

# PHYSICAL ACTIVITY OF ASTHMA PATIENTS DEPENDING ON THE LEVEL OF DISEASE CONTROL

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## *Abstract*

*The aim* was to study the physical activity of asthma patients with different levels of disease control.

*Materials and methods.* 165 patients with asthma, mean age ( $41.8 \pm 4.2$ ) years were examined. During the study period all patients were divided into 3 groups: 50 patients ( $35.3 \pm 3.8$ ) % — well-controlled asthma, 60 patients ( $38.5 \pm 3.5$ ) % — partially-controlled asthma and 55 patients ( $40.3 \pm 3.8$ )% — uncontrolled asthma. The diagnosis considered the history, clinical symptoms, lung function values and bronchodilator reversibility. Severe comorbidities were not observed in any of the patient's groups. As a control, 30 apparently healthy volunteers were enrolled.

*Results and conclusions.* Study demonstrated, that the physical activity of patients with asthma correlated with the level of control of the disease. In uncontrolled asthma due to persistent chronic bronchial constriction at maximum physical exertion the dynamic lung hyperinflation and a depletion of the breathing reserve (BR) occur. This makes the cardiovascular system work not effective (a significant increase in systolic blood pressure and heart rate (HR), a decrease in HR reserve and a drop in the oxygen pulse at the peak workout). As a consequence, the oxygen consumption and redistribution to working muscles becomes disturbed (decrease in oxygen consumption in ml per minute and oxygen consumption in ml per minute per kg of body weight). A decrease in blood saturation at the maximum physical activity, increase in blood concentration of  $\text{CO}_2$  (increase in ventilation equivalent for  $\text{CO}_2$  at the boundary of the anaerobic threshold and at the maximum load with a low ventilation equivalent in oxygen at the boundary of the anaerobic threshold and at the maximum load) ultimately led to a decrease in maximum reached physical activity and low physical exercise tolerance.

In partially-controlled asthma, all of the above mentioned changes were less pronounced. Such patients demonstrate higher adaptive capacity and cardiorespiratory endurance during exercise (patients can perform more physical exercise). In controlled asthma the patients were fully fit for daily physical activity according to their age and social activity, having high quality of life. Therefore, reaching complete asthma control with the evaluation of cardiovascular system physical condition is essential aim of the asthma management.

**Key words:** bronchial asthma, physical activity.

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