

# Why KAATSU Is a Fitness Game Changer

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

March 19, 2023

## STORY AT-A-GLANCE

- › KAATSU, also known as blood flow restriction (BFR) training, involves partially obstructing blood flow to your extremities while exercising
- › The intermittent hypoxia generates an increase in anti-inflammatory myokines, the muscle version of cytokines, which in turn provides a whole host of beneficial hormonal responses
- › Aside from dramatically improving muscle tone and preventing sarcopenia (age-related muscle loss), KAATSU is also a wonderful tool for post-surgical rehabilitation, allowing you to regain physical function in a fraction of the time that you would normally anticipate
- › It will also improve your metabolic flexibility, as it increases the number of glucose transporters that absorb blood sugar in your cell membranes
- › As a result, your insulin level won't go up and you won't develop insulin resistance which in turn lowers the risk for virtually every chronic degenerative disease
- › KAATSU is a specific type of BFR therapy, as it uses a device that automatically inflates and deflates the cuffs you place around your extremities. "Conventional" BFR uses static pressure from elastic or inflatable bands, and while that can provide benefits when used correctly, KAATSU's cycling mode is far superior and provides biochemical benefits you cannot get from static pressure

**Blood flow restriction (BFR) training, which I perceive to be the greatest innovation in exercise training in the last century, was developed in Japan by Dr. Yoshiaki Sato in**

1966. There, it's known as KAATSU, which means "additional pressure." KAATSU was brought to the U.S. just over a decade ago by Steven Munatones, after he completed a 13-year mentorship by Sato.

In summary, BFR involves partially obstructing blood flow to your extremities while exercising. This intermittent hypoxia generates an increase in anti-inflammatory myokines, the muscle version of cytokines, which in turn provides a whole host of beneficial hormonal responses.

Aside from dramatically improving muscle tone and preventing sarcopenia (age-related muscle loss), KAATSU is also a wonderful tool for post-surgical rehabilitation, allowing you to regain physical function in a fraction of the time that you would normally anticipate.

Importantly, it will also improve your metabolic flexibility, so that you can seamlessly transition between burning fat and glucose as your primary fuel. It does this by increasing the number of glucose transporters, which absorb and lower your blood sugar in your cell membranes. As a result, your insulin level won't go up and you won't develop insulin resistance.

**“ 'Conventional' BFR uses static pressure from elastic or inflatable bands, and while that can provide benefits when used correctly, KAATSU's cycling mode is far superior and provides biochemical benefits you cannot get from static pressure. ”**

KAATSU is really a specific type of BFR therapy, as it uses a device that automatically inflates and deflates the cuffs you place around your extremities. "Conventional" BFR uses static pressure from elastic or inflatable bands, and while that can provide benefits when used correctly, KAATSU is far superior for several reasons, which we'll review here.

## How KAATSU Builds Muscle

One of the reasons I'm so excited about KAATSU is its ability to help build muscle mass and prevent sarcopenia. Sarcopenia is a progressive decline in muscle mass as you age, primarily due to the decrease in blood flow supply to muscle stem cells which are called satellite cells.

When your satellite cells don't get the nourishment they require, it becomes very difficult to build muscle. Once you are over 50, this is always working against you, even if you're doing hardcore resistance training. KAATSU solves this problem. It increases the blood supply to your satellite stem cells, which provides the necessary metabolic support needed to increase muscle protein synthesis and grow your muscles.

KAATSU has the added benefit of allowing older people, like me, to engage in relatively aggressive exercise with almost no risk of injury because you're using very light weights, or if you're frail and/or elderly, none at all. As explained by Munatones:

*"KAATSU cycle is basically a very clever biohack that will allow the muscles to work and allow the vascular tissue to become more elastic. You don't perceive the pain of heavy lifting, but your vascular tissue and muscle fibers are being worked out just as effectively, and you can do it for a longer period of time.*

*Putting the KAATSU bands on your legs and walking down to the beach, walking your dog or just walking around the neighborhood, standing, cleaning your windows of your house, folding your clothes, banging out emails, all of these things can be done with the KAATSU bands on your arms or legs. You're getting the benefit of exercise.*

*Beta endorphins are being produced; hormones and metabolites are being produced as you're doing simple things – and that is the way to get the older population in Japan, in the United States, around the world, to understand that you can stop sarcopenia, but you have to exercise. You don't have to run a 10K, you don't have to go down to Gold's Gym. Just put on the KAATSU bands and live your life."*

## What Makes KAATSU so Different From Standard BFR

As explained by Munatones, the KAATSU device inflates and deflates according to preset algorithms, creating pressure and releasing pressure at set intervals. In the standard KAATSU device, it's 30 seconds of compression followed by five seconds of release, and each subsequent compression provides slightly more pressure.

