe 30 plus repetitions. You're doing high volume, which means you're doing around four to ten sets. You're doing a lot of sets with short rest periods. In doing so, it basically is doing a few things. One of the things--it's saturating these organic compounds in that area. It's bringing some good, organic compounds to help facilitate growth. It helps prevent things like myostatin, which prevents protein synthesis and muscle growth. It helps inhibit that. It helps up-regulate something called mTOR, which is another kind of signaling mechanism in the body for increasing muscle mass. It also provides mechanical tension which helps improve strength and spatial awareness in terms of the muscle you're training. And then you know it also helps basically trigger a variety of these biochemical responses in the body to help increase growth hormone and IGF 1 and such--all these fat burning, muscle building hormones. So it works kind of through those three main mechanisms. And I was just astounded when I first heard about this, because I thought, "Wow, this has a wide variety of applications." You could apply this to somebody who is maybe looking to gain just pure size and strength--if they want to just look better and be bigger. It could apply to somebody who is maybe recovering from an injury whether it be recent or old. Maybe somebody who had a surgery a while back and they can't really do a whole lot of strength training. They want to ease back into it. It's a great kind of rehab tool, or even maybe women who are maybe averse to lifting heavy weight. This is kind of a good tool for them to break into better weight

training habits without feeling like they're going to get huge by lifting heavy, because this really helps facilitate muscle tone. I was really astounded when I first saw this. When I dove deeper, I realized this form of training has actually been around for a long time. It originated a few decades ago, I believe in Japan. It was being used by a doctor who was using it with patients to help them prevent muscle atrophy. And he was just using blood pressure cuffs. He realized that they were all not only preventing muscle atrophy, but a lot of them were gaining muscle. And they weren't really doing anything. They weren't doing any specific exercises; they weren't in a gym. They were in a hospital setting and they were doing just basic flexion or extension and just basic muscle contraction that you could do when you're sitting down. And so since then, there's been hundreds of studies on blood flow restriction training. Even more recently in the last 10 years, they've done studies on what's called practical blood flow restriction training, which is the use of just basic wraps instead of using expensive medical devices. And they found just stellar results. We had a study that was done with our bands about a year or year and a half ago. This study was done with these really fit individuals, so these weren't guys who were brand new to weight training who were going to see general adaptations to basically anything they would do. These are guys who--their bodies would otherwise need some pretty significant types of advanced training to really see a change you can't just get but what this all they did is they put the bands on their legs. They had them walk for 20 minutes--just walking 20 minutes, three days a week for six weeks. And at the end of the study, they all saw significant results with regard to increases in their VO2 max, decrease in their 1.5 mile run times. They got faster and they improved their legs size and leg strength. So it was really interesting to see that you know taking someone who's even advanced and just having them do something so simple like walking could see such incredible results. So yeah, it really intrigued me from something that just seemingly was so simple.

Dr. Jay Davidson: [00:11:16] That's so awesome. I see so many benefits like you're saying of taking somebody that's working out and kind of breaking a plateau and going to the next level. I see it easier on your joints as you're not having the lift heavy weight to get the same effect. And then I also see it just being such a benefit for those dealing with like chronic illness, where they can actually do some movement and kind of stimulate this whole pathway easier and not overstressed the body up and get all the benefits from it. Is that is that kind of what you see too?

Kusha Karvandi: [00:11:52] Yeah, absolutely yeah. We see just such a wide variety of people using our bands right now, whether it be you know women who want to develop better hips, glutes, and thighs; we have older guys who are just maybe they're tired of the days of lifting heavier, or maybe their body has taken a toll from so many years of just lifting heavy that they need something to help kind of repair the body while still getting back to looking good. People who use our bands primarily really want to feel good but they also want to look good. And so we have a wide variety of young people, old people, rehab, men, women, you name it. We have a wide variety of people, surprisingly, who are using our band, whereas initially, I thought this was something that was really just for the bodybuilding community, but it really isn't.

Dr. Jay Davidson: [00:12:39] Yeah. Well I interviewed Dr. Tyna Moore. She's definitely a really huge fan of squats and deadlift to build your glutes, that really protects like the bottom part of your spine. She really believes that muscle mass is really important to build up, because when you get an infection, your body will break down muscle right away to get the amino acids to activate the immune system. So if somebody doesn't really actually have a lot of muscle mass, it actually makes you more prone to not being able to fight the infection or ward things off. So I see such a benefit of really getting muscle mass not just for looks, but just for overall immune system function as well.

