

Appraisal

Critically appraised paper: The addition of exercise training to a weight-loss program improves clinical control in adults with asthma

Synopsis

Summary of: Freitas PD, Ferreira PG, Silva AG, Stelmach R, Carvalho-Pinto RM, Fernandes FL, et al. The role of exercise in a weight-loss program on clinical control in obese adults with asthma. A randomized controlled trial. *Am J Respir Crit Care Med.* 2017;195:32–42.

Question: Does the addition of exercise training to a weight-loss program improve asthma control, health-related quality of life, and airway inflammation in obese adults with asthma? **Design:** Randomised controlled trial with concealed allocation and blinded outcome assessment. **Setting:** Tertiary hospital in Brazil. **Participants:** Inclusion criteria were physically inactive adults (30 to 60 years) with clinically stable moderate/severe asthma and a body mass index between 35 and 40 kg/m². Exclusion criteria were: cardiovascular, musculoskeletal or other chronic pulmonary disease; uncontrolled hypertension or diabetes; weight changes > 5% and/or antiobesity drug use within 6 months; bariatric surgery; and (past) smoking. Randomisation of 55 participants allocated 28 to an intervention group and 27 to a control group. **Interventions:** Both groups undertook a weight-loss program conducted by a nutritionist and a psychologist that comprised 12 individual sessions on hypocaloric diet counselling and behaviour change techniques. In addition, the intervention group completed 60 minutes of supervised aerobic and resistance exercises, twice/week for three months. Aerobic training intensity was prescribed at 50 to 75% of peak oxygen uptake. Resistance training for major muscle groups was prescribed at 50 to 70% of

one repetition maximum. The control group completed 60 minutes of sham exercises (stretching/breathing), twice/week for three months. **Outcome measures:** The primary outcome was change in the Asthma Control Questionnaire score after three months of intervention. Higher scores mean poorer control and a change of 0.5 points is regarded as clinically significant. Secondary outcome measures included health-related quality of life and airway inflammation. **Results:** A total of 51 participants completed the study (26 in the intervention group and 25 in the control group). At three months, the intervention group had a better (lower) Asthma Control Questionnaire score (MD -0.61, 95% CI -0.96 to -0.26), better health-related quality of life measured via the Asthma Quality of Life Questionnaire (MD 0.86, 95% CI 0.21 to 1.51) and less airway inflammation measured by the fractional exhaled nitric oxide (MD -7.5 ppb, 95% CI 1.5 to 13.5). The intervention group also had a lower body mass index (MD -1.6 kg/m², 95% CI -2.3 to -0.9). **Conclusion:** Adding exercise to a short-term weight-loss program is a useful strategy to achieve clinical control in obese adults with asthma. [95% CIs calculated by the CAP Editor.]

Provenance: Invited. Not peer reviewed.

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Commentary

An increasing number of asthmatics are obese, which is reflective of trends in the general population. This poses an important clinical dilemma because obese asthmatics have worse lung function and symptoms, which do not respond well to asthma pharmacotherapies.^{1,2} Weight loss improves asthma³ and can be achieved in morbidly obese patients via bariatric surgery, with 20 to 30% weight loss typically seen within 2 to 3 years.⁴ However, surgery is not indicated for the majority of obese asthmatics who are below the body mass index criteria or otherwise unsuitable for surgery. Hence, non-surgical strategies are needed such as dietary restriction and exercise interventions. Whilst more modest weight loss is likely, these strategies are nonetheless worthwhile, as just 5 to 10% weight loss results in clinically significant improvements in asthma control and quality of life in the majority of obese asthma patients.³

The study by Freitas et al is one of very few randomised, controlled trials that have evaluated non-surgical weight loss in obese asthmatics. They used a dietary restriction intervention with and without the addition of an exercise program. The group undertaking exercise had greater weight loss and greater improvement in asthma control. These findings are not surprising, as exercising increases the energy deficit in favour of weight loss. Further, weight loss improves asthma control.³ However,

importantly, improvements in aerobic capacity predicted improvements in asthma control, independent of body weight reduction. These findings suggest that while weight loss alone improves asthma control, similar improvements can be achieved with lesser weight loss if there is a corresponding improvement in aerobic capacity.

In summary, this study suggests that the benefits of exercise are both independent and complementary to body weight reduction. Strategies for this population should incorporate a physical activity component to improve respiratory outcomes, and overall health and well-being.

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References

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