This incremental increase in pressure is really where the magic lies, and it's taken Sato more than 30 years of experimentation to find just the right "sweet spots" to trigger the greatest improvements.

*"The second difference between standard BFR, as we know it in the physical therapy world, and KAATSU is the shape of the air bladder inside the band," Munatones says. "With KAATSU, there is a narrow air bladder, and when it inflates, it inflates in an oval shape.*

*That oval shape means the pressure on the arterial flow is minimal, but the pressure on the Venous flow, from your limbs back to your torso, is much greater. That is the secret that Dr. Sato found. He wanted to engorge the vascular tissue of your limbs in blood. That's the catalyst for all of these biochemical changes."*

This is why I no longer recommend using inexpensive BFR bands because conventional BFR will not produce benefits anywhere nearly as good. There's risk of injury there, and you can't get the same benefits. Unfortunately, many physical therapists still do not understand that BFR and KAATSU are really two different things. Munatones comments:

*"The current state of the physical therapy market is more [focused on] muscle growth. Muscle hypertrophy is the goal of BFR. Sato and his team of cardiologists in Tokyo were also focused on muscle, but they were specifically focused on the vascular tissue. The key patent of Dr. Sato is the strengthening of the vascular tissue.*

*They knew that if they made our vascular tissue more elastic, basically antiaging, enabling our vascular tissue to be as elastic as it was when we were*

*in our teens and our 20s, that would be a catalyst for hormonal production – everything from nitric oxide, vascular endothelial growth factor (VEGF), brain derived neurotropic factor (BDNF) and hundreds of other beneficial myokines.*

*So, their focus was engorging the limb in blood to the point where your hands or feet get pink, rosy, and in some cases, if you've been doing it long enough, a dark red. We want the vascular tissue of our arms and legs to be very, very much engorged in blood ...*

*Engorged in blood, you feel that lactate, you feel that metabolic waste build up very efficiently. That's the real focus. We focus on the vascular tissue and the resultant hormonal response as opposed to muscular strength."*

## **Using KAATSU During Daily Activities Pays Dividends**

Twice a week, Munatones provides free Q&A sessions during which you can ask questions about KAATSU (sign up for the [KAATSU Q&A Zoom sessions here](#)). I've attended a few of those and was surprised to find that most people don't use KAATSU with any weight. They're just wearing the bands while doing chores or activities of daily living, and that's enough to see improvement.

*"The non-athletes who start KAATSU doing average everyday things, once they see their increased strength, once they start looking in the mirror and seeing some definition in their arms, their core, their legs, they get motivationally excited to do more," Munatones says.*

*"It's really great to see this migration from a non-athlete, sedentary lifestyle, to a much more active one, and that drive is coming from inside themselves.*

*On the other side of the spectrum, you have the athletic population, that former college athlete, that former high school quarterback, or she might be a runner, a rower, a basketball player. Now they're older and they know how to push themselves.*

*They typically are the exact opposite. They start lifting with heavy weights and say, 'God, I can't do much more than 10 minutes.' I go, 'Wait, wait, stop. Don't be so aggressive. Be gentle, slow down. I'd rather you use the KAATSU cycle for 45 minutes than 10 minutes.'*

*And they go, 'Oh, you mean I could still get the benefits of exercise, muscle building, stamina increase, if I slow down? If I don't use heavy weights? If I'm not as intense?' And I go, 'Yes.'*

*So these former athletes start coming down the intensity scale. So it's very interesting seeing the non-athletes sort of go up the intensity scale, and the former athletes or athletes come down the intensity scale. They all sort of meet in this happy median in the middle."*

## **KAATSU Eliminates Need for Recovery Days**

An added boon is that you don't need recovery days. You can use KAATSU every day if you want. I used to do conventional strength training twice a week and KAATSU five days a week. Now, I no longer do conventional strength training at all and I am able to train every day with KAATSU without the need for recovery days. At most, I use 30% of my one rep max, with KAATSU, which allows me to work out longer and more frequently.

