

## **Aerobic Capacity in Endurance Trained and Resistance Trained Athletes**

**Sakthivelavan<sup>1</sup>, D.S. & Sumathilatha<sup>2</sup>, S.**

Corresponding Author<sup>1</sup>: No 8 A, Jai Balaji Nagar, Nesapakkam, Chennai 600078, Tamilnadu,  
e-mail – iconsakthi@yahoo.com

### **Abstract**

The study was aimed at comparing the aerobic capacity in endurance trained and resistance trained athletes. Thirty male athletes who received endurance training and thirty male athletes who received resistance training for a period of more than 1 year were chosen for the study. Physical parameters were measured and exercise stress testing was done on a cycle ergometer with a portable gas analyzing system. Functional capacity (FC) as percentage of predicted  $\dot{V}O_2\text{max}$  was measured to study the aerobic capacity. Highly significant ( $P<0.001$ ) differences existed in values of FC for endurance trained and resistance trained athletes. The higher aerobic capacity displayed by the endurance trained when compared to resistance trained athletes could be due to variations in adaptations that happen in them due to different types of training protocols. The levels of aerobic capacity reported from athletes abroad are higher compared to our athletes and this could prove to be a potential area of improvement for their much awaited superior performance in international arena.

**Key words: Endurance training, Resistance training, Functional capacity,  $\dot{V}O_2\text{max}$ .**

### **Introduction**

Primary interest in fitness research has traditionally centered upon cardio respiratory endurance (Mead *et al*, 1981). As there are not many studies conducted in the field of exercise physiology in India, this study was conducted to analyze the variations in aerobic energy capacities of South Indian male athletes who underwent two different forms of training. The athletes were divided into two groups based on their training. In one group there were athletes who predominantly received endurance training which involved continuous steady paced prolonged exercise in moderate intensities for long distances. On the other hand, the athletes in the other group received resistance training in the form of weight lifting. With this method, exercises were designed to strengthen specific muscles by causing them to overcome a fixed

resistance, usually in the form of a dumbbell or weight plates on a pulley – or cam-type machine (McArdle *et al*, 1996). The endurance trained athletes were mainly long distance and marathon runners; while the resistance trained athletes were predominantly sprinters but included hurdlers, long jumpers and volley ball players. This would result in various adaptations (Mead *et al*, 1981). Measurement of aerobic energy transfer in these individuals required the evaluation of long term energy system and it was done by assessing the Functional Capacity (FC). FC was considered as the percentage of predicted  $\dot{V}O_2\text{max}$  ( $\dot{V}O_2\text{max}$  is the maximal amount of oxygen a person could take in per unit time).

### **Material and Methods**

*Selection and preparation of Participants*