

Dr. Mercola: Welcome everyone to the *Take Control of Your Health* podcast. This is Dr. Mercola bringing you the latest cutting-edge interviews to help you achieve optimal health. You can receive more information by subscribing to my free daily newsletter at Mercola.com because you won't find us on Google or Facebook. We respect your privacy and will continue to fight the Silicon Valley censorship. Thank you so much for listening. So let's get started with this week's latest program to help you and your family take control of your health.

Welcome, everyone. This is Dr. Mercola helping you take control of your health. And today I'm excited to have two guests to discuss one of the really the most innovative concepts in exercise therapy I've ever been exposed to. And I've been passionate about exercise for over 50 years. So this is groundbreaking, and you just got to listen because the impact it can have on your life of you and the ones you love is beyond dramatic.

So we have John Doolittle, who is a former special – captain, I believe, in the special – forces, who is now involved with KAATSU, K-A-A-T-S-U, which is the pioneer in developing this form of training called blood flow resistance training. And then we have Steven, too, who is also going to be joining us. So welcome, guys, and thank you for joining.

Steven Munatones: Thank you very much.

John Doolittle: Thank you for having us, Dr. Mercola. It's an honor.

Dr. Mercola: Yeah. So, which one of you would like to give a brief history of Dr. Sato of Japan, who really is an extraordinary individual, a pioneer who developed this therapy over 50 years ago, and is now 73 years old. His arms are bigger than most everyone's leg watching this.

Steven Munatones: [Laughter]

Dr. Mercola: In extraordinary shape. And real testimony to the value of this approach. So who would like to discuss the history of KAATSU and get us up to speed.

Steven Munatones: John. I can handle this one.

John Doolittle: Okay.

Steven Munatones: Dr. Sato is a real innovator, as you say, and he's a visionary. Back in 1966, that's when he first had the inspiration to start something that we now know at KAATSU. And he literally worked, self-experimented on himself. He was a biohacker in the 1960s, and his initial goal was how does he actually maintain his musculature? That was his goal.

For seven years, he experimented on himself. He started out using bicycle tubes. He then went to elastic tubing of some sort. And he tried KAATSU around every part of his body. So he would tie a tube around his mid-forearm, mid-leg. He tied bands around his forehead, his chest, his abdomen. And he finally came up with the system that we now are still currently using to this day.

So, that was seven years of self-experimentation. Then he proceeded to experiment on his patients and people around him; family members and friends during the '80s and '90s. And then it was in the mid-90s when a professor of exercise physiology at the University of Tokyo, who expressed an interest and said, "Dr. Sato. You're aging, but you're actually getting bigger. How is that possible?"

And when he, explaining it, he was doing it without weights, this exercise physiologist, Dr. *Ishi*, proceeded to do a variety of groundbreaking research, and that led to another 20 years of research that the Japanese have been conducting to this day. And Dr. Sato, with Professor *Ishi*, and then very specifically and more lately Dr. Nakajima, a renowned cardiologist at the University of Tokyo Hospital, did all the groundbreaking work between 1996 and about 2015. And that's where we are today.

Dr. Mercola: Okay. Well, thank you for that history. I first heard of blood flow resistance training or KAATSU specifically from Ken Ford, who is at the Institute for Human and Machine Cognition. I listened to one of his podcasts and discussed it and was really intrigued. And that was the first scientific explanation I understood of that. And you mentioned the Japanese doing a lot of the initial research. But there's been loads of research done in the United States – not just on KAATSU, but on the more generic version, which is blood flow resistance training. We'll discuss the differences between those two.

Because the reason I'm so fascinated with this is because it's –we have a problem in this country. As people get older, they have a tendency to develop muscle loss. It's called sarcopenia, from the two Greek words, *sarx*, which means "flesh" and *penia*, meaning

"poverty." So it's a progressive loss of muscle mass. And it's not just the muscle fibers that are being lost. It's the muscle strength.

So there's something more going on than just an atrophy. It has to do with the quality of the functioning units, primarily the mitochondria that get depleted and damaged and dysfunctional as one ages. And traditionally, heavy exercise training has been used; conventional resistance training. And that is typically done with pretty heavy weights. And there's this term that people need to understand, which is called the one-rep max, and that's the amount of weight that you can lift – the most weight that you can lift in one repetition. And that's your maximum. And typically when you're doing conventional strength training, you're working in a range of 60 to 80 percent of that number.

But with KAATSU, or BFR – and it's just easier to say BFR in the future. So I'll refer to BFR, which is an acronym for blood flow resistance training. You're using ranges of weight. You still use weight. Although you could use body weight in some cases. But in most cases it's 20 to 40 percent of your one-rep max. And I've been doing this for a few months now, but I've understood the principles. And I've learned that a competitive person will typically move towards the higher end, to 40 percent or even pushing 50 percent. But that's a mistake. You really want to use going to the 20 percent. So, literally one-fifth of what you typically, the most weight you can lift.

But you're not doing it with just a few reps. You're doing a lot of reps. You're going to 30 repetitions, at least on the initial first set. And if you can repeat the 30 in the next two sets, great. But if you go to 25 or 20 – and the key, at least with the upper arms is you want to minimize the amount of time between the sets. So typically, as Dr. Sato figured out, it's about 15 seconds, which isn't a lot of recovery time. So it's a lot of work, and really pushing it, and provides profound benefits, which we're going to talk about in a minute.

But I'm wondering, because I've read the books that Dr. Sato has published in KAATSU Academy. And it's unclear to me – at least it's somewhat nebulous, and I'm wondering if either of you can comment on the frequency of the training. Typically, well, one of the restrictions of it is that, at least for your arms, you only want the bands on for 15 minutes, and on the legs for 20 minutes. And you don't want to go any longer than that because that's just what has been figured out.

So I guess the question becomes because this is such a low, a light load, even though you're doing a lot of work, there's not as much muscle damage and you're able to recover better than when you're doing heavier weight training, which you're only doing most people a few times a week because it takes so long to recover. But you recover much quicker with BFR. So I'm wondering what the frequency of the training is and the parameters that you would typically advise individuals who want to do one or even more sets a day.

Steven Munatones: Go ahead, John.

John Doolittle: Of course, Steven.

Dr. Mercola: You know, John, before you answer, why don't you give us a little history of how you got into this? Because I think it's a really intriguing. You were, as I mentioned earlier, in the special forces. And you've actually come to my house and helped train me with this. And you have a very interesting history. So why don't you start with that first?

