Differences in aerobic capacity and spirometric parameters between athletes and nonathletes

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Aim: To investigate if there are differences in aerobic capacity and spirometric parameters between athletes and nonathletes, and also differences in these parameters between anaerobic and aerobic athletes.

Introduction: Physical fitness is defined as ability of organism to increase level of metabolic processes due to increased level of metabolic needs. Aerobic capacity is measured by maximum level of oxygen consumption (VO2max), and it can be expressed by absolute (l/min) or relative (ml/kg/min) value. Pulmonary capacity has great evaluation importance for sport and health of general population.

Methods: Number of participants was 45 males, aged 18–35 years, divided into 2 groups: athletes and nonathletes. Athletes were divided by sport type in aerobic and anaerobic group of athletes. Testing was consisted of anthropometric measuring, spirometry and measuring of aerobic capacity on ergocycle with mask, by principle of ramp test.

Results: Value of VO2max in group of athletes (55.46 ml/kg/min, p < 0.05) was significantly greater than in group of nonathletes (37.78 ml/kg/min, p < 0.05). Compared between all groups, VO2max showed significant difference in both aerobic (58.88 ml/kg/min, p < 0.05) and anaerobic (52.04 ml/kg/min, p < 0.05) athletes in relation to nonathletes (38.78 ml/kg/min, p < 0.05). Spirometric parameters (FVC, FEV1) were significantly greater in group of nonathletes (5.481 L, 4.635 L, p < 0.05) than in group of athletes (4.874 L, 4.635 L, p < 0.05). Compared between all groups, we found significant difference in FVC between group of nonathletes (5.481 L, p < 0.05) and anaerobic athletes (4.807 L, p < 0.05), and in Tiffeneau index between group of anaerobic athletes (97.29%, p < 0.05) and nonathletes (90.82%, p < 0.05).

Conclusion: Values of anthropometric parameters are greater in group of nonathletes. Differences in body weight and body mass caused greater values of FVC and FEV1 in group of nonathletes. Values of aerobic capacity are increasing with training. The greatest values of aerobic capacity are shown by aerobic athletes.

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References