

## Keep fit with aerobics

Monday, 21 January 2008

If you train aerobically on a regular basis, some important metabolic changes take place inside the body.

At the cellular level aerobic exercise force your body to adapt to new conditions of life and new demands. As a result, your body starts an increase in the size and number of mitochondria it produces. The body also produces a greater proportion of myoglobin.

BY MOINUL ISLAM

If you train aerobically on a regular basis, some important metabolic changes take place inside the body.

At the cellular level aerobic exercise force your body to adapt to new conditions of life and new demands. As a result, your body starts an increase in the size and number of mitochondria it produces. The body also produces a greater proportion of myoglobin.

Mitochondria can be called cellular furnaces where fat and other nutrients are burned. Myoglobin is a protein that transports oxygen from the bloodstream into the muscle fibers.

Mitochondria is formed upon the words MITO, meaning "thread", and CHONDROS, meaning "dot" or "granule like". Myoglobin is formed etymologically upon two words, MYO, meaning "muscle" and GLOBIN, meaning basically "blood".

Mitochondria are responsible for aerobically producing ATP via the oxidation of glycogen. Myoglobin increases the level and activity of the enzymes involved in the aerobic metabolism of glucose.

When the main mitochondria are combined with an increase in the quantity of oxygen that can be delivered to the mitochondria through higher levels of myoglobin, the aerobic capacity of the muscle tissue is enhanced.

Larger and more numerous mitochondria result in increased levels of aerobic enzymes and blood flow. All of this is bound to boost the fat burning capabilities of the muscle fibers.

Oxygen is the key to health and weight loss?

Yes!

From fat burning to improved cardiovascular health to improved recovery abilities, aerobic work should be an integral part of all training programs.

Aerobic is a low-intensity, sustained activity that relies on oxygen for energy. This activity builds endurance, burns fat and conditions the cardiovascular system.

Improving the body's ability to process and deliver oxygen may improve stamina, not only in sports but also in every day life, doing any activity. To reach this goal, you need to strengthen and condition your heart because it is the organ that pumps oxygen-rich blood to the rest of your body. Like any muscle, the heart can grow stronger and more efficient by progressive demands in oxygen.

The normal heart pumps approximately 70 times a minute or approximately a hundred thousand (100.000) beats a day. The well-conditioned heart can beat as few as 40 times a minute or approximately fifty thousand (60.000) beats a day.

The aim is to develop bigger and stronger organs so that we can transport oxygen throughout the body with less effort and using more fat.

Increased oxygen consumption promotes overall health and increases metabolism resulting in burning extra fat stores, but a mild activity can just do the trick; it is not necessary to work up a heavy sweat.

There was an old doctor who practiced unconventional medicine. He was very fit for his eighty years old. One day, someone asked him what was his secret. He took a deep breath that went on for so long everybody was amazed. He said: "The more oxygen you can breathe, the better you will live because the more you nourish your system." This shows how important is oxygen and breathing while doing exercise.

Exercise should increase your lungs capacity because your lungs are like balloons; it is at the beginning hard to inflate them, but when they are inflated, they keep a larger shape, increasing its capacity with less efforts. That's what aerobics exercise does to your lungs.

So, the more skillful at an exercise, the less oxygen is needed and less energy is depleted.

The body's oxygen requirements increase drastically the moment exercise begins. However, the respiration and circulation transport system needs several minutes to produce adequate oxygen muscles need.

Thus, when we recover from a quick sprint, our oxygen consumption does not immediately end, leaving us out of breath. The oxygen debt resulting exists partly to clear the CO<sub>2</sub> accumulated in the tissues as by-products of metabolism. Keep fit with aerobics

Training helps making oxygen readily available to our metabolism and getting rid of toxins faster. As a result, we have more stamina.

What are the metabolic changes coming from oxygen consumption during exercise?

Increased oxygen consumption (VO<sub>2</sub>) and carbon dioxide production (VCO<sub>2</sub>) occur immediately with exercise. During aerobic metabolism, glucose and fats utilize oxygen to form adenosine triphosphate (ATP), the ultimate source of energy.

There is very little oxygen stored in the body, so aerobic metabolism requires continuous delivery of oxygen from the atmosphere to the blood. Without oxygen, glucose is metabolized anaerobically, using up oxygen from cells and generating lactic acid as a by-product.

