

# **The History of Blood Flow Restriction Training: A Special Interview With Steven Munatones**

**By Dr. Joseph Mercola**

**JM:** Dr. Joseph Mercola

**SM:** Steven Munatones

**JM:** Welcome, everyone. This is Dr. Mercola, helping you take control of your health. Today we're going to talk about one of my most exciting new discoveries. That is blood flow restriction (BFR) training, which I perceive to be the greatest innovation in exercise training in the last century, maybe even longer. I've got a lot of videos and written information on that. But briefly, one of the reasons I'm so excited is it provides a practical tool, a resource that virtually everyone can use to get the benefits of conventional strength training, which uses really heavy weights, typically 70% to 85% of your one rep max, which can be significant, and precludes that for most elderly people because they just can't lift that heavy a weight.

So BFR training, when done properly will provide almost all the benefits and then some. We'll probably touch on some of those benefits later. But we have the person who is responsible for bringing this marvelous innovation to the United States, because it was developed by a Japanese, Dr. Yoshiaki Sato, in 1966, and remained in Japan – still is to this day – until literally this decade. So Steven Munatones, who is on with us now, is going to share his story.

I think it's really important, because this, to me, is a major historical landmark, bringing KAATSU, which is the name that Dr. Sato described to BFR training, to the United States. If it wasn't for Steven, we probably wouldn't be talking about this now, because it would still be restricted to Japan. A lot of it has to do with the Japanese culture. Steven speaks fluent Japanese and I'll let him tell you the story specifically. But he was basically the intermediary that facilitated bringing this BFR training to the United States. So welcome and thank you for joining us, Steven.

**SM:** Thank you very much. It's a pleasure to be here.

**JM:** Yeah. Well, I am so grateful that you provided this radical innovation to the United States. Obviously you didn't invent it, but you facilitated the introduction. It was a long and painful process. I want you to give your backstory, your history, how this whole story happened, because the world needs to know. Because I'm convinced that BFR therapy training is going to explode. They need to know how it got here and why.

**SM:** Yes. Well, Dr. Sato, as you said, invented it in 1996.

**JM:** 1966, right?

**SM:** I'm sorry. 1966. I apologize. For the next seven years, he experimented on himself. Why did he discover it? He was actually at a Buddhist ceremony, sitting on his heels. He felt his calf get very, very tight, just as if you did some heel raises with the barbell on your shoulders. He was thinking, "Gosh. My calves are tightening up. What could that physiological process be?" One thing led to another. Over seven years, he experimented with bicycle tubes. He experimented with every kind of string, strand and rope that he had. He put bands on his legs, around his waist, on his chest, his arms, forearms, even his forehead, to figure out what he thought was restricting the blood flow.

**JM:** He was a human guinea pig.

**SM:** He was a human guinea pig for seven years. He kept meticulous notes. How he judged success was, “Was the muscle mass increasing?” Initially, that was his parameter. He would do various things. Ultimately, after seven years, he found out that if you put bands on the upper arms and upper legs of the human body, not only could you improve your muscle mass, but also your strength and your performance. During the seven-year period, he did not do KAATSU on anybody. It was just a self-experimentation. And then he figured, “Hey. A lot of other people need to do it,” so he started a very small office just west of Tokyo, within the Tokyo confines. He continued to treat people over the next 20 years. Over those next 20 years, he found out other things. He started to work with other researchers. He started working with cardiovascular surgeons, with internists, with endocrinologists, et cetera.

All of this information was limited to Japan in the Japanese language. All of this data, all of this clinical research, the academic research was all limited to Japan, basically Tokyo, and the University of Tokyo Hospital, where he had colleagues. Come 2001, I was asked, because of my linguistic abilities in Japanese, to be a swimming coach for the U.S. National Swim Team at the World Championships that were in Japan. That’s when I first found out about Dr. Sato. The Japanese coaches introduced me to Dr. Sato. I visited his office in Tokyo. I saw a huge line of people waiting to see him at his office. The people would come out quite happy. I’d ask them in Japanese, “How do you feel?” They say, “I feel great.” I ask them how they felt before. They said, “There was a strain in my back,” or “I had broken my finger,” or a variety of injuries and ailments.

When I met Dr. Sato, he said to me very softly – he is a very humble man with a very soft voice – he said, “I was waiting for you.” I said, “Oh really? I didn’t even know about you until three days ago.” He said, “Well, I’ve been anxious to share this with the rest of the world, because I think everybody in the world should be doing KAATSU. I said, “Well, Dr. Sato, why haven’t you shared this with the rest of the world?” He said, “Well, there are two reasons. I don’t speak English, and I don’t travel outside of Japan.” I said, “Well, I do those two things.” I said, “Well, I’d like to learn. I want to try this. I want to learn about it.” I was not thinking about business at all. I was merely thinking about myself and my parents. Because I saw all these people going to Dr. Sato’s office, and they were all elderly. Elderly by, I would say, over the age of 50. I was in my mid-40s at the time.

