

Presented at the Medical Research Society, August 1998

Clinical Science: 95: 4P, 1998

Inspiratory muscle training improves lung function and reduces exertional dyspnoea in mild/moderate asthmatics

AK McCONNELL, MP CAINE, KJ DONOVAN, AK TOOGOOD and *MR MILLER

Sports Medicine & Human Performance Unit, School of Sport & Exercise Sciences & *Department of Medicine, The University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK

Weiner et al. (1992) have reported improvements in lung function, asthma symptoms and reductions in usage of medication following six months of pressure threshold inspiratory muscle training (IMT). Where interventions require compliance with a programme of training, it is important that patients perceive benefits rapidly if compliance is to be maintained. We examined the changes induced by 3 weeks of IMT in mild/moderate asthmatics.

Using a single-blind, control design, 18 subjects (10 male) with stable, mild/moderate asthma were randomised to two groups matched for sex and forced vital capacity (FVC). Both groups used a pressure threshold inspiratory muscle trainer (POWERbreathe®). Nine used a protocol which has proven effective in our hands (30 breaths @ ~50% maximum inspiratory pressure (MIP), twice daily), whilst the remainder used a protocol known to be ineffective (60 breaths @ ~20% MIP, twice daily). Lung function, MIP and maximum expiratory pressure (MEP), and exertional dyspnoea were assessed at baseline and after 3 weeks of IMT. Dyspnoea was measured at 1 min intervals during an incremental cycle test to volitional fatigue using a modified Borg scale. A mean Borg score was calculated pre- and post-IMT. Perceptual changes were assessed using a questionnaire. Statistical comparisons were made by repeated measures ANOVA; significance was set at $P < 0.05$.

Post-training the IMT group exhibited significant increases in MIP (109 to 121 cmH₂O, $P < 0.004$) and peak expiratory flow rate (510 to 551 litres.min⁻¹, $P < 0.05$), as well as a 12.4% reduction in exertional dyspnoea ($P < 0.006$). FVC and forced expiratory volume in 1 sec showed non-significant improvements (4.5% and 8.6%, respectively). The IMT group also reported a significant increase in their motivation to perform exercise ($P < 0.03$). There were no statistically significant changes in the control group.

The data are consistent with those of Weiner et al. (1992) and confirm their hypothesis that improvements in MIP and lung function translate into a reduction in exertional dyspnoea. In addition, the data suggest that where appropriate training regimens are used, these changes are observed within 3 weeks of commencement of IMT and lead to an increase in patients' motivation to take exercise.

Reference

Weiner et al. (1992). Chest 102 (5): 1357-1361.