Kusha Karvandi: [00:13:21] Yeah, absolutely. One of the main things--one of the really cool things it does it helps you know accumulate lactate, which creates basically this biochemical cascade that helps improve your body's response to fatigue and endurance, but also helps signal the

pituitary to release more growth hormone, and the athletic hormone which is IGF 1. There's kind of a whole cascade of responses that happens by doing BFR training, as well as the cell swelling. So when you're doing weight training, one of the benefits of weight training is you're increasing the size of the muscle cell. You're swelling the muscle cell. BFR training does that, but without having to lift heavy weight. So you're getting some of these benefits without having to lift you know 500 pounds on the squat rack and potentially hurt yourself.

Dr. Jay Davidson: [00:14:13] Yeah. Well, I'm a dude and I'm all about let's get bigger muscles. I was I was born a pretty skinny little guy. So of course, you always aspire to what you don't have. When I saw you take your shirt off when Jono wanted some extra footage for his docuseries, I'm like, okay, what does this guy do? And I asked you. What are the main things that you do for the audience?

Kusha Karvandi: [00:14:39] Yeah, I mean I do a little bit of everything. I feel like in today's day and age with social media there's so many gimmicks that you'll see online. So many ads for all kinds of you know silver bullets that promise the whole world. And you know one of the main things I tell people is that BFR bands are not going to you know replace all forms of training. Really, it's a tool that you want to integrate into your training program. Just like anything else. And so the best program you know and my program is essentially an integrated program where I'm doing sometimes some heavyweight training and maybe I use BFR as a finisher, or maybe I'll use that as a warm up to more kind of neurally activate the muscles a little bit better. I might use it on alternate days. Some days during the week I go heavy and then the alternate days I go light with BFR. So there's a lot of ways that you can go about it, but my approach is always one where it's integrated and I'm always trying to progress. So I'm always trying to change something and it kind of add more of a challenge and add more novelty. You need that novelty for the brain to pay attention in order to create that neuroplastic change and to have fun. Otherwise you get bored.

Dr. Jay Davidson: [00:15:49] Yeah totally. I had a back injury and I didn't work out for probably four or five months and it just kind of killed me, because I had such a good routine going. But any type of movement just like flared it up, so I just kind of took a break. And then more recently, I want to get back into it. And I kind of eased back into it, and I'm like okay... I've got the BFR bands and I was using them before. For the listener, can you explain where do you put the bands?

Kusha Karvandi: [00:16:22] Sure. Yeah the main places you're going to put them is in your upper arms, you know basically where the deltoid and the biceps meet, or you going to put them on the upper legs. So it's always going to be one of those two positions. There's a lot of misconceptions about that. I think people think that the train abs you should move closer to the knee, or to train for arms or something you put them close to the elbow, but that's actually not true. You have a lot of nerve density around the elbows and knees that you don't really want to put compression on. With bands. It would be better to actually always keep them on the upper thighs or on the upper arms. And essentially it has what's called the systemic effect when you're training with them. So anytime you're training anything upper body, even if it's bench press, or you're doing pull ups for your lats, whatever it may be... even if you're not training just arms, you'd still wear the bands on your upper arm. So there's a big misconception. People think, 'Oh, this is just for arms, for building bigger biceps and triceps.' Really it's for building you know pretty much any muscle group. If you're anything upper body wear it on the upper arms. Anything lower body you weigh it on the upper thighs.

Dr. Jay Davidson: [00:17:22] Yeah and that surprised me, because I was like, "How did you get that big of a chest?" You're like, "The BFR bands." I'm like, "They work on your chest?" You're like, "Yes." Human nature is if you blood flow restrict in the arm, you're affecting what's downstream. Like you said, it really has a whole body, systemic effect then.

Kusha Karvandi: [00:17:42] Exactly. It has more of a whole body effect. And then there's a famous bench press study that was done where they wore the bands on the upper arms while they did a comparison of traditional heavy bench press without the bands, and then they did lightweight bench press with the bands. They actually saw significant results with regard to gaining pec size and pec strength. So they increased their bench press by training with light weight with the bands. So I thought that was kind of interesting, because you know you always think that like, OK, if I want to increase my bench press--which is like what every guy wants to go to the gym and train heavier and heavier and heavier on the bench for their ego--and you realized that you don't have to always train that way. It's OK to give yourself permission to try something different and that's why I like BFR bands, because it gives you an opportunity to try something different. And also the other thing I really like about it is that it gives you kind of the smallest conceivable unit for change. The thing I love about coaching and training is the psychology of things. And a lot of times you know we can be our own worst enemy. Especially if you're an overachiever. Probably a lot of people who listen to this and they're probably overachievers and go getters and performance addicts. You always want to do more. If you don't have the time that day to go to the gym and get your normal hour and a half routine in, you're like OK I'm just not going to do it today. When in reality, it's like you can give yourself permission to do less that day. And I like the BFR bands because it doesn't really feel like you're making as much of a sacrifice. Like if I normally do a pretty high intensity, rigorous routine and I just go to the gym and I commit to like five minutes, I'll kind of feel like I failed that day. But with BFR bands, if I commit to just going for 10 minutes in training with light weight, and just doing just a BFR routine, I don't really feel like I failed that day, because you feel like you've got a rigorous workout. You still feel like you achieved something. You still feel like you're making progress, and physically you are. I mean you still are moving forward and making progress with regard to size and strength.