He said, “Great. Please come. I’ll teach you everything. I want this information to be shared with the world.” I said, “Dr. Sato, I have to go back to the United States. But I’ll come back shortly.” He says, “Great. Take all the time you need and I’ll share this with you.” Well, that training period took 13 years. It was a very Japanese mentorship. I learned everything. I learned how to wrap the bands, what to look at a person physiologically. We went through the research labs. We used Doppler machines and ultrasound machines. We tested, prodded and poked people with blood samples before and after KAATSU. He really wanted me to learn what was the mechanism of KAATSU. That’s what I did for 13 years. At the 13th year, I visited Japan for the fourth time. I was going to Japan four times a year, visiting Dr. Sato.

**JM:** So that’s over 50 visits to Japan.

**SM:** Yes.

**JM:** To allow that technology and information to be transferred to the United States.

**SM:** Correct. Remember, when I first met Dr. Sato, there was no information written. It was all in his head. He had shared it at that time with about, I would say, 20 physicians or 20 academic researchers. It was all just clinical information. There was no How-To book. I had to write a How-To book. I had to capture the information in his head and what he had showed me and explained to me and make English words for that, because there was no English word. The only word that I kept the same was the original Japanese word,

which is KAATSU. It's formed by two Japanese characters: "K-A," which means additional, and "A-T-S-U," which means pressure. That's the additional pressure that the band and the equipment is placing on the limbs. And so everything else, all the words, all the explanations of KAATSU, we translated over the 13-year period. He wanted to make sure if I was the one who was going to share this with the rest of the world, then I had at least as much information as possible in my brain and in English to share with the rest of the world.

[----10:00----]

**JM:** Well, that's quite a story, quite a perseverance to persist for 13 years, over four trips a year, to Asia, which is quite a trek. I mean that's not a domestic flight at all, of course. A lot of time and effort. Can we maybe discuss the next step, which is actually the formation of the company in the United States and supplying the equipment to perform this?"

**SM:** Yes. Dr. Sato is a very clever man. He's not an engineer. I had lived in Japan for seven years previously, working in Hitachi R&D Labs. I had those skillsets as to how to develop a machine, how to create a product that attempted to replicate what Dr. Sato was doing with his own hands. And so after Dr. Sato said, "OK, you're ready. Let's form a company."

**JM:** Let me stop you there because this is new information to me. When you said, "What he was doing with his own hands," could you describe what the early work prior to the year 2000 was? Did he have a manual blood pressure pump? How was he getting these cups inflated?

**SM:** Yeah. From 1966 to I would say around 2000, he simply used elastic bands.

**JM:** Wow.

**SM:** They were very elastic. They were very, very long. Literally he would wrap the bands around the upper arms and upper legs. When I saw this and when he would apply it to many people, it was a very laborious effort. You'd wrap and you unwrap. You'd wrap and you unwrap, over and over again, over a course of 20 minutes. And if he'd see 10, 15 or 20 patients a day, he would literally be dripping in sweat. My engineering mind said, "Dr. Sato, we could create some bands or machines that would automatically replicate that."

Now, in order to do that, there was this step. How tight were the bands? What was that measure of elasticity? What was that tensile strength there? There was a lot of engineering work that was done in between the age of these elastic bands to the age of where we are now with pneumatic bands. I always laugh – When the academic researchers and the cardiologists et cetera asked us or asked Dr. Sato very specifically, "What is that pressure?" We had to find a measurement, a unit of measurement that was understandable to everybody. Dr. Sato simply went to the auto parts location. He bought a little device that measured pressure, air pressure. He put it on the arms.

And so in the early days, what we did was we used these elastic bands. However, we put this little device that told us, "What was that external pressure on the limb?" We had to do more testing to figure out, "OK. How do we keep that pressure consistent and uniform if we did eventually sell thousands and tens of thousands of machines around the world?" There was some engineering effort in there. It gradually, as the science developed, as we were understanding that the real benefit here or the most profound mechanism was actually increasing the elasticity of our vascular system. And then we went into what I call "the second generation."

**JM:** Why don't you stop there and explain what you just said? Because it's a bit confusing.

**SM:** Yes. Originally, when we would do KAATSU, anybody – it didn't matter if it was a young man in Dr. Sato or a 60-, 70-, 80- or 90-year-old. We were seeing increased muscle tone or increased muscle mass. We, Dr. Sato and the researchers, theorized that it was replicating heavy exercise. Therefore, the HGH, the human growth hormones, were being secreted. That was leading to increased muscle tone or increased muscle mass. But as we started to study more and more with magnetic resonance imaging (MRI) machines, Doppler devices and ultrasound, we realized that it was actually the strength or the elasticity of the three vascular walls – the inner, middle and the outer walls of our capillaries and veins – that were becoming more elastic. When that happened, there was a subsequent or secondary hormonal response. Now, we understand it as science has advanced. Now, there's a lot of different, very healthful metabolites that are being generated because of this increased elasticity of the capillaries and veins.