*"We call it 'time under tension,'" Munatones says. "How much total time, let's say, in a one-week period do you have the bands inflated on your arms? To do long-term sustained time under tension, you absolutely have to use the KAATSU cycle and you absolutely have to do it with non-intense, non-all-out vigorous movement.*

*Walking is great. Some people do Pilates, some people do yoga, some people actually just sit and watch Netflix. We have a lot of people who are older, they're in retail, or they are in law enforcement. Let's say they're on their feet all day long and they come back home and they just want to be off their feet. They sit*

*back on the couch, put the KAATSU bands on their legs and have a great recovery session."*

## **KAATSU During All Phases of Exercise**

Anyone who's familiar with exercise knows you start with a warmup, then you do the exercise itself, followed by a cool-down session. KAATSU can be beneficial during all of these phases. It is limb-specific, though. If you have the bands on your arms, it's not going to warm up or help recovery in your legs. So place the bands on the limbs you're working that day.

Never use arm bands and leg bands simultaneously. It's either one or the other. Using it on arms and legs at the same time could cause a dangerous drop in blood pressure.

*"Quite often, our elite athletes, our competitive athletes ... use it before they get to the gym, before they get to the track, before they get to the pool, so when they start their traditional warmup, their vascular tissue is already ready to go.*

*And so, if we talk to our track athlete, they'll say 'I feel light on my feet.' If we're talking to a basketball player, volleyball player, they'll say 'I'm already jumping near my vertical leap max.'*

*So they're using it before, they're using it during, and very importantly, afterwards – after they've taken a shower, they could be hydrating, they could be talking with their friends. Whatever body part they focused on in that workout, they're throwing the bands on, 30 seconds pressure on, five seconds pressure off.*

*During that five seconds, metabolic waste is being whooshed out and, therefore, they are ready for the next workout the next day. And that's why, if you're using KAATSU seven days a week, there really is no need for a rest day."*

On a side note, if you don't want to use weights or a cable resistance machine, both of which can get pricey, loop resistance bands are an inexpensive alternative that work

great. It's like a giant rubber band and it comes in a variety of resistances, from 5 pounds of resistance all the way up to 300 pounds.

With KAATSU, all you need are two or three of the smallest bands, and you can do virtually every type of exercise with these bands that you can do on a cable resistance machine, which, in my view, is one of the best pieces of strength training equipment out there.

## **The Mind-Muscle Connection**

KAATSU also helps with the mind-muscle connection. Most bodybuilders will tell you that you have to focus on the muscle you're working. Just mindlessly moving through a range of motion with weight will not suffice. Sato was well aware of this as well. When you slow down the movement and focus on contracting the muscle, you'll feel the lactate build up.

The same principle applies when rehabilitating from a stroke or an injury that's affecting one side of your body. In this case, place the KAATSU band on the injured side, say the right arm, and then perform a movement with that arm. For example, you could hold a toothbrush or hairbrush, and then go through the movement of brushing your teeth or hair while focusing on the muscle involved in the movement.

*"Boy, when I saw the effect of that mind-muscle focus on able-bodied people and then people who were injured or disabled, it really opened my eyes to what KAATSU can do for people," Munatones says.*

I'm really excited about KAATSU because, to me, it's the ideal form of exercise for the elderly and those who have been sedentary for a long time and will die prematurely if they don't get some type of exercise intervention. And again, while constant-pressure BFR bands can give you some benefits, it's the regular and consistent releasing of pressure that activates the anti-inflammatory myokines, which I exponentially lower when wearing static bands.



