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Title: Comparison of the sensitivity and specificity of the methacholine challenge test and exercise test for the diagnosis of asthma in athletes

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Body: Objective: to compare specificity and sensitivity of the metacholine challenge test (MCT) and exercise challenge test for the diagnosis of bronchial asthma in athletes. Methods: 19 athletes (12 M/7 F, mean age 24.8±3.6 yrs) with respiratory symptoms were studied. Lung function with assessment of reversibility to salbutamol (n=19), MCT (n=19) and exercise test on a bicycle ergometer (n=17) were performed. The specificity and sensitivity of the MCT and exercise test were evaluated. Results: Significant reversibility to salbutamol was found in 5 athletes. The fall in forced expiratory volume in one second (FEV1) following the metacholine inhalation (<8 mg/ml) was more than 20% in 10 athletes. The MCT showed high specificity (100%), high sensitivity (100%) and negative predictive value (100%). At the moderate cut-off value (<4 mg/ml), the MCT had a more low sensitivity (80%) and negative predictive value (82%). Exercise challenge test was negative in all the athletes. The maximal fall in FEV1 during 15 min after exercise was 0.2±2.4%, no significant differences between the group of athletes with asthma and a group of healthy athletes have been identified: 0.3±3.2% vs 0.7±1.5%, p=0.386477. Conclusion: Assessment of bronchial hyperresponsiveness by a metacholine challenge test is good procedure of diagnosing asthma in athletes. The MCT in athletes with respiratory symptoms had a high specificity and sensitivity. Low sensitivity of the exercise challenge test may result in inefficiency of this method for the diagnosis of bronchial asthma and exercise-induced bronchospasm in athletes.