**JM:** What is your perception? Because there are so many metabolic hormonal responses from this exercise. But which ones are you referring to specifically with this elasticity of the blood vessels?

**SM:** The endothelial cells was the original one. We – Again, this is not my specialty, but it was the specialties of the doctors who were at the University of Tokyo Hospital. They saw that increase in endothelial cells, because all of the patients who I was looking at and I was studying under them were people who had cardiac issues. This is a very important point regarding safety. Sometimes as the story of KAATSU and blood flow restrictions transferred from Japan to the United States to Europe and the rest of the world, there was a focus on muscle growth. There was a focus on, "You can get bigger, stronger and faster." That is true.

However, all of that fundamental research was done under the work of Dr. Sato and Dr. Nakajima and Dr. Morita specifically, cardiologists at the University of Tokyo Hospital. Our patients, or their patients, were actually people who had heart attacks, strokes, heart bypass surgeries and other things. Those were the doctors' patients. Dealing with people with cardiac issues absolutely required for us to be, number one, safe. Having these pneumatic bands that were under a controlled pressure and quite gentle – People, they couldn't even get out of bed, let alone do pushups in the beginning, so we had to be very gentle and very safe. We were still seeing increased muscle tone. They were the ones, because of their specialty, who first identified the increased production of endothelial cells. And then it led to other metabolites that they concluded was the increase in the elasticity of the capillary walls that led to a variety of other effects.

**JM:** I'm a bit confused because after studying this, I came to a different conclusion. But clearly, the endothelial function is radically improved, which is why it's being used in Tokyo – not this country yet, but in Tokyo – and in many other places in Japan for cardiac rehab. Not because of the elasticity but because creating a hypoxic environment where there's relatively low oxygen tension when the bands are compressed and you're exercising the muscle. That catalyzes HIF1A, hypoxia-inducible factor 1-alpha, which catalyzes vascular endothelial growth factor (VEGF), which is the strongest angiogenic signal your body could possibly produce, very powerful fertilizer for the capillary growth and endothelial cells specifically. That's why it's called vascular endothelial growth factor. Isn't this the more likely mechanism or is it this elasticity that you're referring to?

**SM:** Yes. You explain it much more eloquently than I did, much more eloquently.

**JM:** It's not that I figured this out. I mean it's really clear in the literature. Let me just preface why I'm so fascinated with this. I didn't explain it earlier. I purchased a unit in May of 2019 and was just astounded, literally astounded. I played with it before, listening to Dr. Jim Stray-Gundersen, but didn't get it. I just used regular stupid bands. I didn't know what I was doing. That was two years previously, but I finally got the KAATSU equipment. I used it – Unbelievable results. I said, "This works." I didn't really get the benefits from what your company was telling me, so I just dug into the literature. I read hundreds and

hundreds of articles on it. There are a lot of well-documented, well-published research on this. It really explains in a very detailed level what the heck is happening and why it works.

**SM:** Yeah. That research and study is still continuing.

**JM:** Yeah. They didn't stop.

**SM:** For example, because of the cost of the original equipment, it was pricey, without a doubt. It was pricey.

**JM:** It was like 5,000 dollars or maybe even more when it first came out.

**SM:** When it first came out, it was actually 16,000 dollars.

**JM:** OK. Sixteen thousand.

**SM:** Again, the early equipment was very large. Like anything that's an engineered product, we make it better and better and better, and generally smaller and smaller and smaller, and easier and easier for the average person to use.

[----20:00----]

But in the beginning, because it was so expensive, people were not using it on a daily basis. Suddenly, as our product was getting less expensive, people are using it more on a daily basis. They saw even more increase. It actually took the paraplegics and quadriplegics to really open our eyes as to what is possible. Because these people felt so much better because, again, being paraplegic, they have portions of their body or all of their limbs that are immobile for a variety of reasons. But we were still using the bands on these individuals. They started to use KAATSU two or three times a day. Again, we saw another incremental shift in their improvement.

**JM:** Let me just be clear – Because people will be wondering, “How could they use it if they're going to be doing weight training?” This was just the cycling they were doing. You were putting the unit on. It's pumping air in, maintaining the pressure and then repeating it multiple times.

**SM:** Correct. And then what we did with their caregivers, we do what we call passive exercise. They put the bands on. The air would go in for 20 seconds, release for five seconds, in for 20 seconds, release for five, as the caregiver would be lifting their arm or moving their leg. And then we saw the people, through Dr. Sato's work with the cardiac therapy patients, he would always advise them or advise them through me to try to move the arm. Suddenly we have quadriplegics who started to go like this or started to go like this. Their spasmodic conditions were now released. They were able to move their pants a little bit. They weren't necessarily able to suddenly walk, but that simple movement drastically increased their quality of life. As we continue to go along this journey, we continue to explore different mechanisms, different metabolites that are being produced. To this day, we are still learning. Dr. Sato and all the Japanese are still learning. We're still pushing the envelope past to what is possible.

