

# Cardiovascular Conditioning

The training you don't have time not to do!

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## **PART ONE – Cardiovascular Conditioning – Theory**

In the rapidly evolving world of dance, where athleticism and diversity in the presentation of dance forms are as valued as classical technique, the advantage can be in strategic training. Canada's National Ballet School is committed to logical, progressive and strategic training. Ballet is entrenched in tradition – this tradition can be respected while adopting some of the sports scientific methodology in an effort to maximize potential, increase performance longevity and reduce injury. One example is Cardiovascular Fitness / Conditioning.

### **What is cardiovascular (CV) fitness / conditioning?**

Cardiovascular fitness is the foundation of all physical development. In mechanical function, it can be defined in terms of maximal oxygen uptake or VO<sub>2</sub>max. VO<sub>2</sub>max is the maximum volume of oxygen consumed by the body each minute during exercise. VO<sub>2</sub>max is also referred to as maximal aerobic capacity. VO<sub>2</sub>max is expressed in milliliters of oxygen per kilogram of body mass per minute (ml/kg/min). The higher your VO<sub>2</sub>max, the greater your output of effort / work. VO<sub>2</sub>max depends on the external delivery system (cardiovascular system) to bring oxygen from the atmosphere to the working muscle cells and the mitochondria (oxygen capacity in skeletal muscles) to carry out the process of aerobic energy transfer. In practical terms, it is a measure of how long the body can sustain effort in workloads. **Cardiovascular fitness is the ability to resist fatigue or to persist in activity.** Therefore, as training takes a phenomenal number of repetitions to learn and master a new skill, CV fitness is important for sustaining energy through the learning curve with reduced injury risk.

### **What are the benefits of cardiovascular fitness?**

A significant benefit of training the CV system is the improvement in the efficiency of the heart, lungs and blood transport system. As the cardio-respiratory system becomes more efficient, it is able to pump more blood with each beat carrying the oxygen and fuel sources to the various tissues of the body. Therefore, the body is equipped to exert greater output with less effort. Other examples of the benefits of CV fitness training include:

- Increases self-esteem
- Facilitates faster recovery from fatigue
- Delays the onset of fatigue
- Reduces the potential for injury (unfit athletes are at greater risk)
- Allows for greater work efforts
- Loads the skeletal system
- Increases the metabolic rate
- Assists with weight control and desirable body composition
- Increases anaerobic capacity
- Lowers blood lactate concentrations
- Decreases stress reactions and anxiety

## How is cardiovascular fitness increased?

Gains in CV fitness can be realized adhering to the **FITT** principle.

**F** FREQUENCY  
**I** INTENSITY  
**T** TIME  
**T** TYPE

**Frequency** refers to the number of training sessions per week. Gains in CV development require a minimum of three (3) training sessions per week.

**Intensity** refers to the workload or exertion level of training. Gains in CV development require training at an appropriate intensity level. The intensity level range varies depending on the age, health and conditioning of the dancer / participant. Widely accepted in athletes is the lower intensity range of 70% maximum heart rate and the higher range of 85% maximum heart rate. The most accurate measures of intensity evaluate metabolic demand, such as oxygen uptake (VO<sub>2</sub>max) and blood lactate levels. These strategies are limited to a laboratory setting. Two examples of non-laboratory strategies to monitor training intensity include the Talk Test and basic Heart Rate Monitoring.

**Time** refers to the duration of the activity. Gains in CV development require a minimum of 20 minutes per training day. This 20 minutes can be realized in two 10 minute periods. It is important to understand that 20 minutes is exclusive of mandatory warm up and cool down periods.

**Type** refers to the exercise choice. Gains in CV development can be realized when an athlete participates in exercises that they are comfortable in doing for prolonged periods of time, that involve large muscle groups, that are rhythmical in nature and that they enjoy.

**Ergo, cardiovascular fitness can be increased by incorporating a minimum of 3 training sessions per week of 70%-85% intensity lasting for at least 20 minutes of fun exercise!**

### In the next issues:

PART TWO – Cardiovascular Conditioning – Practical Ideas: Stair Climbing

PART THREE – Cardiovascular Conditioning – Practical Ideas: Water / Pool Activities