

Cardiorespiratory capacity in sporting population

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Summary

VO₂max and VO₂max/kg values were directly obtained during 2777 measurements in competitive athletes and active but not competing subjects.

The normatives of cardiorespiratory capacity for different age groups of male and female endurance athletes (Group A), team sport players (Group B) and other sports (group C) were established, and compared to normatives for Czech population based on the International Biological Program (IBP) results (Seliger a Bartůněk 1976).

The most favorable values of cardiorespiratory capacity (both VO₂max; VO₂max/kg and W170;W170/kg) were found in the group A athletes (endurance trained) – both males and females. Their level highly exceeded the values of untrained CS IBP population and also those obtained in control group D in this study.

The highest correlation was found between VO₂max and Wmax and between VO₂max/kg and Wmax/kg. This high correlation was very similarly high in the whole sample of 2777 examinations, in the sample of men (n=2015) and women (n=762) and also in all age-groups in different athletic groups A to D.

It was proved that VO₂max and VO₂max/kg values could be calculated according to the maximal performance attained on bicycle ergometer.

During spiroergometric examination the values of stroke volume and cardiac output can also be calculated. These values represent additional data closely correlating with the adaptive changes of circulatory system.

Regular aerobic endurance exercise could reduce biological age of active individuals by 10 to 20 years with a correspondingly decreased likelihood of becoming dependent when a senior and an expressive improvement in the quality of the final years of life (Shephard 1994). VO₂max and VO₂max/kg

values represent important health quality marker. They also offer feedback information, positive and/or negative, about the effectiveness of physical activity influencing its development. Thus, aerobic fitness level has been strongly and positively associated with reduced disease and mortality rates, good quality of life, performance level, and functional ability.