**JM:** OK. I want to go back to the early days because I'm curious as to the transition. You developed this large machine, 16,000 dollars at the initial implementation, which is now down to 800 dollars. It's called Cycle 2.0. It's the size of a deck of cards, maybe two decks of cards. It's pretty tiny. It basically performs everything the individual would need to use. If you're a professional, you might need a higher level of equipment. But any end user only needs the small one. It's down to that price. But when you developed the unit, you mentioned that he was wrapping his patients with these elastic wraps. At what point did he convert

over to using these mechanized units? I assume – I don't know because I haven't asked previously – that in Japan they're all using these mechanized units now. At least at Dr. Sato is.

**SM:** About 2005, the first prototypes were made. They went into market in about 2006. That was the transition from the elastic bands manually put on, non-pneumatic, to some pneumatic bands that were – I'll call them semi-automated at that point.

**JM:** OK. Good.

**SM:** There are still some. Remember, at this time there was only a handful of practitioners in Japan. Once the shift made from the non-pneumatic, manually applied elastic bands to the semi-automatic, pneumatic bands that physicians and physical therapists could actually dial in this specific pressure, then that increased to thousands of practitioners in Japan, from chiropractors and physical therapists to physicians of all sorts.

**JM:** Yeah. Now, I want you to go into some details and explain the manufacturing processes of constructing these bands. Because just superficially, they appear to be pretty simple. Almost everyone has seen or had a blood pressure cuff applied to their arm. They're probably thinking, "Well, just make a thinner blood pressure cuff. It would be great if it was that simple. But apparently it's not. There are a lot of complexities to this. I'd like you to walk us through how that band was constructed because it's not intuitive that this is a really complex band and why it cost so much to manufacture and charge itself.

**SM:** Correct. The band itself has an air bladder inside. That air bladder only is inflated to one side. Imagine a balloon. When you blow up a balloon, it expands uniformly. When we blow up the KAATSU band, it does not expand uniformly. It expands in one direction, the direction toward your skin.

**JM:** Does a blood pressure cuff blow up symmetrically too?

**SM:** No. It actually just squeezes. It's an inflexible piece of plastic that squeezes the arm. I wish I had the blood pressure cuff. But it covers the whole of the upper arm.

**JM:** It's a tourniquet.

**SM:** It's a tourniquet.

**JM:** I'll let you continue. But differentiate between a tourniquet and what the KAATSU bands are, because that is a massive and vitally important piece of information that you have to understand if you're going to make a decision on how you're going to implement this program.

**SM:** Correct. People say, "Oh. That looks like a blood pressure cuff. That looks like a tourniquet." Outwardly, it does. Except, the tourniquet keeps the blood out. It occludes momentarily, so the physician or the nurse can check your blood pressure. The KAATSU bands are specifically designed to keep the blood in on a practical basis. It reduces the venous flow back from the limb, to the torso.

**JM:** Almost completely. It completely obstructs that, the venous flow.

**SM:** No. It doesn't completely obstruct it. We call it "blood flow modification," because there is always blood going in and there is always blood coming out.

**JM:** That's when your muscles are contracting, right?

**SM:** Right.

**JM:** If it's not contracting, it's not returning.

**SM:** Correct.

**JM:** The elasticity and the pressure allow it to actually return some of the blood.

**SM:** Correct. That's why the cycle – pressure on, pressure off, pressure on, pressure off – enables that blood flow to continue, the arterial flow in and the venous flow out. That is very important. When a person does KAATSU, the palm of their hands and/or their feet become very pink, even a rosy, beefy red. In some athletes and very fit people, it actually turns it deep purple. Because what's happening is all that blood is going in and is being modified coming out. There is what we call “blood cooling” in the limb. That is the catalyst for a bunch of metabolite hormonal responses in the body.

**JM:** OK. Great. But I guess here is a good point to transition into alternative devices that are being implemented, or in some cases, primarily a physical therapist, health professionals, almost all new physical therapists now are Ph.Ds. I mean they're clearly professionals, no question. They're well-studied and very good at what they do. I want you to discuss this because it's a really important thing. I'm going to actually interview one of the leading physical therapists shortly, who teaches this. But they, for some reason, have embraced – is the best word I was searching for – the preexisting surgical tourniquets that are used in surgery to completely obstruct blood flow in the limbs so the surgeon's going to operate on them. They have U.S. Food and Drug Administration (FDA) approval, so they can be used by a clinician for anything else that they deem appropriate.