John Doolittle: Yeah. No problem. Hello, everyone. I retired two years ago out of the navy. I've worked in naval special warfare for 25 years. And when you work in the special operations community, it's not a matter of if you get hurt, it's when you get hurt. So as an example, I had 11 orthopedic procedures done on me over a 25-year career. My last shoulder surgery, the physical rehab, the physical therapist, used KAATSU on me. And it was an injury that was the exact same injury I had had when I was six years younger. And I recovered in rehab in almost half the time – about 60 percent of the time. So they definitely had my attention.

And what I think when we're talking about the rehabilitation aspect that you can use with this as a tool, when you're dealing with elite athletes, or tactical athletes or athletes, in general, and they get hurt, they oftentimes want to get after it too hard, too fast, too soon. And the beauty of the KAATSU piece is you can really stress the musculature and physiology of the body without straining the skeletal system. And I think that's really kind of the game changer when you're talking about rehabilitation. Because we're always interested in rapid rehabilitation. We want to get the guys back on the battlefield as quickly as possible.

So that's how I was introduced to it. I've learned a lot since those days. It's not just the rehabilitation aspect. There's also a recovery from heavy work, and a warm-up piece, and a whole 'nother

hormonal cascade piece that I know, Dr. Mercola, you're going to hit on during this segment.

Dr. Mercola: Yeah. Yeah. So with respect to the original question was the timing and the frequency. Are there any parameters you use for respect to the number of days a week that one needs to rest to recover from this? Or any guidelines with respect to using more than one set a day?

John Doolittle: Well, in the general, there's two forms of KAATSU that you know about, right?

Dr. Mercola: Right.

John Doolittle: You have the cycle function, which is a period of pressure on. And then a rapid complete depressurization. So on the device you have, it's 10 seconds of pressure on, 5 seconds of pressure off; 20 seconds of a higher pressure, 5 seconds off; 20 seconds of a higher pressure. When you're doing that type of training, you can do it as much as you want. When you're doing the sustained pressure – that's the second function. So going and training up to certain level of pressure and sustaining that; when you do that type of training, we try to tell the human performance strength coaches and trainers to not do that aspect more than once a day.

But what we find is when you're working really hard, right, especially when you're talking about these type-A personalities in the gym, getting after it, pushing heavy weight; one of the things the guys are almost always dealing with is that delayed onset muscle soreness. You hear people talking about DONS a lot. When you're doing KAATSU, because – and again, I'm not a researcher. And I don't have a science medical background.

But I can tell you from personal experience and with all my teammates, when you're doing KAATSU, because you're not tearing those fibers down, like we were talking about earlier, like 80 percent one-rep max; because you're technically doing light intensity load training, there's very little to any delayed onset muscle soreness from inflammation coming from tearing muscle fiber. So what you find is people can get after it very, very intense type workouts with KAATSU, and within a matter of hours feel like 100 bucks, like they haven't worked nearly as hard as if they had done that same level of intensity with heavy weight.

Dr. Mercola: Okay. So let me get in some of the science and one of the reasons that I'm so excited about this. Because as you mentioned, you're

really tricking your body, and you're tricking it into believing that it's lifting a weight far heavier than you're lifting. As a result, you're able to get the benefits of lifting the heavy weight with virtually none of the damage. And you just get the benefits.

So how do you get these benefits? It's because you're restricting the blood flow in the limbs. And it's either the arms or the legs – not at the same time; one or the other. And you do it – you stretch into a range that's about half of the arterial occlusion pressure. It's enough that the blood continues to flow in your limb. And that's important. You can't – this is not a total occlusion. It's a partial occlusion. And the blood continues to flow. So there's continued oxygen. But it's at a radically reduced level. But the venous output, the venous return back to the heart is stopped. So what you get is an accumulation of metabolites.

And to understand how BFR works is literally – and let me just highlight this – I have never seen in my entire life anything more extraordinary than BFR with respect to exercise. It is just the ultimate. And I am so saddened that I didn't know about this earlier, because it could have saved me so much time, effort, and energy. So that's why I'm sharing this now.

So why am I so excited about it? It's because of this trick. And the trick is – well, before we get into the trick, it's important to understand that the way that there's two types of muscle fibers. There's a type one, which is a slow oxidated, that uses oxygen, essentially. And they're usually smaller fibers and they're for endurance. And then there's type two muscle fibers, which are fast, glycolytic. They don't use oxygens hardly at all. And they use, in fact, a substrate of glucose called pyruvate. They metabolize pyruvate to lactate. I'm sure you've heard of lactic acid. And this is the burn that you get when you do conventional weight training. But you get this burn when you're doing the – even more of a burn because you have compression and occlusion of the limb.

So this lactic acid builds up locally, and it does magical things. When the lactic acid – it sends a cascade of hormonal and metabolic, of benefits; to cause a radical increase in the size – acutely and chronically of your muscle and the strength of your muscle. And in fact, I mean, you've heard the term frequently many people who are weight trainers say they're going to get **swoll**. Well, in fact, that is exactly what happens when you have occlusion training. I mean, your muscles will swell up.

Typically, it's at least an inch in circumference if you're doing it right. For me, it's about an inch and a half. So, my arms start at like 13 inches and they'll grow to 14 and a half after I'm finished with a set. And it stays enlarged and swollen for awhile. But anyway, what happens is because these type two muscles – because the type one muscle fibers are exhausted, there's not enough oxygen, the type two have to come in. And these are the type of muscle fibers that are activated in high-intensity exercise to give you all of these benefits. And you need type two fibers to actually grow the muscle.

So the lactate level accumulates. It doesn't escape because the venous flow return to the heart is obstructed. So it accumulates. And the lactate increases the osmotic pressure. And the result of that, water has to come in – this is what causes the swelling. But eventually, you're going to release the pressure, and the lactate that accumulated in some pretty high concentrations will go and do magical things in your body.

First of all, it flows out and goes to your brain. And there's actually – you know, your brain operates primarily in glucose, but we know that you can use ketones, too. Now, BFR has nothing to do with ketones, but it's an alternate fuel source. But it has everything to do with lactate. And this lactate is another alt – just like ketones are another alternative fuel source for the brain. And in fact, the brain can actually work to 68 percent of its energy can be done with ketones. And similarly, you can almost use the same amount with lactate. It can survive on about 60 percent lactate. And it works really, really well.

And it does, once it gets in the brain, and it gets in there through an MCT, which is a monocarboxylate transporter. It puts it into the brain. And it basically is fertilizer for the brain. And it produces something called BDNF, the brain-derived neurotrophic factor. And it's just incredible. You get smarter when you do this. Not just a little bit, but your brain starts to function at a much higher level – much higher level – because this lactate stimulation with BDNF.

