Abstract

Title: Heart rate recovery as a predictor for VO_2max and anaerobic threshold

Objectives: The aim of the study was to determine the statistical relationship between the maximum VO_2max values at standardized loading, with a decrease in heart rate after maximal loading, and functional anaerobic threshold values.

Methods: Ten healthy men, aged 22-26 years, participated in the testing. The probands had their blood pressure, weight and height measured before testing. Subsequently, they were fitted with a silicone spiro-ergometric mask and chest belt to measure heart rate. After stepping on the treadmill ergometer, standing spirometry (FEV1/FVC) and minute ventilation in sitting were performed. In the warm-up, probands completed a run for 4 minutes (11 km/h, 0° incline). In 5th minute the incline was set to 5°. From the 6th minute onwards, the speed of the treadmill ergometer was increased by 1 km/h every minute until the proband could not continue. After the run, the proband was seated and heart rate was measured for 5 minutes along with spirometry.

Results: Although there was a positive correlation between the heart rate recovery after 30 s, 90 s and 240 s after maximal load and peak values of VO_2max, these correlation (r = 0,51, r = 0,49, r = 0,53) are not strong enough to generalize the results. No statistical dependence was determined between functional parameters at the level of anaerobic threshold and heart rate recovery or VO_2max peak values.

Key words: load, adaptation, oxygen utilization, regeneration rate