Mostly physical therapists have deemed it's appropriate to implement blood flow obstruction therapy, which is BFO, completely different than BFR training, and fraught with huge risks, major potentials of blood clots and hypertensive crisis. It's just a nightmare. I don't really understand how they're getting away with this. It really frightens me because it's such a powerful tool and it seems to be – My take on it is because these preexisting devices existed, which are not that expensive. They're probably in the range of the price of the new KAATSU unit. They were very competitively advanced before the new one come out. But that would be the only advantage. It seems like these companies are trying to take advantage of that and dual-purpose their devices. What's your take on that? Explain in more detail what the dangers are.

**SM:** Yes. I always explain it very easily. I have no problem putting this on my parents. Again, back in 2001. That was the initial –

[----30:00----]

**JM:** The KAATSU device.

**SM:** The KAATSU device. Yes.

**JM:** Let's take a little tangent because I'm really curious. How are your parents doing and how old are they?

**SM:** They're 82 and 83. They use KAATSU daily. Sometimes twice a day. They have their own unit. I could tell you all kinds of anecdotal things that went well, that improved with them. Their muscular form is great. They're very active. My mother uses it in the pool and for her arthritis. My father uses it for his varicose veins and while riding a bike. They use it in a variety of forms. They've really been my guinea pigs. I knew if I could get my parents to use this safely, in the comfort of their own home, without any

problems – Both my parents have had cancer. They are doing quite well. Every time we develop a new product, they are part of our initial –

**JM:** The longest users elderly individuals of KAATSU in the United States, your parents.

**SM:** Yes, yes. Almost 20 years, actually.

**JM:** That is great.

**SM:** They've used KAATSU through hip replacements, knee replacements, et cetera. They do not go to a physical therapist after their surgeries. They just come home. They know how to use the KAATSU bands themselves. Now, of course I've always been there with them. They live very close to me. It's quite easy to implement.

**JM:** That's wonderful. We didn't mention earlier is that it's a wonderful tool for post-surgical rehabilitation and really regaining the function in the fraction of the time that you would normally anticipate.

**SM:** Correct. Going back to your issue about the difference between the competitive products that are espoused and used by physical therapists and KAATSU. We have to go back to the original intention of Dr. Sato. The original intention of Dr. Sato was literally for every person on planet Earth, anywhere, anytime, to be able to do KAATSU. That's a difficult bar to hit. We had to make sure that it was safe to use for every person on this planet. Now, I'm not saying that every person on the planet will want to use this or should use it, but that was our engineering goal: to make a product that you could use at whatever age, in the comfort of your own home, without a medical practitioner actually applying it. And so we had to make rule No. 1 is very safe; rule No. 2, easy to use; rule No. 3, Is the person motivated to continue to sustain KAATSU? Because if we make a product that's safe, if we make a product that they could use in their own home, but they're not motivated to continue their rehabilitation or their training program, then we haven't achieved our goal.

So we set out to engineer a product that was easy to use and effective at the same time. Therefore, when other products come on the market and you have to go to your physical therapist and you have to use your own medical insurance to get reimbursed or pay for this, we believe that is the door for global adoption. We've been very careful. That's why our original, our very original patients who are using this were among the most vulnerable patients possible, those with heart attacks, strokes, clots and have undergone other cardiac surgery. If it was safe for them, we knew it would be safe for most people on this planet.

**JM:** Yeah. Essentially, there are no restrictions for use of this product, as I understand. I mean it's safe for just about everyone, even pregnant women.

**SM:** Yes. In the United States, we do not sell to pregnant women because if –

**JM:** You've heard of the liability risk.

**SM:** If something happened, it would be easy to point to us. But in Japan, that's not an issue. People have to understand that when they put the bands on, it's just 20 seconds of pressure on, and then it releases. It's a very momentary amount of pressure that's done. It always starts off very, very gently. You can put it as high as you wish. Part of our company ethos is actually to teach people how to apply it to themselves safely. Because we want people to use it in the comfort of their own home, in their office cubicle, during travel, vacation, business trips, et cetera.

**JM:** Alright. Well, let's delve into the two types of KAATSU training that are available. One is pretty much what you have been referring to in this entire conversation, which is cycling, and then the training mode. Now, cycling means it's going on and off 20 seconds on, five seconds off, although in some units, you could vary that cycle. That's usually eight repetitions so they could use four. But with the training, it's continuously inflated when you're doing heavy exercise. I'm curious – I didn't realize, but it sounded like what Dr. Sato was doing prior to the mechanized system was available. He was essentially cycling with the elastic bands. Is that true?

**SM:** Yes. Correct.

**JM:** That's crazy.

**SM:** Yes. That's why it was so laborious. You'd have one patient who would do, let's say, 20 minutes on the upper body and 20 minutes on the lower body. But that would mean that Dr. Sato would be wrapping the band on both limbs, approximately 20 to 30 seconds and unwrapping them, wrapping them again, unwrapping, wrapping.

