Breathing training improves subjective health status but not pathophysiology in asthmatic adults

Synopsis


Question: Does breathing training improve respiratory symptoms, quality of life and objective markers of disease severity in adults with asthma? Design: Randomised controlled trial. Setting: Ten general practitioner (GP) practices in Leicester, UK. Participants: Adults treated for asthma in a GP practice with moderate impairment of asthma-related health status, defined as a score less than 5.5 on the Asthma Quality of Life Questionnaire (AQLQ). Smokers were excluded. Randomisation of 183 participants allotted 94 to breathing training and 89 to a control group. Interventions: Usual physicians for both groups were requested to continue baseline therapy if possible. All participants were invited to 3 sessions within one month: an initial 60-min session with 2–4 participants, followed by two individual sessions of 30–45 minutes. At these sessions, the intervention group were educated about abnormal breathing patterns and taught appropriate regular diaphragmatic and nasal breathing techniques and encouraged to practise these exercises for at least 10 min each day. At the control group’s sessions, an asthma nurse provided information on the nature of asthma, atopy concepts, and treatment rationale, without providing personalised asthma advice. Outcomes: Assessments were undertaken at baseline, post-treatment and at 6 months. The primary outcome measure was the AQLQ. Secondary outcome measures were the Asthma Control Questionnaire (ACQ), the Nijmegen hyperventilation questionnaire (NQ), the Hospital Anxiety and Depression Scale (HADS), lung function, bronchial hyper-responsiveness and reversibility, resting minute volume and end-tidal carbon dioxide, inflammatory markers, exhaled nitric oxide, and corticosteroid use. Results: Although both groups improved substantially by 1 month on the AQLQ, most of the other questionnaires, lung function and minute volume, there were no significant between-group differences. However, by 6 months, the intervention group had significantly better scores than the control group on the total AQLQ score by 0.4 (95% CI 0.1 to 0.7) and on the AQLQ Symptoms, Activities, and Emotions subdomains. Also at 6 months, the intervention group was significantly better than the control group on the HADS Anxiety score by 1.0 (95% CI 0.2 to 1.9), the HADS Depression score by 0.7 (95% CI 0.1 to 1.3), and the NQ score by 3.2 (95% CI 1.0 to 5.3). None of the other outcomes differed significantly between groups at any time. Conclusion: Breathing training improves asthma-specific subjective health status but does not influence the pathophysiology of the disease.

Commentary

In 2004, the Cochrane review of breathing training for asthma (Holloway and Ram) was largely inconclusive due to inconsistent results between studies. Since then, this study and several others that would be eligible for inclusion in that review have been published (Holloway and West 2007, Slader et al 2006, Thomas et al 2009). Among all the relevant trials, there is still no consistent evidence that breathing training improves objective measures of disease severity. By contrast, almost all the trials have identified an improvement in outcomes reflecting the influence of symptoms on quality of life or a reduction in medication requirements. Where such benefits have not been identified, strong trends have occurred in underpowered trials. This suggests that the next version of the Cochrane review is likely to reach the same conclusion as this study: breathing training improves asthma-specific health status and other patient-centred measures in patients whose quality of life is impaired by asthma, despite not having a clinically marked effect on the underlying pathophysiology.

This trial has overcome some of the criticisms levelled at other trials in this area, such as the lack of comparable clinical contact to control for the individual attention received by participants in the intervention group, unsophisticated measures of inflammation, and inadequate statistical power (Bruton 2008, Holloway and Ram 2004). Despite the relatively high pre-intervention drop-out rate (12%) this trial achieved reasonable group numbers. However, it still has some minor limitations: reliance on documentation of a diagnosis of asthma in medical records with no confirmatory assessment, and lack of blinding of most of the parties involved. However, the study did blind the data analysts, for whom blinding has only recently been recommended (Kolahi and Abrishami 2009).

The benefits of breathing training in asthma appear clinically worthwhile despite the probable absence of an effect on the underlying pathophysiology. Physiotherapists should consider using this intervention in appropriate patients.

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References