When wearing the KAATSU bands for 45 minutes, you're cycling the pressure on and off twice per minute, so you're getting a lot of activations. With that, you're also getting a lot of hormonal cascades. With constant-pressure BFR, your muscles will grow, but over time they'll get spastic. I experienced this first-hand. So now, I never use constant tension. I always use cycle mode. As noted by Munatones:

*"You use less weight, less resistance for more muscle, you do less intensity for better results. On the face of it, on the macro level, it doesn't make sense. But if you look at it at a micro level, what is actually happening within the body as you engorge limb in blood, KAATSU makes a whole lot of sense."*

## **How Professional Athletes Use KAATSU**

KAATSU is also a superior choice for athletes. I've already mentioned how they use it for warmups and cool downs. Many professional athletes also use KAATSU during practice, but with different protocols. Munatones explains:

*"For example, if we're working with Olympic track athletes, they could be using their bands while working on their starts, or that first hurdle on the hurdles. They typically will do a KAATSU cycle to warm up. If they're doing a very specific motion in the starting blocks, they'll use it in constant mode there, and then release the bands."*

*This is very important for athletes. We found that the human growth hormone, and most of the hormones that are released, are released about 12 to 15 minutes after you take off the bands. So the maximal production of hormones isn't when you have the bands on. There's a time delay. So what does that mean?"*

*Now, when we share that information with a professional athlete, let's say an NBA player who's in the NBA dunk contest. Well, they'll KAATSU, ideally, 15 minutes before they get on the court to do their dunk. They want to maximize*

*their physicality when their hormones, their adrenaline, their beta endorphins, et cetera are flowing. You want to perform at that point in time.*

*So, we basically backdate; we go back and say, OK, let's say at 12 noon, you know that your race is going to start, so let's finish the KAATSU session at 11:45. That gives you enough time to put on your jersey, get ready, et cetera. Same thing in between periods, in between halves. We have everybody from high schoolers, to college athletes, to pros, that are using the bands.*

*This actually came from the Japanese pitchers who are using the bands in between innings. So it's a nine-inning game. Let's say they pitched six innings, they were recovering in between the first and second and third and fourth inning.*

*We did a test with the equivalent of the NCAA baseball players in Japan, and found, for those who use KAATSU exclusively, their pitch count and their number of innings that they pitched increased over the whole season versus the control group that did not use KAATSU during that season ...*

*At the Olympics, especially for 100-, 200- and 400-meter runners, you've got three races: the preliminary heats, the semi-final heats and the final heats within one 36-hour period. They're doing KAATSU in between the pre-lims and semi-finals, and between the semi-finals and finals, simply to get that body back to 100% as quickly as possible.*

*We also have professional-level arm wrestlers. In a tournament, you might have as many as five, six or seven arm matches within a very short period of time. As soon as they're finished, we want that metabolic waste whooshed out. So they throw on the KAATSU bands on both arms and do some KAATSU [in between matches.]*

## **KAATSU Is Ideal for People in Sedentary Professions**

KAATSU is also being used by submariners, truck drivers and people in other sedentary professions.

*"If you're a submariner, you're pretty confined for months on end. You're living in a small space, obviously there's some stress involved, just do some simple bicep curls, hand clenches, tricep extensions and squats by your bunk,"*  
Munatones says.

*"These are all innovative ways we use KAATSU. For long distance haulers, truck drivers, this is an ideal way, in a confined space, that you can get a workout if you don't have the luxury of going to the gym.*

*Or, you might be on a business trip. Maybe you're at a convention and you've been on your feet all day. By the time you get back to your hotel room, you're just exhausted. Throw it on there.*

*We're in 49 countries around the world. It's really a heartfelt labor of love that we're doing. We hear so many stories that are really touching, and that drives us every single day. So if people are interested, they're very welcome to attend our Tuesday and Thursday one-hour sessions."*

You can sign up for these free [KAATSU Q&A Zoom sessions](#) here. The next three sessions will be held March 21, 23 and 28 at 9 a.m. Pacific time. Whether you're elderly, recovering from an injury, a professional athlete or someone in a sedentary profession, KAATSU can be a real game changer. To learn more, check out my previous article, "[How to Stay Fit for Life](#)," in which I review the science behind KAATSU and explain in greater detail how to use it.

For a limited time, you can get 10% off the C-3 KAATSU unit (\$100) by using this [link](#). Be sure that you purchase the C-3 and not the more expensive Bluetooth recently launched which is not recommended due to the EMFs it releases.