And not only that, but there's two other magical things. It increases another hormone called vascular endothelial growth factor, which is VEGF is what it's called for short. And this is an angiogenic hormone. And why is that so important? Because as you get older, it's such a key component. The microcirculation, the capillary supply to your muscle, and specifically the type two muscle fibers, and the muscle satellite stem cells that surround those type two

fibers, are depleting. And they're not nourished as well as a result of – they're compromised.

And normally – and this is pretty intriguing. There are studies that show this that were done relatively recently. When you just do regular strength training with someone who has compromised some microcirculation with type two fibers, they don't get the muscle growth. You have to have good circulation. So this is why that is so key with BFR is because you increase by dropping that – that's fertilizer for your blood growth, or for your blood vessels.

So you get, stimulates all this capillary growth, not only in your muscles, but in your brain and in your heart, liver, all your tissues, which is really good, because you want good circulation, especially as you get older. So when you have an improved circulations in the _____ fibers, then you're able to stimulate those muscle satellite stem cells, and that's what's responsible for producing this growth. But you can't do it if you don't have a lot of good blood flow.

And then finally, another benefit is the high lactate levels inhibit a substance called myostatin. And if you haven't heard of that model before, it's somewhat like it sounds. Myo means "muscles" and statin means "stop." So it's a negative regulator of muscle growth. So when you have high levels of myostatin, which tends to occur as you get older, it actually inhibits your ability to produce muscle growth. One of the beautiful things about this training with the lactate, when you have those high lactate levels, it actually lowers your myostatin by 50 percent – cuts it in half.

I mean, it's as effective as taking – there's a lot of people who take drugs to inhibit myostatin. You can even go online and look at Google images and find myostatin growth or inhibited mice, or cows, even horses and see these pictures of these massively body built – looks like body building animals. And it's only because they've inhibited myostatin. So you can do the same thing with the BFR. And it also increases another hormone called F – it's actually a **playful** protein called follicular stimulating – no, follicle – follistatin, follistatin, FTS1. And that goes up by 900 percent. And this FTS1 actually inhibits myostatin even further.

So it does all this magic and essentially, for 15 minutes of an investment of time – and we'll talk about the intensity that's required in a bit. But you're going to get this incredible growth in your muscles and a radical improvement in the strength. And that is so important because sarcopenia is a massive problem. And one

of the reasons I've been so fascinated with this is that I lost both my parents within the last two years, and I failed – failed miserably – to address this as they grew older. And that's because I didn't understand it. I didn't know that there was simple, easy solutions.

And this is something that – it mean, it occurred with my own parents, so it's clearly occurring with most everyone out there. And that's not always foolish, or not an astute **observer** really fascinated with health. But it happened with my parents. And they became progressively weaker, and they were eventually bedridden – not bedridden – confined to wheelchairs, and that rapidly accelerated their demise. And I'm sure they could have easily lived for another few years with a higher quality of life. So this happens to everyone as you get older. It's inevitable, invariably inevitable. But we can delay it dramatically, which looks like this.

And it's not just that you want, you want to be buff. It's not bad to be looking buff, but you want – muscles serve a function other than just supporting you, helping you move around. They actually are, have a, they're a very important metabolical organ that comprises almost half of your body tissue is muscle. And it's the primary way that you're able to lower your glucose levels and add to the **insulin**. So, if you have more muscle mass, you're less likely to be insulin-sensitive, and develop diabetes or obesity. But also, it prevents frailty.

Frailty is what takes you out. It took my parents out; this progressive loss of your function. And not only frailty, but it provides a reserve. Because when you get injured, you're going to need a reserve of protein, and muscle is a magnificent source of proteins to reserve a protein to _____ we don't have access to it, but I believe that it would help your _____. So it's so important to have optimal muscle mass as you're aging. I don't know of any better intervention than blood flow resistance training. Because you don't have to use heavy weights.

And in fact, for someone like my parents, if they were alive now, I would just have, put the bands on them and just simply do body weight. You know? Just to biceps with just their hand weight, nothing more. And that probably really would have produced they'd did some training. Then I probably would have moved them up to a pound or two-pound weights. I mean, really, really tiny weights. And because of the restriction, you get this magnificent metabolic cascade of events that actually reverses, in some ways, the aging process. So, Steven or John, if you'd like to comment on that, and we can discuss it further.

Steven Munatones: Over 70 percent of our users are people over the age of 50, and most of those people, unlike the navy seals like John, or Olympic or professional athletes, they're not actually into any kind of resistance training. And we do exactly what you would have recommended to your parents; just actually go through the motion of movement, whether that's stretching, whether that's just extending your arms up with the bands. And we see the effects. Now, their arms may not increase an inch and a half as yours were.

But most of our users over the age of 50, they're not motivated, or they're not interested in inch and a half growth. They just want to be more toned, or be able to stretch and rub the top of their head, or touch their toes if they're standing up. So, those people with the products, they could use them up to twice a day, doing the **count** cycle, as John recommended – 15 times a day – I'm sorry – 15 minutes a day, twice a day. And without any extra equipment. And they find that to be effective, convenient, and very sustainable. Meaning they can do it 365 days a year, if they wish.

Dr. Mercola: Yeah. Yeah. It's just the – I couldn't agree more. This type of training – and we'll talk about the details of how one can access this in a moment. But this type of training, in my view, should be used by every single person over 50. There's almost no reason not to. And the other form of non-weight training, at least for something that's called KAATSU or BFR walking. Merely to put the bands right near your groin, and put them at a pretty high pressure, and then just take a walk, walk with it. That's it. And I do that pretty much every day. I walk typically supposed to do 20 minutes. I use a little lighter pressure so I could walk a little longer. But you'll get extraordinary **practice** just by walking, and you have nothing more than that, no weights at all.

Steven Munatones: Oh, yeah. You can do squats, and dead lifts, and pack races, and lunges, and a variety of other leg exercises. But you really don't need to unless you're seeking to **compound** it.

Dr. Mercola: Well, John, do you have any comment on it?

John Doolittle: Just that what we seem to see a lot of guys doing, especially in special operations, they'll have a prescribed workout, or the human performance program, that's already programmed for that day, and they'll go through all of that without a KAATSU, and then at the end of the workout, as a finisher, they'll put a KAATSU on, and they won't use any weight, and they'll do a lot of functional movement type things. There's that whole aspect of the

neuromuscular pathway enhancing that after a heavy workout, putting KAATSU on, and just doing something as simple as a very like half-speed grappling with jiu-jitsu, or krav maga, or shadow boxing, or even just light calisthenics. Something like that when they guys have the bands on at the optimal pressure can be a very intense way to finish out an already pretty intense _____.