**JM:** No wonder why he was so fit. He was working out like crazy for years.

**SM:** Yes, yes. And so that process, that KAATSU cycle, that was actually started in 1973. I always enjoyed this story. Dr. Sato went on a skiing trip. He broke his ankle. He instinctively knew, thought or theorized that KAATSU would be helpful for his bones to heal. Now, he'd come from a long line of physicians. His father said, "Come into the hospital. We'll take care of you." He, being sort of the rebellious young son, said, "No. I'm just going to treat myself with KAATSU."

**JM:** Just to be clear. Dr. Sato is not a medical doctor. He's a Ph.D.

**SM:** He did not go to medical school. Correct. He wrapped his leg with the bands as he normally did. And because there was so much blood pooling in the area where his ankle was broken, it was very discomforting. He unwrapped it after about 30 seconds. He says, "Well, there's a lot of blood going to the injured part. That's a good thing. I'm going to wrap it again." That was the catalyst for this KAATSU cycle. They've been doing that for decades now. However, what you're referring to is KAATSU training. KAATSU training is when you don't want to be tethered to a machine.

**JM:** Yup.

**SM:** You want to go out for a walk. You're a boxer and you're boxing in the gym. You're a swimmer in a pool. You are a cyclist. In this case, we inflate the bands to what we call your optimal pressure, whatever the appropriate pressure is for you, and you can untether yourself from the machine and go ahead and do whatever exercise or motion that you want. We recommend that as limited to 20 minutes. Ideally, if you're doing this between, I would say, seven and 12 minutes, it's very healthy and very good for you.

**JM:** OK. Perhaps you can elaborate on when you would use each type. It seems to me that the training mode might be better suited if you're interested in gaining muscle mass and strength as the cycling. Although they're probably pretty similar with some of the other metabolic hormonal benefits. That's my impression, but I don't know. You're really the pioneer in bringing it to the United States, so –

**SM:** It really depends on the individual. If you have somebody who's bedridden, if you have someone who is just beginning the training program, they may be overweight, they may be deconditioned for whatever reason, or maybe they're coming off of a broken bone or a surgery. They're not going to go to a gym. They might not even want to lift dumbbells. In this case, we can do the KAATSU cycle and just ask them to

move their limbs very slowly as they contract the muscles, their muscles. That has the same effect as taking off the bands – I’m sorry – taking off the tubes, untethering the bands and just doing what we call KAATSU training and lifting the dumbbells.

Many of our athletes, they’d love working out in the gym. That’s what they love to do. They don’t want to have a machine tethered to them. In these people’s cases, they untether, and they go ahead and do their own training as they normally do.

[----40:00----]

**JM:** Yeah. Let me attempt to get people a visual because this tethering is obvious if you’ve seen it, but if you haven’t, it might be a bit complex. So the KAATSU device that you’ve developed, especially the new one the size of a deck of cards, is attached to plastic, very flexible tubes that actually go to the restriction bands. The device itself is a pump that pumps air into it and gets it to the right pressure that you preset it at. But you’ve got these long tubes that could be up to three feet long and it can be kind of cumbersome if you’re moving around the gym. I mean you could attach it to your belt or in your pocket but it’s still a bit of a hassle. You can separate it and then remove it from that, and the band will retain the pressure.

**SM:** Correct.

**JM:** Another interesting distinction I want to bring up, because I’ve tried a lot of different systems. Even at 800 dollars for the new KAATSU, still some people may find it too expensive and search for less expensive ones – and they do exist. You can go on Amazon and find them. But what I’ve seen is they’re more similar to the blood pressure cuffs. In other words, they’re not elastic. They’re too wide. And they use a blood pressure cuff machine. They’re not manual, so it’s really difficult to do the cycling. And even more, I’ve noticed is that when you use the blood pressure cuff, the manual pump that they use for those, you can’t get it accurately. It just goes up and then it falls. It’s really hard to get it tuned in. Where with KAATSU, it’s a digital system. You type into it the number, the single digit, what your pressure needs to be, and then, boom, it goes right there. It couldn’t be more simpler.

**SM:** Correct.

**JM:** It’s so elegant. There’s no other system in the world that does that right now.

**SM:** Right. And remember, that is our goal. Dr. Sato entrusted myself and my colleagues to share this information with the rest of the world. He entrusted us with his intellectual property to develop products that were easy to use, that were safe to use and that are effective to use. And again, my database, my test group, if you will, are people my parents’ age. If I can get an 80-year-old to use a digital product easily and simply, and they can replicate that day after day, then we’ve achieved the goal that Dr. Sato set out for us.

**JM:** Yeah. Well, I would agree with that assessment. You’ve created a device that is essentially available to almost everyone. Now, I’m going to propose an alternative because I was very skeptical with this, and certainly not willing to make an outland investment in this equipment. At the price at that time, this expensive device was worth 2,000 dollars. So now, it’s less than half that. Still, some people may find that too big of a challenge. Although realistically, and there are some other investments. If you don’t have weights, you’re going to have to get weights. That might be another 100 or 200, maybe 300 dollars, depending on what range of weights you want to acquire. But free weights, typically dumbbells.