Dr. Jay Davidson: [00:19:43] I completely agree. I decided, OK I need to hit the BFR bands, and then I'm actually experimenting with SARMS. I did a bunch of research and taking a few different ones right now and maybe can cover that in future podcasts or something. I'm just over a month in, and for instance, my sleeves are tighter. This stuff is definitely working. And I'm not working out longer, which is interesting, because I feel like as soon as I get that huge pump sensation, it doesn't actually take that long. And I feel like I really worked the muscle already. It's you know, maybe like a half hour at the gym. And again I'm a pretty little guy, but my arms were 13 and 3/8 inch around. And I just had my wife measure them this morning without working out, so I'm getting them pumped or anything, and they were 14 inches. A little over half inch already like a month in.

Kusha Karvandi: [00:20:45] Wow.

Dr. Jay Davidson: [00:20:48] This stuff is so cool. Then I started reading your blog more, and I'm like I've got to make sure I'm doing this right, which is part of why I wanted to interview you, too. And I was seeing so much of just more like higher reps. I wasn't actually doing that higher reps until just a couple of weeks--maybe two weeks ago. And I was seeing--I think you said like 30 reps, 25, 18, 15, 12, kind of like stacking like that. Is that correct?

Kusha Karvandi: [00:21:18] Yeah, I mean there's a lot of ways you can do it. I always say you know start with a little bit of experimentation. Try to basically train to failure. You know a lot of the studies looked at training to volitional fatigue, which is just basically training to good technical failure. And you know there's different techniques I've seen people talk about. There are some where you'll do 30 reps on the first set, and then you'll do three subsequent sets of 15 reps each. The rest periods between each set are short--it's like 20 or 30 seconds. So that's why these workouts are so efficient, because you're not resting that much between sets, and you're only doing you know 10 to 20 minutes total of exercise. So it's really quick, really efficient. The goal is to increase or

decrease the reps and sets based on how you feel, based on your workout experience, and based on how your body is doing. I've had people tell me, "Oh, you know, the 30 reps is not really enough for me. I don't really feel a difference. My body is not changing." And I tell them, "Okay, well then maybe you need to do more than 30 reps. Maybe you need to do more than four sets. You might need to do six to ten sets for that exercise, because your body's just maybe just too used to higher volumes of training." Whatever it may be. Or you might need to do less. Maybe some people are like, "Oh I'm so extremely sore. I was sore for a week," after just doing three or four sets with like 20 reps each. So you just have to kind of monitor that see how you feel and increase the reps or increase or decrease the reps and sets based on that. I would say always keep the rest period short-- 20 to 30 seconds of rest between sets is good. Always keep the weight really light. I always say err on the side of 20 percent of your 1 rep max, even though I've seen things that show like 30, 40, even 50 percent of your one rep max. And I just think that's a little bit too high. I would stay lower. 20 to 30 percent is fine. And then also err on the side of less tightness on the bands. I think a lot of people over tighten the bands when they first put them on, and it's better to be on the side of like 50 to 70 percent tightness. A lot of people don't realize that when you're doing any weight training, you're already doing occlusion training. You're already doing blood flow restriction training because you're internally occluding. As you drive blood flow, you're increasing the internal occlusion that's happening inside your body without wearing any bands. So to a certain extent that's already happening, and so a lot of people don't realize they might tighten the bands to 70 percent, and then they do their warm up, and then they're already at like 90 percent now because now they've gotten a little bit of a pump going from the warm up. I would say started about 50 percent tightness, in terms of perceived tightness. Tighten the bands to about 50 percent, do an effective warm up, and then the warm up, if it's done correctly, should get you to about 70 percent tightness.

Dr. Jay Davidson: [00:24:02] Okay. Because I have noticed like as I work out, I'm like, "Gosh this feels like it's literally cutting off my blood flow." I keep checking and I'm like nope it's good in my arms. But it it definitely intensifies as you're exercising, so I will attest that for sure. Let's say I'm doing upper body. I throw the bands on each arm, right between the shoulder and the bicep, up near the armpit in reference for the listener. How do you check to see if it's to make sure it's not too tight, because if it's too tight, then essentially it's like you're cutting off the arterial flow, which is not good.

