Blood Flow Moderation Training

Know How
What is KAATSU?

KAATSU is a very safe, revolutionary, efficient, and effective form of strength training that was invented in Japan in 1966 and perfected through the 1970’s. KAATSU uses the moderation of blood flow in the arms and legs in order to exercise effectively and efficiently. Specialised pneumatic belts (KAATSU Air Bands) are placed on the upper arms and upper legs. This belts apply a safe pressure on the limbs leading to an engorgement of blood in the arms and legs and can be used by individuals in every sport and with every form of exercise. KAATSU has specific protocols and procedures for individuals whether they are training for performance or fitness or to improve technique or stamina.

KA means additional and ATSU means pressure in Japanese.

KAATSU in Medical Terms

When KAATSU is done correctly, arterial in-flow is restricted, deep venous out-flow is impeded, and the capillary-venous space becomes distended and congested in the muscle distal to the KAATSU Bands. Muscle contraction under these conditions of restricted and impeded blood flow and congested vascular space, uses up intracellular phosphates energy stores and oxygen at a rate greater than the circulation can replenish them. Metabolic waste products accumulate. Homeostasis in the active muscle is lost.

Consequently, as the tissue becomes more hypoxic and energy stores depleted, anaerobic glycolysis attempts to compensate by increasing its rate, which produces some ATP, but also produces a marked disturbance in muscle homeostasis, ultimately raising intracellular, interstitial and blood lactic acid concentrations. Hypoxia, acidosis, lactate ion per se, inorganic phosphate, AMP and many other local factors have been shown to turn on transcription and thus, protein synthesis in muscle cells. This results in stimulation of muscle, tendon and vascular growth.

The marked disturbance of muscle homeostasis and vascular bed congestion is communicated to the central nervous system (CNS) by group III and IV afferent nerves. These afferent nerves communicate this “distress” to the CNS. It is perceived cortically (consciously), as a type of pain (i.e. what one feels when doing KAATSU), but there are many subconscious synapses that stimulate efferent output in a variety of centers. Connections to and in the cardiovascular control centers stimulate an increase in breathing, blood pressure and heart rate. Another example is hypothalamic release of growth hormone releasing factor (GHRF) to the anterior pituitary which releases growth hormone (GH), which in turn, stimulates insulin growth factor I (IGF-I) release from the liver, which is part of the “systemic response” to repair and grow skeletal muscle and repair injury. In addition, various substances in the venous blood of the exercising muscle modifies and amplifies the changes occurring from both local and systemic mechanisms as the blood is redistributed to other vascular beds.
KAATU Aqua

KAATU Aqua is a revolutionary means to improve speed, strength and range of motion.

KAATU Aqua Bands are neoprene bands in 3 sizes: small, medium and large for both the arms and legs. The pressure of the Aqua Bands is determined by either the KAATU Master or KAATU Nano. Sets with KAATU Aqua Bands are limited to 15 minutes or less and can be combined in a comprehensive training program with the KAATU Air Bands.

KAATU Aqua is used by people of all ages and abilities, and by triathletes, pool swimmers, water polo players, synchronized swimmers, and those doing aquarobics or aquatherapy.
KAATSU Training Benefits

10

KAATSU training is safely and effectively used by hundreds of thousands of people daily.

Protected by 47 patents and invented in 1966 in Japan, KAATSU uses scientifically proven protocols and proprietary equipment to identify safe pressures that maximize physiological benefits.
10 advantages in short periods of time

- Proven Safety
- Increase Stamina
- Proven by Research
- Increase Muscular Strength
- Reduce Risk of Overuse Injuries
- Improve Speed and Reaction Time
- Appropriate for All Ages and Abilities
- Effectively Exercise with Lighter Loads
- Quick Recovery from Heavy Workouts
- Save Time and Use with Any Equipment
KAATSU leads to a disturbance of homeostasis

The blood that circulates the human body is sent from the heart to the aorta and then around the body. Blood from throughout the body is then collected in the veins and returned to the heart.

By applying pressure to the top of an arm or leg, through which large arteries and veins both pass, the flow of blood above the heart is temporarily reduced.

