**Understanding Aerobics... The Benefits and the Limitations**
An Opinion by Roger Schwab

In the 1980's aerobics has become the generic term for exercise - any or all exercise. Since exercise is a concept examined by nearly all people, undertaken by most yet understood by few, it is important that we take a serious look at aerobics.

The term aerobics spawned in the early 1970's under the tutelage of Kenneth Cooper, M.D. A definition, my definition, of aerobics is literally an exercise taking the heart rate to X level, for Y period of time, with Z results. The intended benefit of aerobic exercise practiced on a regular basis is improved cardio-respiratory efficiency manifesting in among other values, a lower resting heart rate. Obviously, the potential benefits aerobic exercise present are enormous. Though aerobic exercise cannot guarantee increased life expectancy, the physiological benefits are real and supportive data of a scientific nature is accepted. If our story ended here there would be no conflict. Unfortunately, the story doesn't end here and there is conflict. Aerobics, for all of its benefits has limitations! In order to strengthen the muscular structures of the body, to enhance the structural integrity of the connective tissues, the joints and the bones themselves, aerobics unfortunately but definitely falls short.

While working in an aerobic pathway, the muscles, working against minimal or zero resistance, are contracting with little of their potential force output. Under such conditions a muscle can continue work for lengthy periods of time without stimulating any meaningful strength gain. Anaerobic exercise by contrast requires much higher muscular force production. In anaerobic exercise you induce fatigue in the muscle faster than the muscle can compensate. Soon, while working against a sufficient resistance, your reduced strength level will no longer be enough to allow you to continue against that level of resistance. Such exercise, if progressive, does have the potential to stimulate strength gain. Jogging would be aerobic. Weight training would be anaerobic.

The problems caused by the misunderstanding of these two types of exercise should be obvious. They seldom are! Aerobics in of itself can not be the be-all or end-all of a sensible exercise program. The failure to understand this point has led to the physiological and psychological trauma of a very large number of sincere but misdirected participants. Many of our favorite activities fall into the category of aerobic exercise. These include jogging, swimming, bicycling, step climbing or walking briskly on a treadmill. However, aerobics is generally perceived by much of the population as "exercise classes" or "aerobic dancing" classes. All of the above aerobic activities may potentially increase cardio-respiratory efficiency if certain criteria are fulfilled.

This increased cardio-respiratory efficiency is what aerobic exercise was intended to do. None of these activities in themselves, however, will adequately strengthen the muscles around the joints, thus enhancing joint stability. Nor will aerobics substantially tone or firm the body! Are you surprised? This was never the intended function of aerobic exercise. Substantial strengthening of the body for physiological or aesthetic benefits cannot be achieved through the use of aerobics! Great increases in general conditioning via lower heart rate and improved heart-lung efficiency, Yes! A firmer, stronger body, No!

In order to get firmer, you must get stronger, Period! This is not an opinion, it is a physiological fact whether you accept it or not. In order to get substantially stronger you must present an overload, a form of sufficient added resistance to the muscles. Ideally, in proper anaerobic exercise a muscle is worked throughout a full range of movement around the joint under load. Regular anaerobic exercise of this nature will lead to a stronger, firmer body with greater structural integrity, less prone to injury.

The solution, which can be summed up from the above, is quite obviously a combination of the two types of exercise - aerobic and anaerobic. Aerobics, properly performed, will enhance cardio-respiratory efficiency by taking the heart rate up to the recommended target level for a substantial period (minimally three times a week for 15-20 minutes). Aerobic (and anaerobic) exercise will also enable the body to burn extra calories. Remember, however, that less body fat does not necessarily equate to a harder body. In contrast, anaerobic exercise will strengthen the muscles thus toning the body.

Aerobics may have major potentially harmful side affects. A careful eye should be kept on the following situations:

1) Excessive aerobics performed in the form of running, dancing or any other form where impact forces are imposed on the body are potentially dangerous. When forces imposed on the body exceed the structural integrity of the muscle, connective tissue or bone, injury must occur. (Anaerobic exercise such as weight training/strength building must also be performed safely - in slow controlled movements which are a requirement in order to minimize impact/deceleration forces.)

2) Excessive aerobics may burn lean muscle tissue, the tissue that moves the body.

3) Excessive aerobics in combination with very low body fat levels may lead the overtrained female to a loss of the monthly menstrual cycle and possibly the onset of premature bone loss.

4) Excessive aerobic or anaerobic exercise may be so overdone that the individual's daily "exercise fix" may lead to psychological "hangups" manifesting in anorexia, bulimia or other symptoms of such compulsive behavior.

Be sensible people! Understand the benefits and the problems of exercise. Keep it in moderation and in its proper perspective. Serious but sensible aerobic and anaerobic exercise performed on a regular basis (3 sessions weekly) can and will stimulate the body to respond. Exercise may stimulate a positive response. Rest allows it! Watch your calories - the amount of food that you eat. Try to eat a balanced diet (which is not so hard to do). Train sensibly and safely and you will be doing all that is necessary to see and feel the results that you are seeking.