AEROBIC AND ANAEROBIC FITNESS

RECOMMENDED READING FOR THE IDTA DANCE EXERCISE DIPLOMA.

Aerobic Exercise

Aerobic Fitness is defined as 'the body's ability to take in, transport and use oxygen. It requires low to moderate intensity exercise, powered by aerobic metabolic function fuelled by the body's stores of carbohydrates and fats. Carbohydrate is stored in the muscles and the liver and can sustain approximately 60/80 minutes exercise. As the carbohydrate is used up, the body then has to rely on the stores of fat, this being so, the energy output will drop because fat does not produce the same level of energy as carbohydrate. During aerobic exercise the muscles of a body with a good store of carbohydrate and plenty of oxygen, can contract repeatedly without fatigue. Another name for Aerobic exercise is cardiovascular training.

Aerobic Exercise reduces over time:

- Stress
- Body fat
- Blood pressure
- Heart rate
- The risk of heart attack
- Insulin resistance (beneficial for the prevention of diabetes)
- Muscle mass
- Anaerobic capacity

Aerobic Exercise increases over time:

- The size of the heart
- Lung capacity
- Glucose tolerance (beneficial for the prevention of diabetes)
- Oxygen up take, for the muscles to burn up the glucose more efficiently to create energy
- Muscle tone

An Aerobic Training Programme includes: Any exercise that speeds up the heart rate by working the muscles to increase the size and productivity of the energy pathways enabling them to store and deliver energy more beneficially.

The factors that affect Aerobic exercise are:

- How often it is performed
- How long the programme lasts
- The percentage of exercise worked at maximum heart rate.

The recommended number of classes is 3 to 5 per week where the heart is working between 114 beats per minute (low rate) and 171 (high rate). This is only a guideline, it will vary person to person, some will be 30 beats above this and some may be 20 below.

Anaerobic Exercise

Anaerobic – Dictionary Definition = Living or active in the absence of oxygen.

To understand the word Anaerobic in its fullest sense is a minefield, for just a selection of its definitions the word is applied to many things: biochemistry, breathing, forms of bacteria, exercise, treatment of effluent and incineration.

For a basic understanding of how it is relevant to exercise, we will initially deal with Anaerobic Breathing: Anaerobic breathing will occur in the first few minutes of any exercise programme, dance or race, due to the time it takes for the amount of oxygen to build up in the blood for the Aerobic metabolism to take over.

When the body is pushed to its limits, anaerobic breathing can be illustrated by thinking of a marathon runner towards the latter stages of a race. In some cases, runners will be observed staggering and looking as though their legs have turned to jelly. This effect is caused by anaerobic breathing; the runner will have pushed themselves physically to a state where they are gasping for breath. The air taken into the lungs because of the rapid gasping will be approximately one quarter of that required for the metabolism to operate properly. If the runner continues to push on at the same high intensity, the oxygen will not be available quick enough to allow the muscles to function normally. Lactic acid will build to such a level that it will interfere with muscle action and cause the jelly legs. There will also be a prolonged period of recovery after such exercise, to allow the heart to slow down to a normal rhythm, the temperature of the body to regulate and for the body to make up the oxygen debt it will have incurred.

Anaerobic Exercise is exercise at high work intensity, where the needs of the muscle metabolism for oxygen, exceeds the capacity of the blood to supply it. It also uses the body's stored glucose as its source of producing energy.

Anaerobic exercise can take many forms a short high intensity 3 to 5 minute burst of activity is anaerobic exercise. Isometric and Isotonic in which the muscles contract against resistance – Callisthenics and Knee bends – Short Sprints – Sit-ups all improve strength, flexibility and joint mobility and are short duration exercise that is powered by metabolic pathways that do not use oxygen. Even though these exercises are described as without oxygen, following anaerobic exercise the respiration rate will still be high to make up the oxygen dept.

Anaerobic exercise mainly focuses on specific muscles, it creates endurance and strength. Opinions are divided some say it will not provide as many benefits as aerobic exercise but is a good supplement to a work out, others extol its virtues. When dancing or exercising and the anaerobic zone of performance are reached, it requires a dancer to pull on their training to be able to access that extra stored energy. They must also become accustomed to the feeling of the build up and dispersal of lactic acid.

Types of Anaerobic Exercise

- Outer thigh lifts at varying speeds.
- Inner thigh lifts at varying speeds.
- Tummy crunches at varying speeds.

Benefits and Dangers of Anaerobic Exercise

- Short bursts of anaerobic exercise triggers the metabolism, raises the heart rate and burns fat.
- EPOC = Exercise Post Oxygen consumption. The greater the intensity of the Anaerobic work out, the more oxygen the body needs to restore normal levels, resulting in the body burning calories for up to 36 hours after exercise
- Weight bearing exercise as part of an exercise programme will help gain functional strength (muscle tone) and increase the metabolism to burn more fat.
- Keep workouts simple and remember with anaerobic exercise - less is more.

It takes approximately 1 hour to disperse lactic acid after a cool down of gentle exercises and about 2 hours or more without the exercise. Whilst lactic acid doesn't have a dangerous effect on the body in small amounts (perhaps a bit of stitch or cramp) too much can cause harm. This is why anaerobic exercise should be done in short bursts, interspersed with periods of recovery by varying the intensity of the activity to reduce the levels of lactic acid.

In time the body will gradually build up greater tolerance to lactic acid and increase its ability to disperse it. Anaerobic exercise is a much more focused way of exercise and done regularly, will improve general health, fitness and help to inject energy into the end of an exercise programme or performance. Compromise must be reached to achieve a balance in any exercise programme and switching from Aerobic to Anaerobic actions will over time achieve a balanced level of fitness. The level of fitness achieved, will be the level of fitness required to be able to finish the exercise programme, competition dance or dance show with the optimum level of energy for performance.

It must be realised that unless a person is training for endurance races, there is absolutely no reason to train as though this is the aim. The level of activity in a well-balanced exercise programme should be sufficient to give the stamina and energy to cope with any activity encountered in our dancing, sporting and working lives.

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Produced for the IDTA by Bobbie Drakeford, March 2009
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