As a result, the volume of blood flow rises, blood reaches the most remote capillaries* of the limbs and blood vessels dilate. Repeatedly applying and relieving pressure increases the number and flexibility of the capillaries. This improves blood flow.

Glossary

* Capillaries
  The tiny blood vessels at the points where arteries become veins. Capillaries transfer oxygen and nutrients from arteries to tissues, and they accept carbon dioxide and waste products from tissues and carry them to veins.
Vascular endothelial cells become softer, restoring the elasticity of blood vessels.

Blood vessels harden with age and their ability to convey blood is weakened. In particular, the vascular endothelial cells that form the innermost layer of blood vessels play a vital role in keeping blood vessels healthy. These vascular endothelial cells produce nitric oxide (NO)* which is involved in the constriction and relaxation (the degree of hardness or softness) of blood vessel walls and also regulates inflammatory cells in the blood vessel walls.

Clinical data shows that continued KAATSU Training rejuvenates and increases the number of vascular endothelial cells by facilitating the secretion of this nitric oxide.

**Glossary**

* Nitric Oxide (NO)  
A nitrogenous compound formed in the body which has various functions. Nitric oxide is thought to be one of the working substances in vascular endothelial cells that make blood vessels dilate.
Both fast twitch and slow twitch muscles can be toned at the same time.

Muscle can be broadly divided into two types, fast twitch muscle (*1) and slow twitch muscle (*2). Normally they cannot be toned at the same time, because fast twitch muscle requires high intensity training while slow twitch muscle requires training continually and for longer periods at lower intensity. When KAATSU training begins, there is insufficient blood flow volume because of the application of pressure and so in the slow twitch muscle, which starts working immediately, there is a lack of oxygen. This is an artificial inducement of the state usually only achieved by high intensity exercise.

The brain is therefore tricked into thinking there is a large load on the fast twitch muscle, which would normally take more time to become active. In this way, KAATSU training enables simultaneous toning of fast twitch muscle and slow twitch muscle using light loads.

**Glossary**

*Fast twitch muscle* - Being able to contract instantaneously, fast twitch muscle is suitable for exercise requiring great power and is used mostly in anaerobic exercise. Fast twitch muscle is easily enlarged and needs to be toned if the aim is to increase muscle mass or strength.
Growth Hormones are secreted in large amounts, activating the body’s metabolism.

Lactic acid is produced by the breakdown of sugar used for energy in muscle contraction due to movement action. When more lactic acid is produced and the blood concentration level of lactic acid rises, there is added stimulation to the hormone-secreting sites in the brain leading to elevated secretions of growth hormone, adrenaline and anabolic hormones (*1).

During the application of pressure, the concentration of lactic acid within muscular cells suddenly rises due to the restriction of blood flow, and the intramuscular receptors (*2) are strongly stimulated. The signals from these receptors induce the action of the pituitary gland (*3), which secretes large amounts of growth hormone and other hormones. Growth hormone is extremely potent, and its impact on body tissue functions produces favourable effects.

*1 Slow twitch muscle
Being able to contract continuously, slow twitch muscle is suitable for exercise requiring stamina, and it is used mostly in aerobic exercise. Slow twitch muscle is difficult to enlarge and needs to be toned if the aim is to tighten up muscles or build stamina.
The KAATSU Air Bands are sold as a set, which includes 2 Arm Bands and 2 Leg Bands. KAATSU Air Bands come in 3 sizes: small, medium and large for both the arms and legs.

KAATSU Aqua Bands are neoprene bands. The Arm Bands are shorter and thinner than the longer and wider Leg Bands. Controls on both the KAATSU Master and KAATSU Nano allow for different amounts of compressed air when using the Arm Bands versus the Leg Bands.

The KAATSU Nano is a handheld, portable 263g (9.7 oz.) touch-screen device that works with both KAATSU Air Bands and KAATSU Aqua Bands.
The KAATSU Master is a robust, handheld, portable 1,134g (2.5 lbs.) touch-screen device which comes in both a wheeled stand, perfect for use in fitness gyms, hospitals, medical clinics and in a table stand best used for sports teams, rehabilitation facilities and by military personnel.