Dr. Mercola: And one of the things that you do, and you helped me understand, is that you could put these bands on when you're doing things like swimming, and being a former navy seal and an avid master swimmer, you use them every day, pretty much, in your swimming exercises. And I am certainly not a swimming professional, but I use them pretty much every day. I do 15 minutes of backstroke with them on.

John Doolittle: If you're doing 15 minutes of sustained backstroke, that's actually impressive. You're right. At the end of, say, a master's workout, I'll put these on and go with some buddies of mine for five or ten minutes, and I'll be smoked. Something about being in the water column and being horizontal – actually, I have to back the pressure off a little bit from my optimal pressure on either legs or arms. But, yeah, absolutely. When you're untethered, the bands are waterproof. And aqua therapy is something a lot of the guys are using it for, as well.

Dr. Mercola: It's incredible. The applications are almost limitless if you're creative. So let me go into if you're interested in using this to increase muscle mass, and not necessarily into a sarcopenia directly in the elderly. But say you're younger and you have the potential to gain more muscle mass. And I couldn't recommend and intervention more **wildly** or more aggressively. But, and I want to describe the details of how to do that, at least from my experience, and you can chime in.

But from reading the literature, it appears that this, the blood flow resistance training is really probably one of the most effective ways to increase muscle size. But if you're – and it will increase muscle strength, but doesn't do as well as the conventional resistance training. That will do better with the 80 percent lifts. But you still – or 60 to 80 percent. But you're still getting stronger. There's no question.

So, to do this, to get this increase in size and to actually increase the concentration of lactic acid, you want to stay within the restrictions of it. You want to have the right pressure. You don't want it too tight. If it's too tight and you, you know, basically

there's a simple test to check capillary refill pressure, where you take your palm. You push your thumb into right below where the thumb on your other hand is, and you see how fast it'll turn white, and then see how long it takes to turn pink again. And that should not be any longer than three seconds. If it's less than two seconds, it's probably not tight enough. If it's greater than three, it's too tight. If you have any pain, you should definitely loosen them up or stop it. But, that's an – or tingling or numbness. You don't want to be pinching a nerve. So, but that's pretty – it's pretty easy to do.

You can find – there's a pretty broad range – probably between 40 and 60 percent of the arterial occlusion pressure. But you've got to get that pressure right. once you have that pressure right, then you can do the exercise. And the exercise should be restricted to 15 minutes for the arms, and 20 minutes for the legs. And normally you can – in my experience – you can fit in three different types of exercises within the time period; about five minutes per exercise.

So, like in this morning, I did bicep curls. And normally, I can do a bicep – I mean my one-rep max is probably 50, 55 pounds; probably at a 55. But I did it with 15 pounds, which is like perfect. In fact, I would probably go. I might even do 12.5; somewhere in there, maybe 12.5 might even be a bit better. But I did that, did 30 reps, nice and slow up, slow down; and then waiting for 15 seconds usually.

What's interesting is when I was doing peak fitness exercises, which was with an, for me it was primarily a _____, it was cardio high-intensity training. Me warming up, and then going all-out for 30 seconds, and then recovering for 90, and then doing seven or eight cycles of that. And what I noticed is that one of the things that happened is that there was still an increase in body temperature where you're sweating. And that happens almost immediately when you're doing this blood flow resistance training. You start to sweat. That means, in my view, that it's a high-intensity exercise that you're actually in this type of _____.

So you do that. Normally I do 30 reps, and if I can do 30 times 3, that's great. But most of the time it'll be the second set will be 25, and then go down to 20. And that's one exercise. Then this morning I did triceps. Did that for the same thing. And then I do hand grippers with the **extent** with the, to, with **lectures** of them of the forearms. And then by the times we'd finish those and did three sets of those, then it's 15 minutes and you have to take the bands off because you've reached your limit.

So that's – and you really want to push it hard. You don't want to push it _____ completely, but you really want to push it. You want to feel a little burning, which is from the lactic acid in your muscle. And then you get the benefit. You know? And it might be interesting for you to check the size of your muscle beforehand, which is easy to do. You just have your muscle not flex, but just put your arm straight out, and then put it around the middle of the biceps. And, you know, Steve, usually they have these tape measures that have a band that can go in. It's real easy to measure. So, typically, my arm's growing about an inch and a half. And it shrinks back after the exercise, but it's pretty interesting to see.

John Doolittle:

Well, one of the things that we're noticing – and I know we want to talk about the hypertrophic effects in muscle building. But I'd also like – you mentioned the **VEGF**, and I just recently learned kind of what that represents. There's a whole 'nother aspect with wound healing and wound care, and lower extremity wound care, and that kind of stuff. We see people that are working on these muscle strengthening or overall fitness, yet when they start having wounds that they're dealing with, they seem to be healing faster. So one of the things we wanted to talk with the VA about was what's going on with that in addition to the muscle building aspect? And I propose it as a question to you with what might be going on with that?

I experienced it myself. They did a case study on me. I just recently had a total knee replacement. And at the seven-day mark, they said, "Hey, these stitches should have come out already. What's going on here?" *[Laughter]* And at the three-week mark, it already looked like the five- to six-week mark. And I'm not talking about the muscle aspect, but just the wound healing piece of it.

Dr. Mercola:

Yeah. I suspect that's related to the improvement of the microcirculation from the VEGF. But one of the other components that we should have talked, discussed, or mentioned is that the improvement that occurs when you have an injury and you have to be putting your limb into a cast. And this is something that Dr. Sato initially observed. There was just a dramatic decrease in the **atrophy**. In fact, almost no atrophy occurs. Normally, there's quite a significant amount of atrophy that occurs after immobilizing a limb for four to six weeks. So, you can prevent almost all that muscle loss with just regular use of the blood flow resistance training.

John Doolittle:

And I have a great example of that. When I first met Dr. Sato, a little over two years ago, I had my family with me, and in Tokyo,

and my daughter at the time was ten, and she had just broken her arm. *[Laughter]* Family vacation. We're going to Tokyo. She breaks her arm literally the day before we go. So he put her in a soft cast. We got to Hawaii, put her in a hard cast. By the time we got to Tokyo, she had been in a hard cast for about three days.

And immediately, Dr. Sato, of course, asked if it was all right – or if we were all right with him doing some KAATSU on a ten-year-old. But that's exactly what he did. He put – because it was a cast that went almost all the way up to her armpit. He put the bands right at the most proximal part of the arm and had her do just that, that isometric hold during the pressure on phase, and in a relaxed or in a pressure off phase.

