Comparison of Cardiovascular Responses to Exercise and Recovery Pattern in Players

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Abstract

The study was conducted on 149 Punjabi University players preparing for inter university competition during their training camps held at Punjabi University, Patiala. The subjects were administered progressive workloads starting from 50W at 60 rpm on an electrically controlled bicycle ergometer and increased in steps of 25W every minute until the exhaustion of the subject. Blood pressure & minute heart rate were recorded during exercise and recovery at intervals of one minute during the course of exercise and 15 minutes of recovery. On the basis of the study it is concluded that significant differences are demonstrated by different category of players and physical education students in their blood pressure and heart rate responses to varying intensities of exercise and at different points of recovery.

Key Words: Maximal exercise, Recovery, Blood pressure, Heart rate

Introduction

After exercise, bodily processes do not immediately return to resting level. The variation in recovery from light, moderate and strenuous exercise is determined by specific metabolic and physiological processes resulting from each level of effort *(Hultman et al, 1967, Di parampero et el, 1983, Gaesser and Brooks, 1984,)*. During the initial minutes of recovery, even though the muscle is no longer actively working, oxygen demands do not immediately decrease; instead oxygen consumption remains elevated, temporarily. This is due to restoration of metabolic processes to its pre-exercise levels. This consumption, which exceeds the usually required when at rest, has traditionally been referred to as the oxygen debt. A more common term today is excess post exercise oxygen consumption (EPOC) *(Gaesser and Brooks, 1984)*. The EPOC curve has two distinct components: an initial fast component (alactacid debt) and a secondary slow component (lactacid debt) both components of the curve reflect the anaerobic activity that had occurred during exercise. The first phase of recovery is marked by rapidly declining VO_2 and heart rate. It is during this period that tissue stores of the ATP and Phosphocreatine (PCr) depleted in the muscle are restored within 30 seconds and 100% restored within 3 to 5 minutes (*Hultman et al, 1967*).

The ability to maintain muscle performance during high intensity exercise depends on the recovery performance in many individual and team sports. According to *Zafeiridis (2005)* a higher rate of PCr re-synthesis, a greater ability to tolerate buffer and remove H^+ and restore muscle pH and a greater oxidative enzyme activity may accelerate the recovery process.

Many sports such as football, boxing, hockey, wrestling, etc., have intense period of work alternating with short to moderate periods of rest (or reduced