Kusha Karvandi: [00:24:47] Exactly. We've designed our bands to try to make it as simple and easy as possible. Most of our bands are two inches wide, because that tends to be kind of the sweet spot for vascular occlusion, which is the veins that we want to occlude. We want to want to basically put pressure on the superficial veins, which slow the blood flow from leaving the limbs, not on the arteries that carry blood flow to the limbs. So you're trying to basically control kind of the blood flow in that one direction. And you know there's a few ways you can measure that. So one way is with perceived tightness. So you can tighten the bands and they say like on a scale of 1 to 10 or 1 to 100 percent you want it to feel like a 7 or 70 percent 70 percent tightness is what it should feel like. And they actually did studies using this you know so-called perceived tightness. It may seem like, OK, well, that's kind of subjective, but it actually worked. In the studies they found that 70 percent tightness worked, and that worked because you don't have to be extremely precise with your occlusion. A lot of people think, oh don't you need like Doppler? I have a lot of these pundits reach out and say, "Oh you don't have Doppler though. How do you know you're doing correctly?" You don't need that. I had a recent podcast actually done with the lead researcher on BFR training, Dr. Jeremy Loenneke, and he even said himself: As long as you're somewhere in the range of 30 to 90 percent occlusion, as long as that's how much occlusion is actually happening at the limb, you're fine. So that's why perceived tightness works for most people, is because you're going to be somewhere in that range. The key is you want to know make sure that you don't feel anything that doesn't make sense. Something that's not normal, like tingling, pain, numbness. Those are things that are not normal, obviously, and you need to loosen the bands if you feel that. If it feels like

you're cutting off all your blood flow, you probably are. So you definitely don't want to do that. And the other thing you can check is something called capillary refill time. So in the medical world, this is something they do to make sure you're getting good perfusion to the limbs into the fingers. And so what you can do is you can press on your finger with your opposite hand--you can press with your thumb. And when you do that, when you press into the hand or press into the finger, you'll see that you're pushing the blood out. You'll see that it might be a little bit whiter in that area. Your thumb leaves basically a print. When you lift it, that color refills. The blood comes back. That's called capillary refill time, because you're pressing the blood out of the capillaries and want to see how fast does it refill. And typically it should take a couple of seconds for it to refill. That's when you know that your occlusion is correct. If it's taking three, four, or five seconds, that's too much. It's taking too long, which means the bands are too tight. So that's more of a standardized way that you could check throughout your workout to make sure that they haven't gotten too tight. So and that's something I personally like to do, because like I said, the pressure is not static. The pressure is going to change throughout the workout. You know even if you tighten it to 70 percent at the beginning, it might be more or less halfway through the workout. That's something you need to check throughout the workout. Usually for the most part, it's going to increase, because as you're working out, if you're working hard, you're going to drive more and more blood flow, which is going to increase the pressure, because you're increasing that pump.

Dr. Jay Davidson: [00:28:05] Yes I agree. And that's what I check is that capillary refill. I remember you telling me. I'm like, "How do you check?" And you're like, "Oh just put your finger in your palm and then you see that white spot and just make sure returns within two to three seconds." And you know it feels like I'm cutting everything off, Kusha, but it still refills. I'm like, "Alright. I'm good. I'm good. Keep working out." You know but it's it's amazing the pump you feel. So is it kind of safe to say then with this type of workout, when you're blood flow restricting that you're kind of just going for burnout. Low weight, high rep, and just burnout and an almost want to kind of constantly keep the muscle in a state of tension too?

Kusha Karvandi: [00:28:45] Exactly yeah. With BFR training you want time and attention, especially if your goal is mass. If you want to gain a lot of size, time and attention is kind of a universal principle for mass. So that's obviously going to be even amplified even further when you apply with BFR training, because BFR is like an amplifier. So yeah time and attention is key, but also focusing on the concentric phase, which is the lifting phase. So if I'm doing curls... Typically what we hear is with traditional heavy training, if you really want to gain size with heavy training, you focus on the negative. You focus on the eccentric phase. So you lift the heavy weight or you do you know the Arnold cheat curl, which can be actually useful if you do a cheat curl correctly, and you focus on that negative. That actually helps break down those type 2 fibers, helps them grow back bigger, and that's how you gain size traditionally. With BFR it's actually the opposite. You want to focus on the concentric phase. You want a focus on the lifting phase. So it's a little bit different, but yeah, again, you're focusing on control. You're focusing on time and attention. And the thing I like most about it is that because you're not lifting so heavy, you can really take a step back and really focus on your form and your range of motion. And for a lot of people, I don't think that it's always necessary to train with the fullest range of motion. I think a lot of people talk about, "Oh you've got to train with full range of motion and everything," and I think that depending on your goal that may or may not be true. I think the problem is most people don't recover from the partial range of motion, so if you lift heavy and a partial range of motion if you don't do some kind of mobility work later to retrain the brain retrain the body on how much degrees of freedom that joint actually has, then the brain is going to get stuck into thinking that you are limited. And that's why you see bodybuilders walking around with short arms and bent elbows because they haven't done any recovery work. They're not doing any mobility work for their elbows or their shoulders after the fact to kind of retrain the brain that hey, you know, even though I did some heavy contraction work in that short range, I actually need to retrain my brain that I actually have a full

range of motion in that joint. BFR can be useful for a kind of retraining and remapping that process.

