

# A randomised controlled study of the effectiveness of breathing retraining exercises taught by a physiotherapist either by instructional DVD or in face-to-face sessions in the management of asthma in adults

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**Declared competing interests of authors:** Mike Thomas is a member of the Health Technology Assessment (HTA) Primary Care, Community and Preventive Interventions (PCCPI) Panel. In the last 3 years he has received speaker's honoraria for speaking at sponsored meetings or satellite symposia at conferences from the following companies, marketing respiratory and allergy products: Aerocrine, GlaxoSmithKline (GSK) and Novartis International AG. He has received honoraria for attending advisory panels with Aerocrine, AstraZeneca, Boehringer Ingelheim, GSK and Novartis. He has received sponsorship to attend international scientific meetings from GSK and AstraZeneca and has received funding for research projects from GSK. He is a member of the British Thoracic Society (BTS)/Scottish Intercollegiate Guidelines Network (SIGN) Asthma Guideline Group and the National Institute for Health and Care Excellence (NICE) Asthma Guideline Group. Paul Little is Editor-in-Chief of the *Programme Grants for Applied Research* journal and is a member of the National Institute for Health Research (NIHR) Journals

Library Board. Lucy Yardley is a member of the *Public Health Research* journal Research Funding Board and a member of the HTA Efficient Study Designs Board and reports grants from the NIHR during the conduct of the study. James Raftery is a member of the NIHR Journals Library Editorial Group and the HTA and EME Editorial Board and was previously Director of the Wessex Institute and head of the NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC). He is also a former member of the NIHR HSDR Research Led Board. Ian Pavord has received speaker's honoraria for speaking at sponsored meetings in the last 5 years from AstraZeneca, Boehringer Ingelheim, Aerocrine, Almirall Ltd, Novartis and GSK. He has received honoraria for attending advisory panels with Almirall, AstraZeneca, Boehringer Ingelheim, GSK, MSD, Schering-Plough, Novartis, Dey Pharma, Napp Pharmaceuticals and RespiVert Ltd. He has received sponsorship to attend international scientific meetings from Boehringer Ingelheim, GSK, AstraZeneca and Napp. He is Chief Medical Advisor to Asthma UK, a member of the UK Department of Health Asthma Strategy Group, a member of the BTS/SIGN Asthma Guideline Group and joint Editor-in-Chief of *Thorax*. Neither Ian Pavord nor any member of his family has any shares in pharmaceutical companies. David Price reports other Board Membership (fees paid to Research in Real Life Ltd) from Aerocrine, Almirall, Amgen Inc., AstraZeneca, Boehringer Ingelheim, Chiesi Ltd, Meda, Mundipharma, Napp, Novartis and Teva Pharmaceutical Industries Ltd; consultancy (fees paid to Research in Real Life Ltd) from Almirall, Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Meda, Mundipharma, Napp, Novartis, Pfizer Inc. and Teva; grants from the UK NHS, British Lung Foundation, Aerocrine, AKL Ltd, Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Eli Lilly and Co., GSK, Meda, Merck & Co., Inc., Mundipharma, Napp, Novartis, Orion, Pfizer, Respiratory Effectiveness Group, Takeda, Teva and Zentiva; lectures/speaking engagement fees (paid to Research in Real Life Ltd) from Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla Ltd, GSK, Kyorin Pharmaceutical Co., Inc., Meda, Merck, Mundipharma, Novartis, Pfizer, Skyepharma, Takeda and Teva; manuscript preparation fees (paid to Research in Real Life Ltd) from Mundipharma and Teva; payment for travel/accommodation/meeting expenses (paid to Research in Real Life Ltd) from Aerocrine, Boehringer Ingelheim, Mundipharma, Napp, Novartis and Teva; funding for patient enrolment or completion of research (paid to Research in Real Life Ltd) from Almirall, Chiesi, Teva and Zentiva; and payment for the development of educational materials (paid to Research in Real Life Ltd) from GSK and Novartis, outside the submitted work. In addition, David Price has an AKL Ltd patent pending and owns shares in AKL Ltd, which produces phytopharmaceuticals. He owns 80% of Research in Real Life Ltd (which is subcontracted by Observational and Pragmatic Research Institute Pte Ltd), 75% of the social enterprise Optimum Patient Care Ltd and 75% of the Observational and Pragmatic Research Institute Pte Ltd. Ratko Djukanovic has received fees for lectures at symposia organised by Novartis and Teva and for consultation for these two companies as a member of advisory boards. He is a co-founder and current consultant, and has shares in, Synairgen, a University of Southampton spin-out company.

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## Plain English summary

### Breathing retraining exercises in the management of asthma in adults

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## Plain English summary

Most adults with asthma have symptoms that affect their lives, despite taking appropriate medications, and many are interested in non-drug approaches. We compared breathing retraining delivered through 'face-to-face' physiotherapy sessions with both a self-guided programme [digital versatile disc (DVD) plus booklet] of breathing retraining that could be carried out at home and usual care. Adults with incompletely controlled asthma in primary care were randomised into one of these groups. They were assessed before starting the intervention and at 3, 6 and 12 months afterwards for asthma quality of life (QoL) and were also assessed with other questionnaire and physiological measures; in addition, qualitative interviews were carried out to obtain the perspectives of patients and an economic evaluation was performed.

We recruited 655 volunteers from general practice surgeries. QoL significantly improved in both active groups compared with usual care, with equivalent improvements between active groups. Patients reported feeling that the exercises were helpful and acceptable, although some participants who received the DVD would have appreciated talking to a physiotherapist. Lung function and inflammation were unaffected. There were consistent improvement trends in the active arms for symptom scores, rescue medication use, anxiety and depression and asthma attacks, but these improvements were not statistically significant and so could have occurred through chance. Asthma-related costs were lower in both of the active groups.

People with asthma felt and functioned better following breathing retraining delivered by either a DVD or a physiotherapist and programme costs were exceeded by savings from better asthma control, with the DVD being most cost-effective. Patients still had asthma but coped with it better. These simple exercises can be carried out at home and have the potential to improve asthma control and save money.



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