EFFECTS OF RESPIRATORY MUSCLE TRAINING (RMT) ON RESPIRATORY FUNCTIONS AND ROWING PERFORMANCES IN SRI LANKAN ROWERS: A RANDOMIZED CONTROL STUDY

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Respiratory muscle training is known to improve respiratory functions and performance in sportsmen. The aim of this study was to determine effects of a 12-week specific respiratory muscle training program on the rowing performance and respiratory functions in elite Sri Lankan rowers. A case controlled randomized study was conducted on 20 male rowers (test group n=11; control group n=9) aged 20-35 years during the competitive period. At the beginning of the study, assessment of lung volumes and capacities namely; peak inspiratory flows (PIF), peak expiratory flows (PEF), vital capacity (VC), forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1) and FVC/ FEV1 were done using a portable spirometer while respiratory muscle strength (RMS), maximal inspiratory (PImax) and expiratory pressures (PEmax) were measured using a mouth pressure meter in all rowers. Performance was assessed by the 2000 m and 5000 m rowing ergometer. Subsequently, rowers in the test group were prescribed a respiratory muscle strengthening exercise program consisting of a warm up session, flexibility training, inspiratory and expiratory muscle strengthening while the control group was prescribed a "general exercise program" for non-respiratory muscles for a 12 week period after which the all respiratory parameters and performance were assessed. The mean ergometer time trial for test and control groups were 2000 m (6.3+ 0.2, 7.2+ 0.2 minutes) and 5000 m (18.2 + 0.7, 19.5+ 0.3 minutes) respectively. The mean lung parameters for the test and control groups were PIF: (2.5+ 0.6, 3.3+ 0.9), PEF: (14.5+ 1.2, 14.8+ 1.5), VC: (8.3+ 1.4, 7.9+ 1.5), FVC: (7.0+ 0.8, 6.4+ 1.4), FEV1:(6.0+ 0.9, 5.7+ 1.4) and FVC,/ FEV1: (1.2+ 0.1, 1.1+ 0.1) respectively, while the means for RMS and RMF were IMS: (134.4+ 36.8, 136.8+ 26.1), EMS: (187.4+ 45.4, 180.1+ 36.9), IMF: (25.4+ 14.9, 20.6+ 20.5) and EMF: (31.8+ 14.4, 29.0+ 28.4) respectively. The ergometer performance, PIF and PEF were significantly higher in the test group (p<0.05) while no significant difference was identified in inspiratory, expiratory muscle strength and fatigue between the two groups (p>0.05). Results suggest that respiratory muscle training has a beneficial effect on exercise performance and rowers' respiratory functions.

Keywords: Respiratory Muscle Strength, Lung Volumes, Exercise Performance