Dr. Jay Davidson: [00:30:52] That makes so much sense. So I had a knee injury, or just repetitive knee injury in the knee surgery back in like 2000. So like 18 years ago and I was in a knee immobilizer for like six, six and a half weeks. When I took the knee immobilizer off, my left quad was the same size as my right calf. It just atrophied. It just disappeared. And ever since then, the left quad has always been smaller than the right quad. I went through periods where I've definitely gained size and it's gotten closer but it's like the right one... It's like the more I do deadlifts and squats, the more my right quad just gets stronger too you know and gets like you know more cut and huge. So what I've recently been doing this last month of experimentation here with with your BFR bands and then and then the SARMS as well. I've got I've got three different bands for me. I've got the ones that auto clamp, which I love those for the arms. What's the name of those? The red ones?

Kusha Karvandi: [00:31:57] Those are called the Pro X band. Those are most popular because they're so easy to tighten with one hand.

[00:32:02] Oh yeah I love those and then I've got the blue one where the clamp you know kind of looks like the same size. Yeah what's that one called?

Kusha Karvandi: [00:32:10] That's our original and that's the Pro... so that was like the previous generation before the Pro X.

Dr. Jay Davidson: [00:32:15] And then I've got the big blue ones, the leg ones. What's the name of those?

Dr. Jay Davidson: [00:32:20] Those are the Quad Wraps. Those are my favorite too. It's like the equivalent of the Pro X bands but for the legs, because they have the marking system, the numbers on them. So you can really dial in the pressure and be consistent.

Dr. Jay Davidson: [00:32:31] Yes. So those are the three that I've got. So for the leg, and I want to get your take... I always feel better when I squat--not so much with my knee when I deadlift. I still do some, but I'm definitely more of the squat guy. I can probably do high 200s, 280 max or something like that for squat. I've been doing 135 pounds, probably just because it's you know 45s on each side of the bar kind of default with the BFR band, but I've only been putting on my left leg in an attempt of trying to like amplify my left quad muscle. Is that is that going to be effective if somebody has asymmetry where one limb, whether it's like an arm because they had it in a cast or a leg because they had surgery or something and it's smaller...mCan you focus with just one in that sense or is it better just to two blood flow restrict both legs, no matter what?

Kusha Karvandi: [00:33:33] No. I think that if the goal truly is to fix an asymmetry between two different limbs, which is common. I have a lot of people were like oh how do I get my left arm to match my right arm? Or in this case, how to have one leg kind of match the other leg post surgery. And you know I think that training that way I think is fine, but I think another easy way is just put the band on that one leg and just do some walking... walking outside, walking on the treadmill. You can use it asymmetrically like that. Most definitely. But yeah can be something as simple as just you know three days a week you just walk for 20 minutes and you wear that band on that one leg and that will slowly help balance things out.

Dr. Jay Davidson: [00:34:16] Wow. Just something as simple as that.

Kusha Karvandi: [00:34:18] Yeah absolutely. It would take time obviously and it depends on how

much of a disparity there is between the limbs you know that will dictate how long it'll take, but I could see over time that you'll close the gap between the limb sizes just by doing something as simple as that.

Dr. Jay Davidson: [00:34:33] Is there a limitation on how long you can wear the band? Like if I was to strap it on my left leg and go walking around and do some activity.

Kusha Karvandi: [00:34:45] Yeah. The nice thing about the bands you can basically do almost any kind of activity. I know athletes will use it for more little more high intensity activity. Usually I recommend doing more of what you'd consider to be kind of low impact, low load, but I've seen people do sprinting type of athletic drills with it. I've seen people do all kinds of some of the traditional lifts they'll do with the bands, but still with light weight. So you can pretty much do any types of activity that you normally do. You can do it with the bands on. But again, I like it because it allows you to really kind of focus on the quality of the movement.

Dr. Jay Davidson: [00:35:23] OK. And I'm just thinking too, I'm doing too much weight then. If I max out at around 280 for a squat and I'm doing 130... so I want to be less weight and lot more reps then.