But the toe in the water, so to speak, are elastic bands that you could buy for 15 dollars, on your arm. They’re Velcro-attached, so they literally can go on in about two seconds, as opposed to what Dr. Sato used to do, prior to the device. I mean, wrapping that thing took a lot longer than two seconds. This may be even

a second. You could actually even do cycling with this if you wanted to. It's a lot easier, of course, to do training, because you only have to put it on once. But I think in my view, 15 dollars is a very low-risk investment to at least see if something that you think you could commit to. Once you get comfortable with it, you say, "Wow. This is crazy good," then you could take the next step and get the KAATSU equipment. It's sort of like a trial. What's your take on that?

**SM:** Obviously, we always want people to use pneumatic systems.

**JM:** Yes. That's the best.

**SM:** The best, and it's the safest. How they find their way to KAATSU is up to them. They could try something else. They could go to – Right now, because there are so many units out there, not only our units, but other competitive units, you can try anything. We always tell people, "Hey, try everything that you want." Again, Dr. Sato entrusted us to share KAATSU with the world. We know that we could not have possibly have 100% market share, so we'd like people to do research and provide products. We just are hopeful that our solution is the best, and some people will be willing to pay for it, and some people cannot. And so we're hopeful that however way they get to KAATSU, they'll find us there. If it requires a test –

**JM:** The reason I mentioned that is these elastic bands do meet the two criteria. They're thin. They're an inch and a half wide. They're not the wide ones. And they're not static. They're dynamic. They stretch. The risk of having a hypertensive crisis or a blood clot is almost identical to the KAATSU. It's not as good because you're not going to be able to be as precise. You're not going to get the cycling as precise. But you should get benefits with virtually no risk, and at least enough to be intrigued with the process to make the investment.

**SM:** Yes. Again, how people find their way to us is great. We're just very thankful. Again, Dr. Sato entrusted us, the KAATSU Global Team, to share this invention with the world. Thank you, Dr. Mercola, for, first of all, trying it on yourself, at your home, walking on the beach, et cetera. We love for people to take the same path as you did.

**JM:** Yeah. Well, my initial strategy was to try it with bands that were not effective. I used the wrong bands. They actually were somewhat risky, although I'm pretty healthy, so it wasn't a big of a deal. But if I had had a stroke or a heart attack and I had really poor clotting factors, that could have been an issue. It could have taken me out early. But if you use the smaller bands, I think it's fine. And at least you know it works. And then it's a commitment.

But realistically, at the price point now, it's less expensive than almost any large piece of gym equipment, like a treadmill or a recumbent bike, stationary bike that you pick. I mean, they're going to be probably more expensive – or an elliptical machine. These are all pieces of equipment that are typically well over 1,000 dollars. In my view, in most every case, it's a pretty serious mistake and a really poor investment. If you're doing it to improve your health – And this is coming from someone who exercises, hardcore cardio, for over four decades, so I'm not saying it without some substantiation and personal experience, and I regret doing that.

I think it's an important investment and use of your time. I think you're going to get far better benefits, especially these metabolic benefits. You get some from cardio, but you're not going to get the same ones. You're not going to get the same benefits, especially as you age. The older you are, the more important this becomes, which is why I was so curious as to how it was working for your parents.

**SM:** Correct. And we always tell people, "Yes. It's 800 dollars. But we have this product that people should use and can use twice a day. Let's just assume that you go on vacation. You have some days that you may

not use it, so you're using it 300 days a year. If you're using it twice a day, that's about 2.5 dollars a use. Now if that eliminates the need for you to leave your home and go to a fitness gym and come back, this cost saving is significant.

**JM:** Yeah. As opposed to a gym membership, for most people. Now, I do want to interject too that my view at least, especially in reviewing the literature and knowing a lot of competitive athletes. I think there is benefit to do both, so that if you're a serious competitive athlete, you just don't want to do KAATSU and nothing else. You do your whole entire regimen, which may include and should include conventional strength training. But the combination of both of them is beyond extraordinary.

**SM:** Absolutely. We always say that KAATSU is a great overlay, a great addition, a great enhancer to those people who are competitive athletes. You could be someone who wants to make a varsity team in high school or college, Olympics, pros or whatever. Do what you do to make you the best that you can be, and get that advantage with KAATSU.

**JM:** Yeah, yeah. I mean in my view, the use of it for competitive athletes is a really small percentage of its value. I mean, it's great, but who cares? I mean, this is something that can radically transform the healthcare system, because we all need exercise.

[----50:00----]

There's just no question about it. The older you are, the more you need this. It will not necessarily – It should improve your lifespan. But more importantly, it's going to improve your healthspan. In other words, it's going to keep you healthier longer, free from disease, fully mobile, not frail, being able to have your normal daily activities and move around like you were designed to, and actually improve your mental clarity and acuity. These metabolic benefits are profound.