And he recommended for the next eight weeks that we – well, she was in the cast for another six weeks. But she did KAATSU isometric holds every day, morning and night, for the next six days. Now, this is a ten-year-old. But when she came out of the cast, her arms were the same size – both the forearms and bicep tricep; which, what I understand for a ten-year-old, at least, there should be pretty significant atrophy. And there wasn't.

Dr. Mercola:

Yeah. That definitely works. It's crazy not to use this. So, though, the only argument – and this is what I want to discuss, because it is a really practical component of this – is the cost of the equipment. Now, KAATSU is not inexpensive. There is a professional version, which is, I think, somewhere around \$5,000.00. The home version is typically about \$2,000.00 – the Nano, it's called. I know you're coming out with a lower-priced version, about \$1,000.00 or less. But that's still a significant investment for most people.

And the other alternative – and you can go on Amazon and find these, are just a blood flow restriction bands, which are typically under \$50.00 and in many cases closer to \$25.00. So that's quite a bit of significant difference. I mean, it's like almost a 40-fold difference in cost. So, I've been playing with these bands, too. And they are really – not only are they **inexpensive**, but they're so easy to use, and they're certainly less cumbersome than using the KAATSU.

Now, you cannot do KAATSU cycling, where it pumps up and goes down, pumps up and goes – all you can do is KAATSU training, where you have a consistent pressure. And you can actually get the benefits. But for many people, maybe that's all they need. So I'm wondering if you can address that. Because to me it seems the availability and the opportunity for most people to apply

this training is going to be based, is going to be limited by their finances.

And to have an intervention that they could use for \$25.00, and almost then, if they were elderly, they wouldn't need any weight trainings, weights at all. But if they did, they could use just water bottles from their house. They probably wouldn't need more than five to seven pounds, and that's all. So that's easy to figure. So it seems to me a pretty inexpensive solution for people to use, and it would make it more widely available. So I'm wondering if you can comment on the downsides of those and if there's any concerns?

Steven Munatones: I'll address this. I typically would look at cost as an inverse relationship to risk. And what I mean by that is when you put the band around your arm – and I have the band here – this band is actually the really hard part of this band was actually making the air bladder inside. The air bladder inside was really difficult to engineer. But we did it so that the entire limb sits on a bed of air. And therefore, when you move the limb and change its circumference, the band is not only elastic, but the muscle is sitting on a bed of air, and it adjusts appropriately.

Now, if you have cardiac issues, if you're taking medications, if you're older, morbidly obese, sedentary, et cetera; I personally would never, ever put a band around my arm that is non-uniform in its pressure. And with air, it's completely uniform. And also, it's, when you put bands on, the amount of pressure that is on the limb when it's not elastic will change. So, if I do this, if I go from here, there's a certain pressure on my limb, my arteries, my veins. And when I do this, there's another pressure.

And our whole company, everything that Dr. Sato has been working towards and accomplished is fundamentally based on one key principle, and that's safety. And because our core market is people – or are people – over the age of 50 and the oldest person that we have actively doing KAATSU is 104, this is our core market that we're trying to be extraordinarily safe about. And so it's really a safety factor. And if you're buying something for \$25.00 on Amazon, it means it was manufactured for maybe \$5.00. This is why we say cost and risk are in inverse relationship in the DFR market.

John Doolittle: Could I jump in, as well?

Dr. Mercola: Sure. Sure.

John Doolittle: Something else. With the cycle, when I first met Dr. Sato, he told me he never does anything with KAATSU on his clients and patients without doing the pressure on and off, a little more pressure on –

Dr. Mercola: Yes. The cycling?

John Doolittle: Yeah. When you're doing the cycling, you're warming up that vascular tissue. I mean, the way I kind of visualize it is at the capillary level a stretching, a holding, an engorgement aspect and then releasing. And then a little bit more during the next pressure and releasing. The cycle goes through that eight times. We never do any KAATSU sustained pressure until we've warmed up the vascular tissue.

It's one thing if you're talking about young, elite, or tactical athletes that are already doing all kinds of other exercise to warm up their system. But if you're doing, if you're a sedentary, somebody like Steven was saying, it's in our core market area that's 50, 60, 100 years old. And they're not warming up the vascular system before going right up to that optimal pressure, there's potential issues there with that. And I kind of think of it as a guy going into the gym. He's not going to throw 300 pounds on the bench press and get after it. He's going to warm up to that.

Dr. Mercola: I agree. So, and I would agree with that assessment, too. I mean, I own a KAATSU Nano, and I do use every morning the cycling; probably about three full cycles – before I do the KAATSU training. But I don't do the KAATSU training with the KAATSU system. I do it with bands. And Steven, I disagree with your assessment about safety. That's not been my experience. Most of the bands out there are elastic. And I couldn't agree more. You do not want to use a non-elastic band. So you would think you're going to save yourself some money, even \$25.00, and you'd use a cloth that's not going to give, that is just beyond foolish and very unsafe. But I haven't seen a band that's not elastic out there. So that would be – you know, it's not an issue. And they're pretty uniform pressure, except where the attachment is where it turns. So I don't think that's an issue.

But what is an issue – and some of these bands, they don't understand it for whatever reason – they only have two inch sizes. And you have to, you can't, you don't want too wide a cuff. You only want to restrict the band on the arm to one inch, and the one on the leg is two inch. Now, if you have 18-inch arms, you could probably get away with a two-inch band on your arms. But most

people don't have 18-inch arms. They have a lot smaller. So you gotta go to one-inch.

But, personally, I think the bands are great, and I think if you're on limited amounts of income and you can't afford – I mean, ideally, KAATSU would be great, and if you can afford it, unbelievable. I use it. I think it's a magnificent thing. But for those who can't, I mean, it's crazy not to get a \$25.00 band, use it appropriately. You've gotta do the warm-ups. You can't do something, if you don't have a KAATSU system, you can't use KAATSU cycling. But you can do some other type of warm-up. And then you just use the training. I mean, it's basically almost free.

And I don't think there's a really serious safety factor there. I mean, I've been using it for the last almost two months, and actually prefer it to the KAATSU for the training. It's just so simpler. You don't have to pump it up, and you don't have this extra piece of apparatus walking around. It's just easier. And going to the beach, I don't have to carry a machine with me to pump it up. You know, because I can't go over there without. And it's just, you don't want to bring that expensive machine to the beach. It's **hard** to be able to tie up once you're there.

Steven Munatones: Okay. So, anyway, I, we have new products. It's this small, the size of my hand. It fits in a shirt pocket. It fits in a pair of board shorts. So, it's \$799.00.