Kusha Karvandi: [00:35:35] Yeah that's what I was going to say. When you said you're doing that much, I thought that might be a little heavy. Probably go lighter. You know usually when I'm doing it, like I can probably... I haven't maxed out in a long time, but I could probably squat 365 to 405 something like that. Nothing crazy. But I'm usually doing like 95 pounds when I'm doing BFR, which is basically 25 pound plates on each side. So it's not that much it's not even a 45 on each side and it looks kind of funny because I never really lift that light normally or I hadn't in the past. And so when I started putting these weights on, I thought wow this looks and maybe a little bit too light. It's kind of crazy and and it's effective. Even sometimes I've done the bar. I've done the bar and I've tried to really train to pure just failure, do as many reps as I can and then and then rest and do it again for about four rounds. And even the bar can be hard. So yeah you can. You can do a lot with very very lightweight before you need to go heavier. So when people ask me like how do I progress it? When should I go heavier? And I say you know there's a lot of other things you can do before you need to go heavier.

Dr. Jay Davidson: [00:36:37] Wow. Yeah I just feel like it's probably just ego getting in the way... that I don't want to I don't want to put less weight on the bar than you know 45. But wow ok. That's so good to know. I mean I see this being you know such an important piece for somebody that is struggling with their health, where they can do this and still gain muscle mass without wiping out their adrenals. Are there certain like easy exercises or somebody that maybe they literally don't workout at all, they're you know dealing with chronic fatigue but they want to you know build some muscle mass and use the the BFR bands? What are some suggested exercises?

Kusha Karvandi: [00:37:17] Yeah. You know typically when it comes to building size and mass, I always say that there are certain principles which are pretty much going to be applicable. You know regardless of the tool you're using. So whether you're doing heavy weight training without BFR or you're doing lightweight training with BFR, there's all these principles like we talked about before time and attention is a key principle. But when we're talking about exercises, your big compound lifts are going to help yield the best results. Those are going to help flood the body with all those androgenic and anabolic hormones, testosterone namely, and growth hormone. So if you're doing compound lifts versus you're more ancillary exercises like a bicep curl for example versus a bent over barbell row or a weighted pull up. Those are compound lifts they are requiring more than one muscle group. They're requiring multiple muscle groups to work together, which are going to make bigger changes faster in the body. So I always recommend those types of lifts, or any kind of

compound lift you've done before, like a squat is a perfect example, or a deadlift, or romanian deadlift, or bent over row, or pull ups, or bench press... all these big major lifts, those you'll still want to do, but just wear the bands and go light. Use light weight, high reps, lots of sets, short rest periods. That's the key. Those kinds of exercises, and again you know, it's not set in stone. It depends on what your workout looks like. So let's say for example you have a heavy chest day and you did traditional bench press without the bands and you did a bunch of other heavy chest exercises, you could do some you know ancillary muscle groups or ancillary exercises with the bands like maybe just some pec flies or pushups, for example, at the end of your workout as a burnout with BFR. So if you were to use BFR as a finisher, then you could use it that way if you already did your compound lift that day. But if we're talking about just a BFR workout by itself, you still want to try to do compound lifts in your program in some way or another.

Dr. Jay Davidson: [00:39:28] What about for the person that doesn't want to gain--any females listening right now and they don't want to gain size. Will the BFR always create that?

Kusha Karvandi: [00:39:39] No not necessarily because again that's going to be dictated by how you eat. That's going to be a big portion of it. If you're not eating in a big caloric surplus, you're probably not going to gain a lot of size or excessive muscle. How you train. So if you're doing extremely high volume and trying to do as many reps and sets as you can with a heavier load, like we talked about earlier (like 30 to 50 percent of your one rep max instead of 20 percent), you're probably going to see a little more mass gain. And then also you have some of that is kind of facilitated by your genetics as well. So you know if you're somebody who's concerned... like let's say a lot of women always ask me, "Am I going to get really massive from putting these things on my arm?" They get scared that they're going to get huge, and I always tell them that that's just not going to happen. You're going to gain muscle tone. So you're going to get firmer faster and easier. But you're not going to get huge. It's still not that easy. And again, there's no panacea. There is no silver bullet to size and strength. If you want to get the best results, you still have to do a combination of the two. So if somebody did want to gain size and strength and they did want to get bigger, I would tell them to not just do BFR by itself. I would highly recommend they do a combination of heavy weight lifting and then BFR as a finisher or on alternate days because that's what's going to really yield the results to gain size. So gaining size and strength is still not easy. BFR definitely can make it easier, but it's not a default. It's not going to happen just by virtue of putting these bands on and just picking up some weights.

