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Characteristics of the inspiratory muscle strength in the well-trained male and female athletes

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Biol Sport 2008; 25 (1):

ICID: 890357

Article type: Original article

IC™ Value: 9.57

Abstract provided by Publisher



Measurement of the maximal inspiratory mouth pressure (P_Imax) is a simple, reproducible, and non-invasive method frequently used for estimation of the inspiratory muscle strength. The aim of the study was to assess the P_Imax values in well-trained representatives of the endurance sports and to determine the basic relationships between these values and age, training experience, somatic indices and aerobic capacity of the tested subjects. Overall, thirty female and thirty-five male elite junior and senior representatives of the endurance sports were included in the investigation. P_Imax and maximal oxygen uptake (VO₂max) were estimated in all the subjects. In the female athletes the obtained mean P_Imax values (118± 24 cm H₂O) were significantly lower than the respective values estimated in their male counterparts (143± 25 cm H₂O). Of all the tested relationships significant correlation was detected only between P_Imax and VO₂max in the females (r=0.475) and only between P_Imax and the body mass index (BMI) in the males (r=0.501). Since the published values of P_Imax vary greatly depending, among other factors, on the studied population, methods and techniques of the measurement and motivation of the tested subjects it is suggested that each laboratory elaborate its own reference values. The results indicate that in the female and in the male athletes the inspiratory muscle strength is not related to the body size. On the other hand, the detected correlation between P_Imax and BMI in the males may suggest a possible relationship between the inspiratory muscle strength and the total muscle mass. Presumably, endurance training in the well-trained individuals can not enhance any more the inspiratory muscle strength or the described relationships are indirect and depend on the intersexual differences.

ICID 890357

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