

HIGH INTENSITY STRENGTH TRAINING: MORE AEROBIC THAN "AEROBICS"

by Greg Anderson

The most common question asked by our new personal training clients at Ideal Exercise is: "Where are the treadmills and stationary bicycles?". Most have never heard that great benefits to the cardiovascular system, commonly referred to as "aerobic fitness", can be had through a program of high-intensity strength training with no additional steady-state activity. And while I do certainly spend a great deal of my time explaining why such benefits are certainly possible (and more desirable as it is much more efficient to achieve muscular and cardiovascular benefits in a single program) it usually takes a few workouts before the client understands the depth and magnitude of cardiovascular involvement possible from strength training. As one of my trainees remarked recently (after a set of squats to complete failure followed by 20 seconds of effort against the bar in the bottom position): "My God! (gasp, gasp...) this is more aerobic than aerobics..."

Although (as I shall explain) the statement that high-intensity strength training is "more aerobic than aerobics" is not entirely correct, such an observation on the trainee's part does underscore the profound effect of intense muscular contractions on the cardiovascular system. The current mania for "aerobics" in the fitness industry stems from a misunderstanding of two factors: The function of the cardiovascular system, and the identification of skeletal muscle as the window through which optimum loading of the entire metabolic system(s) --including the cardiovascular system--takes place.

Pictured at left, Mike Mentzer Supervising Mr. Olympia's High Intensity/Bodybuilding Training

A great deal of the misunderstanding of the function of the cardiovascular system arises from the use of the word "aerobics" to describe a particular exercise protocol. The term aerobic denotes a metabolic pathway within the body which yields energy through the oxidation of fat and carbohydrate. Literally, aerobic means: "with oxygen". Most of us have been taught that to exercise aerobically is to perform long duration steady-state activities which produce an elevated heart rate. Note that said participation of the heart and lungs is entirely dependent on muscular activity. Such low intensity activity is said to primarily stress the aerobic metabolic pathway and allow the body to use primarily fat as a fuel source. Additionally, "aerobics" is thought to provide an increase in endurance and provide a protective effect against coronary artery disease. While I will certainly agree that there are some marginal benefits to the cardiovascular system from a program of such activity, the reality is simply that these effects could be achieved in a safer and more efficient manner through the use of high-intensity strength training.

Many bodybuilders that I have spoken to believe that the inclusion of some type of "aerobic" activity in their program is necessary to achieve optimum leanness. I point out to them that from a bodybuilding standpoint, the issues at hand are both the amount of fat that you don't have and the amount of muscle that you do. Since it is very easy to overtrain by including too many exercises or too much additional activity, it seems that any slight fat loss achieved through steady state activity could be more than offset by compromising the ability to build (or even maintain) muscle as a result of overtraining. In fact, research on fat loss performed by Ellington Darden Ph.D. (and duplicated by Ideal Exercise) showed best results with the combination of high-intensity strength training with a reduced calorie diet and the total exclusion of steady state activities. As Mike Mentzer has pointed out, the body only has a limited amount of adaptation energy. It is not as if you have 100 units of adaptation energy for building muscle and 100 units available for increasing endurance; you have 100 units, period!

The following is a reprint of an article which we hand out to all of our new clients at Ideal Exercise...

Why not aerobics...?

- "Aerobic" activity is not the most effective form of exercise for fat-loss. Steady state activities such as running, cycling, dancing, etc. do not burn a significant number of calories! One pound of fat can fuel the body for up to 10 hours of continuous activity. "Aerobic" activity is simply inefficient for this purpose!
- The most important contribution that exercise makes to a fat-loss program is the maintenance of muscle tissue while fat is lost. Strength training is the only reliable method of maintaining muscle tissue. Aerobics can actually cause you to lose muscle tissue!
- Some supposed "experts" have suggested that the important effect of aerobics is that of increasing metabolic rate. Our question is this: If "aerobic" activities burn few calories while you are doing them, then how many calories will they burn (calories burned = metabolic rate) when you are not doing them? The answer to that question is: very few...
- On the subject of metabolic rate: Every pound of muscle added to the body of an adult female will require an additional 75-100 calories per day just to keep it alive. The average person, through a program of proper strength training can add enough muscle to burn an additional 3500 calories per week (1 lb. of fat = 3500 calories). The amount of strength training required to effect such a change is less than one hour per week.
- "Aerobic" activities are dangerous! Running is an extremely high-force activity that is damaging to knees, hips, and back. Aerobic dance is probably worse. And so-called "low impact" classes or activities like stationary cycling are not necessarily low-force. Don't be fooled by the genetic exceptions who protest that they have never been injured-- overuse injuries are cumulative and we are often not aware that we have them until it is too late. In time, the enthusiastic aerobic-dance participant or jogger will probably pay the price for all that "healthy" activity. If that price is a decrease or loss of mobility in one's later years, then "aerobics" have effectively shortened the individual's life-span. Loss of mobility is often the first step toward loss of all biological competence.

