ERGOSPIROMETRIC ASSESSMENT OF CARDIAC PARAMETERS IN TOP LEVEL MALE BASKETBALL PLAYERS

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Aim: Modern basketball has been considered as a “dynamic sport of moderate intensity”, but static loads are also present both during game situations as in training program. The energy sources for making motions in basketball are aerobic as well as anaerobic, depending on different styles of play seen in different countries. Good aerobic abilities are important mostly because reduce negative effects of exhaustion and enables faster recovery in a short break-up during the game. All mentioned loadings cause adaptive physiological and functional changes of all body, especially cardiovascular system. There are very few data in literature about functional capacity and adaptive characteristics of cardiovascular system in basketball players.

Method: Subjects in this study were 35 elite male basketball players and 34 sedentary controls matched by age, BH, BW and BSA. Ergospirometric maximal test on treadmill were used to assess cardiac parameters at rest; at maximal workload and in recovery. We obtained following parameters: HR at rest, at the moment of limiting 50, 75, 80, 85, 90, 100% VO2max, at ventilatory threshold (HRVT) and in recovery; systolic and diastolic blood pressure (TAs, TAd), oxygen uptake (VO2), production of carbon dioxide (VCO2), oxygen pulse (VO2/HR), ventilatory equivalents for oxygen and carbon dioxide (EqO2, EqCO2) and double product (HR×TAs) at all three levels of physical activity.

Results: HR was significantly lower at all relative levels of physical activity in basketball players. Blood pressure at rest remained unchanged, but at maximal workload was significantly lower in basketball players comparing to sedentary control population. VO2max, VCO2max and VO2/HRmax were significantly higher in athletes. EqO2, EqCO2 at maximal workload were lower in athletes then in sedentary. Double product was lower in athletes at all levels of physical activity.

Conclusion: Aerobic functional capacity is moderately altered in top level basketball players. Better cardiac work efficiency as an adaptation to physical training in basketball players originates from lower heart rate at all relative levels of physical activity and decrease of blood pressure, what beside other well known effects, decreases myocardial oxygen consumption. Minute ventilation necessary to supply enough oxygen and to eliminate produced carbon dioxide during maximal effort in these athletes is also lowered.