You know, one of my passions is NAD, nicotinamide adenine dinucleotide, a very important coenzyme in your body that has become more recently appreciated in the last decade – some of the work out at Harvard University and Massachusetts Institute of Technology (MIT) on sirtuins and longevity proteins. Well, the exercise in general, but specifically BFR training and KAATSU, can increase your NAD levels by 30%, and there's no charge. Some of these NAD supplements and precursors, they're like 1 dollar or 2 dollars a day. I mean that alone can justify the cost of the equipment, because you're not paying for expensive supplements because you're having your body make this. And it does work. We've got documented studies where just the exercise, nothing else, will increase your NAD levels. That, we know, has profound influence on your healthspan.

It's just a miracle in a box is what it is. I just – I couldn't be more passionate about encouraging people to consider this as one of the most valuable tools in their armamentarium to keep themselves healthy for long-term. One of my greatest disappointments in life is that I failed to find this prior to my parents passing away a few years ago. I did encounter it while they're still alive, but it never clicked. I never got it until two years later. At that time, they were already gone. I'm sure it could have added another five or 10 years to their life and improved their quality to ambulate and not be restricted to a walker or a wheelchair.

**SM:** Yes. Again, that was my original goal. How can I help my own parents as they aged to remain as active in my children's lives, their grandchildren's lives as possible? It's so far proved an immense benefit.

**JM:** Yeah. That's a noble goal. I congratulate you for doing that and really serving your parents well. Ultimately, that's one of our responsibilities. I believe there's a lot of good support for that. "Honor and respect your parents and take care of them like they took care of you." They brought you into this world

and you need to make sure that they're well taken care of as they age. One of the best things you can do is to make sure that they maintain their health. Be with them.

Here's another important part that many people don't understand. When you become frail, when you lose muscle mass and you go into the hospital, you radically increase your risk of not coming out of the hospital alive. I mean the risk of complications and disasters when you have low muscle mass and you're frail is enormous. So you need this reserve. When you don't have the reserve and you go in, you're not going to come out. So not only do you have to have the reserve – but then, of course, as a child of your parents, you want to go in with them and make sure someone else is with them in the hospital, because the hospital is a very dangerous place. There's a good chance you may not come out alive just from a simple, stupid mistake, not intentional mistake. It doesn't matter. Once you're dead, you're dead. So someone's got to help you and monitor you and make sure that no one's injecting something that shouldn't be there or giving you medicine that's for someone else, or the wrong strength or dose. I mean it's a dangerous place. But having muscle mass improved by the KAATSU or BFR training is one of the most important strategies in my viewpoint to keep yourself healthy and out of the hospital. But if you ever happen to go in, you're more likely to come out alive.

**SM:** I couldn't agree with you more.

**JM:** Yeah. Alright. Well, I want to express my deep and sincerest appreciation and gratitude for all the persevering work you did in bringing this incredible tool to the United States. I mean it takes a rare individual to do that. Truthfully, I wouldn't have done it. I absolutely would not have done it. I would have not gone to Japan four times a year for 13 years before I was able to get it into the U.S. That was just too big a barrier for me. But I'm glad I didn't have to do it and you did it.

**SM:** I'm glad I did it.

**JM:** Yeah.

**SM:** It was a long road.

**JM:** Yeah. It was a very long road. I think it's important for people to understand that. Because they'll think, "Oh. This is some marketing gimmick they're trying to hype." No. This took decades and decades of engineering and reiterations to get this thing at this price point where it's affordable, useable and available to almost everyone. Congratulations and thanks for all your efforts.

**SM:** Thank you. I have to tell you, I didn't know the end of the road. Dr. Sato surprised me around the 13th year. He said, "OK. Now, you're ready."

**JM:** My guess is – maybe you can comment on this – I think that's an artifact of the Japanese culture. Because that would not happen in America. Can you comment on that?

**SM:** Yes. Absolutely. I mean I learned the Japanese way of thought, their social protocols and the expectations of the respect between different levels of society. I knew or I had hoped that at some point, Dr. Sato would say, "Yes. You are ready." Accept whether you're a young person trying to be a sushi chef, a young person trying to be a Japanese sword master, a kimono maker, it doesn't matter. You don't know what that length of mentorship or apprenticeship will be. If you're good, it might only be eight years. If you're not good, it might be 18 years. In my particular case, it was 13 years.

**JM:** That's crazy. Because in medical school, which is one of the most rigorous academic training professions. If you don't have medical school – I mean it's typically a minimum of three, but some take

eight years. I mean I don't know of many places where it's longer than eight years as a residency program, but you did 13. That's great.

**SM:** Yes.

**JM:** Alright. Thanks again.

**SM:** Yes.

**JM:** We're going to make this information available. I hope – One of my goals now is to really help everyone understand this and make sure they are aware that it's an available option that could radically change your life.

**SM:** Thank you very much again.

**JM:** Alright.

*[END]*