Don't I need some form of aerobics to insure good health?

What about my heart?

- Remember: The function of the cardiovascular system is to support the muscular system--not the other way around. If the human body is logical (and we assume that it is) then increases in muscular strength (from a proper strength-training program) will correlate to improvements in cardiovascular function.
- You will notice that the word "aerobic" has been set off in quotation marks when it refers to an activity performed for exercise. There is a good reason for this emphasis: There is no such thing as aerobic exercise! We have all heard that activities such as jogging and cycling are "aerobic" while those such as weight training and sprinting are "anaerobic". These distinctions are not 100% correct. The words aerobic and anaerobic refer to metabolic pathways which operate continuously at all times and in all activities. You cannot "turn off" either of these pathways by merely increasing or decreasing the intensity of an activity.
- A word on intensity: Few of the "experts" who promote aerobics will debate our last statement. What they do say, however, is that gentle low-intensity activities use the aerobic pathway to a greater degree than they use the anaerobic pathway. We agree with this statement completely and feel that it should be taken to its logical conclusion: The most "aerobic" activity that a human being can engage in is sleeping!

- Consider this: Dr. Kenneth Cooper (author of *Aerobics*, *The New Aerobics*, *Aerobics for Women*), the US. Air Force Cardiologist who coined the term "aerobics" (meaning a form of exercise) and has promoted their use for over 25 years now admits that he was wrong! According to Dr. Cooper, further research has shown that there is no correlation between aerobic endurance performance and health, longevity, or protection against heart-disease. He will admit, however, that such activities do carry with them a great risk of injury. Further, he admits that gross-overuse activities such as running may be so damaging to the body as to be considered carcinogenic.
- Irving Dardik, MD, former vascular surgeon, contends that: "The basic concept of aerobics conditioning is wrong." He also contends that the best way to train the vascular system is to build flexibility into its response by using short bouts of elevation followed by sudden recovery, then demanding activity again.
- Elevated heart rate is not an indicator of exercise intensity, exercise effect, or exercise value. It is quite possible to experience an elevated pulse, labored breathing, and profuse sweating without achieving valuable exercise. Intense emotional experiences commonly cause these symptoms without a shred of exercise benefit.
- Even if an elevated pulse is necessary for cardiovascular conditioning (we do not doubt that pulse elevation may be necessary, but we do not believe that it should be the emphasis of a conditioning program) remember that some of the highest heart-rates on record were achieved during Nautilus research performed at West Point. The West Point cadets commonly experienced heart rates in excess of 220 beats per minute during Nautilus exercise. These pulse rates were maintained for periods of 20-35 minutes.

What about endurance? Won't my athletic performance suffer if I don't do aerobics?

- Endurance for athletics and recreational activities is primarily a result of three factors: skill, muscular strength, and genetics. Heritable factors (genetics) are considered to be non-trainable or, in other words, you cannot do much about them. Increasing one's skill in an activity is a result of practicing that activity. For long-distance runners skills such as stride length and efficiency can be trained through practice (practice on a treadmill doesn't serve this purpose as it is not the same as road-running). Muscular strength is the single most trainable factor in endurance performance. It is the muscles that actually perform work. When strength increases, the relative intensity of any given task decreases.
- Athletes often talk about training their "wind". Actually our bodies' ability to use oxygen is not as trainable as once believed. Consider that in a resting state the lungs can saturate with oxygen the blood moving through them during the first one-third of the total transit time. At maximal exertion, saturation speed might slow to one-half of the total transit time. Even with some compromise of pulmonary function (illness, injury, etc.) the lungs can usually perform their job quite adequately. It is the muscle's ability to use the nutrients delivered to it that needs training. This is most efficiently addressed by strength-training.
- More on the subject of "wind": Most exercise physiologists refer to the phenomenon of "wind" as maximal oxygen uptake. One Canadian researcher has determined that maximal oxygen uptake is 95.9% genetically determined.
- A 1991 study at the University of Maryland showed that strength training produced improvements in cycling endurance performance independent of changes in oxygen consumption.
- Covert Bailey, author of *Fit or Fat* and advocate of "gentle aerobic exercise" now recommends wind sprints to those seeking to become maximally fit. Why wind sprints? Because sprinting is a much more intense muscular activity than jogging. Why not wind sprints? Because as with other running,

the risk of injury is just too great! Pulled hamstrings, sprained ankles, and damaged knees are too high of a price for a marginal increase in fitness. Strength training greatly increases the intensity of muscular activity (much more so than sprinting) and greatly reduces the risk of injury!

- Ideal Exercise possesses signed testimonials from members who have improved their endurance performance for running, skiing, and other activities while following a program of high-intensity strength training and following this policy:

Aerobics... Just Say No!

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