Dr. Jay Davidson: [00:41:09] OK that's good to know. Yeah I mean I'm amazed so far, and I haven't even been pushing that hard in the gym. I just feel like everybody should have this in their repertoire for lifting. I guess one of the final questions I've got for you. You mentioned mTOR that it stimulates mTOR. mTOR I always feel like is the building phase and then autophagy would be like the opposite and that's kind of the breakdown the clean up of debris. How often do you recommend actually the exercise? I mean are you recommending every other day? A theory that I'm kind of wondering about too... Intermittent fasting's popularity has really shot up in the last five years or so. When you fast, you are stimulating autophagy and you know kind of shutting off the mTOR. So is it better if you wanted to intermitemt fast to do, maybe on the workout days, to really pound down a lot of like protein and fats and calories, and then on the non-workout days to actually more fast? Because in the workout days, you're really stimulating mTOR, the off days you're stimulating the autophagy?

Kusha Karvandi: [00:42:24] Yeah, if you're doing things a ketogenic diet or intermittent fasting, the thing that you want to really be aware of is hydration and electrolyte balance, because with BFR training, your demands for hydration and fluid intake are going to be a little bit higher. So you have to make sure really, really well hydrated. If you're doing fasting and you're trying to incorporate BFR and all these things in your program, just make sure that you're really hydrated. I personally

like taking things like essential amino acids as well as using Trace Minerals research brand. They have something called Concentrace s a ton of trace minerals. I also like basic things like Celtic Sea salt or Himalayan sea salt. There's a lot of trace minerals in there. I personally I like to intermittent fast. Not not everyday, but a couple of times a week for that just to kind of trigger that autophagy. Doing that for me, I need to have those kind of support supplements to help make sure I'm not crashing, because if you're training rigorously, it's easy to kind of drain the body of those minerals and electrolytes. So it's just something to be aware of something to kind of watch out for. And like I said before, BFR you need to be well hydrated.

Dr. Jay Davidson: [00:43:28] So awesome. I mean your bands are so affordable, too. I saw them on Amazon. They're also on your website. What's the website that people can go to?

Kusha Karvandi: [00:43:38] Yeah so our website is www.bfrshop.com. The Pro X bands are available at www.bfrshop.com/pro-x that will take them to the Pro X bands and right now there are \$29.95 on our website. I think it's a bit more expensive on Amazon, but they're going to save like 20 or 30 percent on our website right now with these Pro X bands. They're designed to be really affordable. We ship worldwide--doesn't matter where you live. We ship it anywhere and it's designed for the average person to really start benefiting from this form of training and use it, whether it be with their weight training or as simple as just going for a walk.

Dr. Jay Davidson: [00:44:12] That's so awesome. You mentioned right before we started the interview Mass Gaining book or something?

[00:44:21] Yeah yeah we have an ebook we put together. It's a free eBook it's called Mass Gaining with Occulasion Training. So if you did want to gain size, or even if you're not really looking to gain a lot of size, if you just want to gain muscle tone, you can take a lot of the principles from this book and apply it. That's available at www.bfrshop.com/mass and that'll redirect and take you to the ebook. I think it's like 50 some pages. A lot of good content. A little bit of a workout program in there as well. It talks about some of the research. Alot of good stuff in that ebook.

Dr. Jay Davidson: [00:44:54] I just love it. I appreciate your time and expertise, Kusha. I guess one of the last questions I got to ask is how big are your arms? You had to have measured them at some point.

Kusha Karvandi: [00:45:07] I was stuck for a long time at like 15 inch and I always wanted to have a 21 inch arms. Being 5' 8" I'm not really close to 21 inch arms yet. It's going to be a while, but I'm about like 17 now. So definitely getting there. Like I said, just everything takes time. There's no magic pill. BFR is not a silver bullet. You can't just eat horribly and not get any sleep and and just do BFR by itself and expect to you know to reach all your goals. It's going to usually take an integrated approach. It's a tool you want to incorporate. But this is definitely a very, very useful tool. The one thing I did want to mention, too, that I didn't really touch on earlier was just some people talk about like, "Oh is it safe? What about blood clotting?" A lot of people think like oh that that's not good to pool the blood like that. It's actually really interesting because in a lot of the research they studied the coagulation of it and they actually found that there is no increased risk--that you're actually at a higher risk from doing heavy traditional weight training. They saw increases of internal pressure. When we talk about you know blood pressure most people think healthy blood pressure is like 120 over 80. Well when you're doing weight training they measure people's pressure and they found the systolic blood pressure going as high as 400 millimetres. So triple your normal levels during traditional heavy weight training. With BFR it was like 150, 160. So from a pressure standpoint, it's much safer on the blood vessels from a pressure standpoint. But also even from a coagulation standpoint--they measured you know coagulation. Coagulation is the pooling and the clotting and fibrinolytic activity is the opposite that is the breaking down of clots.

