

THE EFFECT OF INSPIRATORY MUSCLE TRAINING ON FATIGUE RESISTANCE OF RESPIRATORY MUSCLES DURING EXHAUSTIVE EXERCISE

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The aim of this study was to assess the effect of inspiratory muscle training (IMT) on fatigue resistance of diaphragm (D), parasternal (PS), sternocleidomastoid (SCM) and scalene (SC) muscles in healthy human during exhaustive exercise. Daily inspiratory muscle strength training was performed for 3 weeks in 10 male subjects (at a pressure threshold load of 60% of $P_{I_{max}}$ for the first wk, 70% of $P_{I_{max}}$ for the second wk, and 80% of $P_{I_{max}}$ for the third wk). Before and after training, subjects performed an incremental cycle test to exhaustion. Maximal inspiratory pressure ($P_{I_{max}}$) and EMG-analysis of (D), (PS), (SCM), and (SC) muscles served as parameters for inspiratory muscle fatigue assessment. The before-to-after exercise decrease in MIP and centroid frequency (f_c) of EMG (D, PS, SCM and SC) power spectrum ($P < 0.05$) was observed in all subjects before IMT intervention. On the contrary, there were no found the before-to-after exercise significant changes in MIP and (f_c) after IMT program. The present study found that in healthy subjects, IMT results in significant increase in $P_{I_{max}}$ (+15%), a delay of inspiratory muscle fatigue during exhaustion exercise and a significant improvement in maximal work performance. We conclude that IMT increases the resistance of D, PS, SCM and SC to fatigue development during high-intensive exercise and these changes seem to improve the maximal work performance in healthy subjects.