Dr. Mercola: That's a good price point. The problem with that, though, is it's got a lot of **EMF in**. It's got Bluetooth and –

Steven Munatones: No, no, no. So there's – what you're talking about are wearables.

Dr. Mercola: Okay.

Steven Munatones: That you use your cell phone. That's a separate product.

Dr. Mercola: Okay. What's that one called?

Steven Munatones: This is KAATSU Wearables.

Dr. Mercola: Wearables? Okay.

Steven Munatones: There are no bands on this. I'm sorry. No tubes on this. So it simply goes on your arm. But because I know people are worried about electronic –

Dr. Mercola: EMFs.

Steven Munatones: Right. This is a separate product from this.

Dr. Mercola: Okay. Good. And what's the non-EMF version called?

Steven Munatones: This is the non-EMF version called Cycle 2.0. It does both training and cycle functions, and it's customizable.

Dr. Mercola: Okay. Okay. Perfect. So then you can get the benefits of warming up. Now, the challenge for the smaller units, as I understood it, and one of the reasons I want the Nano is that it can't generate as high of pressure, which is a non-issue for the arm, but it is for the legs, especially if you've got bigger legs like I do. So you want to go higher. You really want to go all the way up to 400 millimeters of mercury. Now, obviously, that's above the arterial pressure, but it's not the pressure that's transmitted into the tissue. But that's the pressure that registers on the device. So can this Cycle – Cycle 2.0 you said – is connected – what's the highest pressure that that puts out?

Steven Munatones: Four hundred. It's the same.

Dr. Mercola: Oh, it can? Okay. Wow.

Steven Munatones: So we've dropped the price about a third.

Dr. Mercola: Wow. That's pretty crazy.

Steven Munatones: And there's more –

Dr. Mercola: Then that becomes, you know, from \$2,000 to \$800.00 is a big difference. That really opens up your market. So if you can, that would be the way to go. I did not realize that the price dropped so dramatically.

Steven Munatones: Yes.

Dr. Mercola: That's a good thing.

Steven Munatones: What we've done is – sorry. We've listened to the customers and we understood that price was an issue, so we dropped the price. We have made it easier to work with, and the size, the compactness, we actually, our engineers made it to fit in your shirt pocket or in your pants pocket.

Dr. Mercola: Yeah. That would work. Does it use the same bands?

Steven Munatones: It uses the exact same bands.

Dr. Mercola: Okay. Yeah. Well, that's a winner. So, that would be my new recommendation, then, is do it. It's called Cycle Two, you said?

Steven Munatones: Cycle 2.0.

Dr. Mercola: Two point oh? Okay. So, yeah. That would be, that's the sweet spot. I mean, obviously, there will still be a significant number of people who can't afford that for a price point, at which case you could save up for it and you could use the simple bands in the meantime. But, yeah, that's really a great development. I mean, that's just within – because I just got this system about four months ago. I mean, I found it at – I've known about it through Ken Ford, as I mentioned earlier, maybe about two years. But, I just didn't understand it.

I mean, even though Ken explained it pretty well, I just didn't full get it. I didn't think it was – for whatever reason, I didn't do it until I went to the Bulletproof Conference and met you guys at the, as you were one of the exhibitors there. And I realized it was something I had to do, and I'm so glad. Because it really is the best innovation in exercise therapy I've ever encountered. I couldn't be more enamored and passionate about it, and I think it's something that virtually everyone would benefit from. I guess unless you're quadriplegic, then in which case you can't get voluntary muscle contractions.

Steven Munatones: We do treat quadriplegics.

Dr. Mercola: Okay. *[Laughter]* I stand corrected.

Steven Munatones: Yes. And they're actually, their response is actually more significant. Because imagine someone who's been immobile for years. The only time they move is with passive exercise with their therapist. But now we put the bands on, and the amount of physical improvement, skin tone, musculature, vascularity, et cetera, are beyond what the medical community has even imagined. So our successes with the quadriplegics have been extraordinarily satisfying in all parties: caregivers, the quadriplegics themselves, the family members, and ourselves.

- Dr. Mercola:* How are you able to initiate a muscle contraction, though? How can they get the benefit? I mean, I understand the restrictioners. Just simply doing it without any contraction?
- Steven Munatones:* Correct. So initially –
- Dr. Mercola:* Wow.
- Steven Munatones:* – as the person is immobile, the very first effect, we do the KAATSU Cycle, just as you would: two, three, four times. And gradually they're – the tension in their muscles relaxes.
- Dr. Mercola:* Wow.
- Steven Munatones:* And once it's been relaxed, we have quadriplegics who have begun like this, and suddenly they're able to relax. Then, literally, if they can begin to just do a slight movement, we begin at that point, and gradually we get them to move.
- Dr. Mercola:* Wow.
- Steven Munatones:* And we do this morning and evening. The evening KAATSU is extremely important. Many quadriplegics have problems sleeping through the night. And so we do KAATSU ideally an hour before they go to bed. They sleep much, much better by all parameters. Therefore, simple things like a laceration on their leg, on their arm, et cetera; heals significantly faster.
- Dr. Mercola:* Gosh.
- Steven Munatones:* And so we have an active program right now with anybody who is a quadriplegic. And we love to help these people.
- Dr. Mercola:* That is fantastic. I had no idea that that would work. But it makes perfect sense, now that you explain it. Obviously, you have to use the KAATSU equipment for that. You can't do that with a band because you need the compression up and up. But I'm intrigued, not only with that, but with the, as you mentioned how the improvement of the sleep. And I'm wondering what you've noticed on sleep quality improvement and time. When you said an hour before, would this just be one or two cycles on the arms? Or do you do the legs, too? Or how does that work?
- Steven Munatones:* Ideally, you do three to five cycles on the arms, and then the equipment three to five cycles on the legs. But many business people, many professional athletes that cross time zones, or people

who are just under stress, we ask them to put the bands on their arms or their legs, and they do simple exercises, like rotating their shoulders, like a tricep stretch, just for typing e-mails, sending a text to your children or your spouse; something very simple. We do not want to stress the body so adrenaline is produced. We just want to relax the body to prepare it for a deeper sleep.

Dr. Mercola: I'm going to play with that. I had not considered using it. Because I typically do it in the morning. And I imagine it might be better to use it on a lower pressure. Would that be wise?

Steven Munatones: Yes. Yes. You're absolutely correct.

Dr. Mercola: I typically go about 270 on my arms for the morning. But I would maybe 200 or, 170?

Steven Munatones: Two hundred to 220, about 50 points lower would be exactly right.

Dr. Mercola: Okay. Okay. Yeah. Because that just wouldn't seem right. Because when you're going to bed, you don't want to be really exercising. That's not the time to exercise.