They actually found the opposite with BFR to be true. With BFR training, they found an increase in fibrinolytic activity, meaning it was breaking down clots. So I think that happens because it helps to increase blood vessel elasticity, so your circulation is actually better. So yeah. So just to kind of debunk that myth, it doesn't necessarily increase your risk for blood clotting or deep vein thrombosis or anything like that. Obviously there's contraindications. It's not you know meant for women who are pregnant or people with neuropathy or nerve issues or diabetes things like that. When in doubt, check with your doctor. If you're an average healthy individual, shouldn't be an issue. But if you have some kind of health issue, you always want to check with your doctor before beginning any kind of exercise program, including BFR.

Dr. Jay Davidson: [00:47:29] And it just seems like it's easier in your joints. I mean I see some old school weightlifters and they can barely even like bend over. Their knees are just a wreck from all the heavyweight that they've lifted in the past. I heard about this a few years ago. And then just kind of like oh yeah OK. And then I tried some you know some of those elastic stretchy bands kind of wrapping them around my arms and you know I couldn't really figure out, dial it in. You know your stuff with the numbers is so much easier. And then when I finally when got your bands, I'm like, "I don't know why I didn't have this." It just seems like it's so much easier to work out. And whether somebody is just wanting to increase their fitness or just step it up a level or just get going, like it just seems like it's--I don't want to see like a cheat. But I don't know. It seems like it's a shortcut you know.

Kusha Karvandi: [00:48:26] Yeah it's kind of like you know when we talk about biohacking. I think of biohacking kind of analogous to like finding that lever. You just find that perfect spot in the mountain and it moves the whole mountain. And that's kind of how I look at biohacking like this, is this is like that biohacking. It's not going to solve all your problems, but when you're doing things efficiently, when you're using the right tools, you're getting much better results. You know if you're limited on tools, you can get to your goals but it might take you ten times longer. Nobody wants that. And so if you have tools like this, you can get to your goals and achieve what you want much sooner and sometimes with less effort. BFR can be really, really useful. We actually have, I don't know if I told you, we have our new signature series bands too we released recently, which is actually a hand pumpable version. So these are a little more expensive--still not in the thousands of dollars range like many of the devices out there. These are about \$247. It comes as a bundle, armbands and leg bands, and it's hand pumpable. It comes with a hand pump that looks like a blood pressure pump and you can actually dial in the pressure to the exact millimeters of mercury. So for a doctor or physical therapist or a personal trainer who wants something a little more standardized, something that's a little bit more for a professional, then this would be the way to go would be our signature series. That's at www.BRFshop.com as well. And those are great too. Just as comfortable and easy to use as the numbers, all the fun stuff.

Dr. Jay Davidson: [00:49:47] Is there any benefit--I keep thinking of questions. Is there any benefit of loosening the straps up between sets or taking a break or just leave it on while you're working out? And then when you're done take it off immediately or give it a minute or two?

Kusha Karvandi: [00:50:02] I think there's still research that needs to be done on that. A lot of people ask like should I keep them on the whole time? Should I take them off in between sets? I recommend keeping on keeping them on during the duration of the workout. So if you're going to devote a 10 to 20 minute session to BFR training, I would keep them on for that 10 to 20 minutes. I would not recommend keeping them on for your entire workout. If you're going to be at the gym for an hour, then you don't want to keep one for the whole time just for the sake of it. You want to only wear them for the duration you're doing the BFR and keep them on, because again you're trying to create these cascades and these biochemical responses, this the cell swelling, and the mechanical tension, and the cell signaling and all that stuff. To really benefit that, you want to keep them on.

Because I feel like taking them off in between sets you're releasing a lot of the blood flow, and you're almost kind of starting that process over. But I still think that there might be some benefit to it. There just needs to be more research that I haven't really seen on that yet. So I would still recommend just keeping them on and trying to benefit from maximizing that blood flow.

[00:51:02] That's great. Well I appreciate your time and expertise, Kusha. I want encourage all listeners go check out the www.BFRshop.com. Any final words of wisdom as we leave the interview?

[00:51:14] Yeah like I said, give yourself permission to do less. I love the quote, "Your workout should leave you with more than what it takes out of you." That's what I feel like the BFR bands were designed to do is to help you walk away from your workout feeling like you have more, rather than you know most workouts nowadays you feel just crushed after doing these crazy high intensity programs and you feel worse. And so I feel like a lot of people are stuck in this mindset that more is better and sometimes less is more, and training more efficiently is more. So that's kind of our company motto is to try to get the most out of your workout.

Dr. Jay Davidson: [00:51:52] I love it. Awesome. Well thank you so much, Kusha, it's been a pleasure. And yeah I'll see you on the next interview.

Kusha Karvandi: [00:51:58] Awesome. Thanks again.

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