EFFECTS OF ENDURANCE TRAINING ON FUNCTIONAL STATUS OF THE RESPIRATORY MUSCLES IN HEALTHY MEN

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Abstract
Introduction. The aim of the study was to assess the influence of an 8-week endurance training program on the functional status of the respiratory muscles and breathing efficiency. ***Material and methods.*** Thirteen healthy, untrained, male students of Physical Education volunteered to participate in the study. Before and after the subjects completed the training program, they were subjected to anthropometric and spirometric measurements, and performed an incremental stress test. The spirometric measurements included maximal inspiratory pressure (PImax), active time, passive time, and diaphragm relaxation time. Measuring PImax is a simple method of evaluating the strength of the inspiratory muscles. The 8-week training program was performed on a rowing ergometer 3 times per week, using aerobic workloads. ***Results.*** The study did not confirm a significant improvement in the measured spirometric parameters following the training program. However, we observed a trend of increase in PImax values by 12 ± 21% of borderline after the training program and a significant correlation ($p < 0.05$) between the changes in PImax and those in VO_2 max. Following the training there was also a significant reduction in the amount of body fat by 1.4 kg and an improvement of work capacity. The response of the respiratory system to exercise was also enhanced, as breathing efficiency improved (tidal volume increased in maximal exercise, while lung ventilation, the ventilatory equivalent for oxygen, and breathing frequency decreased in submaximal exercise). ***Conclusions.*** The findings of the study suggest that traditional endurance training which is implemented over a 8 weeks is not a sufficiently strong stimulus to cause a significant increase in the strength of the inspiratory muscles.

Key words: endurance training, respiratory muscle strength, aerobic capacity, breathing efficiency