Steven Munatones: Right.

Dr. Mercola: But, this is a different principle, different concept. So it's interesting. I'm going to play with it tonight.

Steven Munatones: Yeah. We started this with our bedridden patients, patients with dementia, et cetera. And we noticed over the course of many years that the closer we were doing KAATSU to their bedtime, whether we were in a retirement community or in a hospital, that they were reporting back to us and their caregivers were reporting back to us how much better they slept and how much better, obviously, the next day they felt. And so we fine-tuned this, we fine-tuned this, and we literally have a jet-lag-slash-insomnia protocol, which this is a part of. And John can share this with you. Ideally, an hour before you go to bed, very simple movements. I would barely even call it exercise. Just simple movement at a lower cycle pressure; arms and legs, and take it off, and you'll sleep like a baby.

Dr. Mercola: John, do you want to comment on that, too? And do you think you could get away with just doing the arms?

Steven Munatones: Um –

John Doolittle: Absolutely. Oh, go ahead, Steve.

Steven Munatones: Yeah. Personally, it depends how I feel that day. If I have some – if I'm traveling from city to city and I have some e-mails to do before I go to bed, I'll have them on my arms. That's a very simple, just tapping away at the keyboard. Or, if I have some phone calls to my family, or to John, for example, I'll strap them on my legs as I'm on my cell phone talking, maybe moving my toes, or turning my ankles around. And that's enough.

Dr. Mercola: All right. John, do you want to comment on that, too?

John Doolittle: Yeah. I use it every night before – you know, one of the things we're dealing with with veterans and across the active duty space is guys that get stuck in this hyper vigilant state.

Dr. Mercola: Oh, yeah.

Steven Munatones: PTSD.

John Doolittle: Sympathetic state, and things like that. Anything, any non-pharmacological tool that's out there to help kick start that proper circadian rhythm, we're all about experimenting with that. And so yes, we're using it a lot to help guys with sleep.

I'd like to just jump back to the quadriplegic piece.

Dr. Mercola: Sure. Yeah.

John Doolittle: There's – and I'll use **Romy**, a friend of mine, as an example. A seventh special forces group guy. He was shot through and through; C7 was completely destroyed; total paralysis, all four limbs. What his therapists used KAATSU for on him is primarily to improve the circulation piece. But the immediate thing he started reporting back on after the afternoon sessions was one, he was sleeping better, which right out of the gate that's a game-changer for somebody.

Dr. Mercola: Mm-hmm. For anyone.

John Doolittle: But, two, and this kind of surprised me. I was not expecting this. In his feet and ankles, every time he gets horizontal, he has a neuropathic pain response that makes it very, very hard for him to go to sleep. And he has a pharmacological solution to that to just kind of knock him out to get to sleep. He found that the neuropathic pain piece was significantly better, and some mornings

when I talk to him after the fact, he said he had no neuropathic pain.

So I don't know all the details with how that autonomic nervous system goes with somebody that is truly a complete quadriplegic and has no muscular control of their limbs. But if you can improve circulation and you can do anything to help with neuropathic pain, that to me, when we're talking about especially the veteran space, and then we start getting into phantom limb pain and all these other things, that's in a really exciting space in the veterans affair scenario. That's why we're really leaning into the VA medical system.

Dr. Mercola: Well, just further confirmation that this is one of the most exciting innovations in exercise training, and really health that I've ever encountered. And as we mentioned earlier, it was developed by Dr. Sato in Japan five decades ago. And I'm wondering if either of you or both can comment on the prevalence or the adoption in the United States, because from my viewpoint it's just barely touched the surface – scratched the surface, rather. And there's not many people who understand it, let alone use it.

Steven Munatones: Correct. We have, I think, most 95 percent of our users range from San Diego to San Francisco, from New York to Boston. We have some cities; you know, Tampa, some pockets in Austin, Texas, Park City, Utah, that do use KAATSU, certainly on the professional and Olympic sports level. Those athletes are always looking for an edge. So it's very popular there.

But really, the amount of Americans who are exposed to KAATSU, or even heard of KAATSU or any kind of BFR is tiny. And it is a new space. It's got a significant track record of success. But we have yet to properly and comprehensively introduce this to our society. But through your greatly-appreciated work and support of this, we hope to change that equation.

Dr. Mercola: I do, too. Because it's really one of the missions of my site and professional life is to help people understand simple, inexpensive interventions to radically change their life. And KAATSU and BFR qualifies **this on** steroids.

But John, I would like you to comment on the professional athlete. Because one of the – not that that makes a big difference, but it might impress some people. I know it impressed me because I'm, I've been more interested in athletics is that the best or the fastest swimmer in the world, the one who is targeted to break Michael

Phelps' records at the next Olympics – I forget his name, but you certainly know him. He's using KAATSU training now. So maybe you could speak to that a bit.

John Doolittle: Sure. Who you're talking about is one of our biggest ambassadors for KAATSU. He is absolutely one of the fastest swimmers in the world. I don't want to say he's the fastest, especially with the world championships going on today. *[Laughter]*

Dr. Mercola: Well, I guess the Olympics – yeah. Yeah. The Olympics will turn out – will –

John Doolittle: But absolutely incredible. His name's Michael Andrew. And what's incredible with Michael is he doesn't just use it as a human performance aspect. He doesn't just use it for training. He also uses it for the recovery immediately after heavy work, and he uses it to warm up before an event. So, imagine somebody getting ready before a big swimming event. They're in the ready room.

And they have the bands on, doing not intense cycles, but still doing the pressure on, pressure off, engorging at the capillary level, holding that wide open, getting the vasculature nice and wide open right before an event to help with just simply improving blood flow. And then, right after the event, when arguably all the tissue in the major limbs is just saturated with lactic acid, depending on the type of event that he or she just did, now instead of going – and I'll talk swimming, because that's kind of my world and Steven's world. And the traditional way to approach a warm-down after any race is you hop right into the warm-down pool.

What Michael started experimenting with was instead of going into the warm-down pool, going right to the table where the trainers put the KAATSU bands on his legs, do a cycle on his legs, do two cycles on his arms, or vice versa, in order to help flush all of those toxins – a lot of the toxins and lactic acid out. Because when the bands – even when the bands are at a very tight aspect, they're never so tight that the blood's not moving. You already mentioned that. But the cardiac output, the stroke volume, has to increase in order to keep the blood flowing, right?