In other words, aerobics forces oxygen through your body, increasing the number and size of your blood vessels. Blood vessels transport oxygen and nutrients to muscles and carry waste products away for muscular growth, for repair and for recovery. Without aerobics in your training program your body cannot create new delivery systems of oxygen to your newly developed muscles.

Many body builders make this mistake. They think that if they train aerobically, they are going to lose muscle mass. Actually, muscle mass loss comes from a poor diet that cannot compensate for the loss in carbohydrates.

Thus, aerobics is definitely good for everyone, in moderation (3 to 4 times a week), and at moderate levels of intensity (60% of Max. Heart Rate is ideal). Shoes and your feet

Your feet support all the weight of your body and they are an important organ in your body since they stabilize you and help keep balance. Do not underestimate their importance during your workouts; a feet problem can show by revealing knee or back pains.

Sometimes it is a bad posture that is at the basis of an injury; sometimes it is genetic. Begin by wearing a shoe appropriate for aerobics. This kind of shoes should include:

- Padded heel collar
- Sole is flexible at ball of feet
- Toe box is to an adequate height
- Support strap (shock absorption)
- Strong arch support
- Sole with matches heel width having a slight heel lift

When you run, your feet can strike the floor with the force equal 3 times your weight. The foot plays the role of a cushion, i.e., you land on the outside, lateral part of the foot and you roll toward the inside, medial part of your foot. This phenomenon is called 'pronation' and it helps distribute the force of the shock on your leg evenly.

After the pronation phase, you go through a 'supination' phase, in other words, you roll back toward the outer lateral part of your foot.

The supination phase raises yourself on the ball of your foot in order to move forward. Now, people who have flat feet roll in so far when moving that their arches roll underneath their feet, touching the ground. But they may also be born without an arch. This excessive roll of the foot can cause foot, leg and knee pain, even hip and lower back pain. These people need special shoes with an extra arch to rectify the position. They can also find an insole with an artificial arch they can place inside their shoes. As a rule, if you feel pain in your heel, stop exercising or trade walking, running exercises for cycling or swimming.

Stretch your calf muscles, but if the pain persists consult your doctor. In addition to wearing arch supports, look for shoes with a flexible sole at the toes. People with rigid ankles and high-arched feet can develop a stress fracture on the bones of the feet (metatarsal). This occurs when you increase your work load suddenly and when your foot do not roll normally inward to cushion the shock. Usually, it heals by itself after a few months. To avoid feet problems, reduce the force striking on your feet by running on the grass, and wearing shoes with extra cushioning.

One cannot be seriously involved in a physical activity without considering risks factors, how to prevent injuries and how to treat them if and when they occur. Sports not only help pushing our endurance level, they help pushing our pain threshold further. This means that the more we practice a sportive activity, the less pain we feel and the more prepared we are to endure pain when it occurs. This is due to our body's ability to adapt to harsher conditions of life and the changing in our internal organ exchanges.

There is a misconception about pain as some people regard it as something that is always negative. Pain can be a helper when it warns our body of its limits and when it teaches us how to place our body properly, when to stretch, when to treat it, etc. Pain can teach our body how to take care of it.

There are 4 kinds of pain resulting from workouts: Two are signs that you are doing the right thing; the other two are signs that you have injured yourself so you have to revise safety guidelines for your workouts and rest. A burning feeling is due to the lactic acid building up in your muscles while exercising. This acid prevents you from doing more than 10 to 15 repetitions in case you are doing muscle conditioning. This sensation of burning disappears as soon as you stop the exercise and more oxygen returns to the muscle. Localized soreness can occurs 48 to 72 hours after discontinuing exercising. To avoid soreness, make sure you are stretching (slow and controlled stretches) before and after each set of exercises. Warm compresses and massage can also help. If the soreness lasts more than 3 days, you may have strained a muscle.

A pulled or strained muscle is not a very good sign in your workout. This kind of pain appears when the muscle or the tendon has been over-stretched. To avoid strains, start the exercise with the larger group of muscles (thighs, back, chest) and work your way down to smaller muscles (shoulders, triceps, biceps, calves and forearms). If you strain a muscle, stop exercising immediately. You will need a few days of rest. Strains heal easily if not ignored and properly cared for. Sprains are severe injuries. A sprain occurs when the ligament is pulled or twisted exaggeratedly. Sprains are accompanied by severe bruising and swelling. The best you can do is to see a doctor.