So now if you imagine you have the leg bands on, they pressure up, everything gets engorge distal of the bands, and now you have this rapid, complete decrease in pressure, and the stroke volume cardiac output has responded to these type bands. So now you have this almost flushing sensation. And you really feel it, for example, if you did a heavy, heavy, or a very hard dead lift day, and then

right after doing those dead lifts, or right after doing those squats, or whatever it is, you do some heavier cycles, you'll feel that flush.

And it's pretty incredible. So he had used it as a warm-up. He'll use it as a warm-down. And then in his training phases, he'll use, he'll swim in an untethered mode, which creates a pretty high lactic acid aspect, and the corresponding hormonal cascade that comes with that during the training. So he uses it for the whole enchilada.

[Laughter]

Dr. Mercola: Yeah. Well, thanks for sharing that. It's an aspect of the approach that I've not really fully appreciate, and I will definitely start integrating that into the cycling. And again, the cycling can only be done with the KAATSU equipment. There's nothing else on the market that does this, and we really can't do it with the bands – simple bands. So, that's good, really good to know.

John Doolittle: And something else with the cycles.

Dr. Mercola: Yeah. Let me just –

John Doolittle: Dr. Sato – oh, go ahead.

Dr. Mercola: Let me just finish this one comment, and then you can discuss it. But what I noticed with the cycling in the morning. Typically, I do some stretches, and then I'll do some pull-ups, dips, and push-ups; just one set, not three sets. And just with the cycling, and interesting, my arm circumference increases by an inch. Now, it goes to an inch and a half if I just use the training mode. But just simple cycling does it, which is just to me shocking. But anyway, sorry. Go ahead.

John Doolittle: I just wanted to add one piece, which was that Dr. Sato for decades has worked almost exclusively in the cycle mode. And even today when you go there, even if you're doing performance training with him, he will work in the cycle mode. He's a huge advocate of using it.

Dr. Mercola: So, can you expand on that? I mean, he does his training in KAATSU cycling, too?

John Doolittle: He tries to do the KAATSU cycle as much as possible. And I might defer to Steven on the details for that.

- Dr. Mercola:* Yeah. I would be interested in that. Because he's an impressive human being, and we're going to put up a picture of him. At 73 years old, he looks like he's 33 years old.
- Steven Munatones:* Yes. So he'll do KAATS Cycle, simply because the, at his age, he seeks the performance gains, as you do, whether he's stretching or doing some slow contraction of the bicep, triceps. He does a KAATS Cycle on his step master machine, where he works his legs. And he's been, he's the only one on the planet other than his wife who's been using it over 50 years. And both of them are incredible specimens. Just they're so healthy.
- Dr. Mercola:* Yeah. If you could send me a picture of her. I've only seen his picture. It would be interesting to see what his wife looks like so we have a female example of someone who's been doing it for five decades. *[Laughter]*
- Steven Munatones:* Yes. Her skin is amazing. It's 20 years younger than you would even imagine. It's really incredible. And that's one of the other aspects that Dr. Sato has long inspired. It's actually because there are so many capillaries in the epidermis for people who've had surgery, who have gotten in an accident, or have a small scar, or just a woman who wants beautiful skin, this KAATS Cycle is really the way to do.
- Dr. Mercola:* I agree. I've decided to move it up one step and actually have a hyperbaric oxygen chamber in my house now so that after I do my KAATSU cycling and BFR training, and going to the infrared sauna and swimming a little bit with some more BFR, then I'll go into the chamber for like an hour and a half. And I think that increases the oxygen and works very powerfully synergistically with that. So I'm hoping to get the combined benefits. So, either of you have experience with combining it with hyperbaric?
- Steven Munatones:* No. I have not.
- Dr. Mercola:* Okay. Well, I'll _____ what I find in the next few months. *[Laughter]*
- Steven Munatones:* What we have had – because we are now supplying KAATSU in 47 different countries around the world – many people are experimenting with all sorts of equipment that they have. And we've always advocated you can do KAATSU standalone, if you wish. Or you can do KAATSU and combine it with anything: an altered-G machine, a hyperbaric chamber. Whatever you would

like, it's an enhancement of what you're doing. It can also be a standalone modality, if you wish.

Dr. Mercola: That's great. So, I really appreciate you guys taking time out of your schedule to help provide a wider picture of benefits of this enormously beneficial strategy to improve your health. I think you really have to have your head examined if you don't seriously consider integrating it into your schedule. I mean, even as a simple basis of doing the BFR bands as a first step, and then saving up for _____ initially the Cycle 2.0, which is a really great innovation to reduce the cost by literally two-thirds of what the previous price was. So any closing comments or points you'd like to emphasize?

Steven Munatones: Our information is at KAATSU-Global.com. We welcome any and all inquiry questions. It could be from an academic researchers, PhD, and MD, or someone who knows nothing about exercise and science. We want to introduce this to the very best athletes and the quadriplegics from coast to coast.

Dr. Mercola: Yeah. John, do you have any comments?

John Doolittle: I think Steven closed it up pretty well. I would like just take this opportunity to say thank you to you, Dr. Mercola, for really helping spread the word for how much potential this has to help people around the world. The way I look at it is yes, you can help any athlete make incremental improvements. I'll guarantee that, 100 percent. But what's more interesting to me is that incremental improvement to an athlete, you can have an exponential change in life to somebody that might be dealing with metabolic syndrome, or hypertension, or a whole host of things that better circulation helps them with. So thank you for helping spread this with.

Dr. Mercola: You're welcome. But the big one is, of course, is frailty. And really what's motivated me most, as I mentioned at the beginning is my patients, who developed that, and they needed this, and I failed to recognize the importance that this could have had on them. And just as simply as putting the bands on them and having them do these simple exercises could have provided a dramatic improvement on the quality of life. You're right. It's not incremental. It is exponential. And you were talking about a radical change in the quality of their life.

And it's not so much about living more years. It's about increasing the health span of the quality of the life that you have in the years that you have left. And it's virtually – well, it's very challenging, if not – well, we'll just I won't say impossible, but very hard and

difficult to be a satisfying, fulfilling, fulfilled life unless you have access to adequate muscle function. And this KAATSU and blood flow resistance training will help you achieve it. It really is the single best, most effective strategy that's out there.

And I've been looking at this thing for 50 years, and I'm just deeply saddened that it took me that majority of those 50 years to find this approach. It's still radically effective. But hopefully people will consider it who watch this. And I actually mentioned earlier, too, I put together – it took me about three months to write this review paper, but I'm going to – it's going to be submitted to one of the journals real soon, and hopefully be published by the end of the year, and along with a how to implement KAATSU or blood flow resistance training. Because it really isn't that hard. You just have to do it, and it takes a little bit of time and effort, but it's certainly worth it.

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