

Fact Sheet - Lung Health and Alpha-1 Antitrypsin Deficiency

Background

Chronic obstructive pulmonary disease (COPD), emphysema and bronchiectasis can be caused by alpha-1 antitrypsin deficiency (A1AD). Lung-affected individuals with A1AD can benefit from activities that support lung health. Lung disease can make it difficult to breathe and produce mucus. You may have excess mucus and cough daily (as your body tries to get rid of mucus). If you can clear mucus from your lungs it will help prevent lung infections, save energy and help you breathe.

A health professional, such as a physiotherapist, can teach you more about mucus clearing techniques. Speak with your doctor or a dietitian for weight related issues and a suitable diet for COPD such as a low-carbohydrate, high-fat diet which has been associated with improved breathing.⁽¹⁾

Activities to Support Lung Health

A wide variety of activities can support lung health including:

- avoiding lung irritants including smoke, chemicals, pollution, gas and dust
- avoiding sick people, use of social distancing or wearing a mask in public
- washing hands regularly / sanitising hands
- breathing exercises
- controlled coughing and huffing
- chest percussion (lightly taping your chest and back)
- the use of devices to clear mucus (such as a special vest or a positive expiratory pressure device i.e. a PEP hand held device)
- prescribed oxygen
- taking prescribed antibiotics at the first sign of a lung infection
- using prescribed inhalers
- walking, other exercise and lung rehabilitation
- nebulising with saline / hypertonic saline
- postural drainage (lying in different positions to help drain mucus)
- eating a low carbohydrate diet
- appropriate nutrition, especially in advanced COPD if you are experiencing weight loss or cachexia (extreme weight loss and muscle wasting)⁽²⁾
- in severely deficient individuals (e.g. ZZ genotype) with lung damage and disease such as bronchiectasis, having sputum tests and treating series lung infections such as non-tuberculosis mycobacterium (or monitoring in some cases) and avoiding possible sources of reinfection e.g. potting mix, gardening.

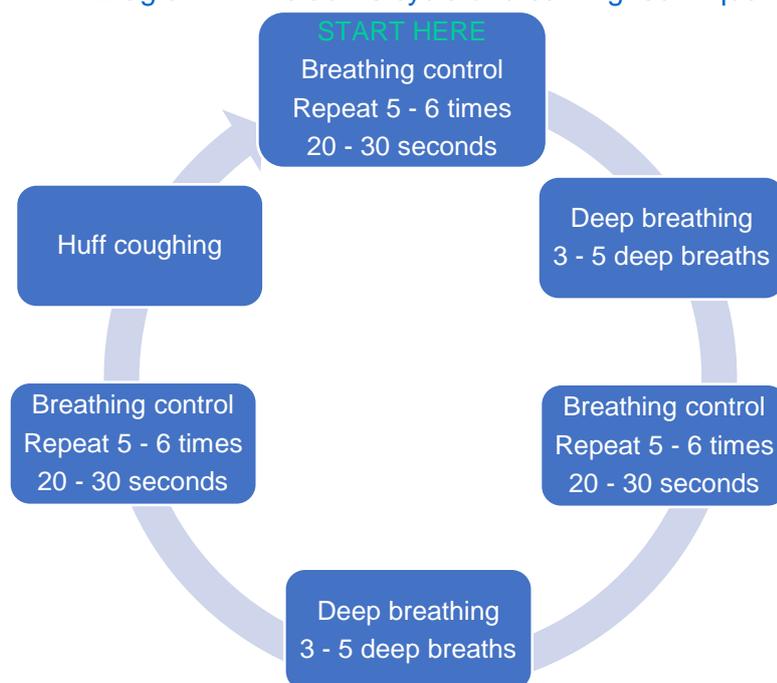
The Active Cycle of Breathing Technique

The active cycle of breathing technique (ACBT) is as clinically effective as other approaches⁽³⁾ and combines three techniques in a cycle, helping to clear mucus from the lungs. ACBT is a flexible approach. If you are short of breath, you can increase the first phase. Aim for about 10 minutes of ACBT once or twice a day, or more often if you have more sputum than usual. If you have mild disease you may not produce any sputum after huff coughing. Some people may cough up immediately, while others might cough up mucus an hour or so after using ACBT. The ACBT can be performed without special equipment. It can be combined with other techniques such as the use of PEP devices and postural drainage. ACBT can be done sitting in a chair, with good posture, lower back support and relaxed neck and shoulders. Each cycle of ACBT contains six phases. Each full cycle is usually repeated three or four times during the same session. The three parts are described below. Note, some parts are repeated during one ACBT cycle, as shown in the Diagram 1.

The Components of ACBT (some of which are repeated)

1. *Breathing control*: relaxing the airways with breathing control. Gently breath in through the nose and out of your mouth. Repeat five to six times or until you are settled.
2. *Deep breathing*: with chest expansion (i.e. thoracic expansion). Use long, slow, deep breaths to move the mucus out of your lungs by getting air behind the mucus using deep breaths. Repeat three to five times.
3. *Huff coughing*: a forced expiration technique where you squeeze air quickly from your lungs with a huff (like fogging a mirror), while exhaling through an open mouth instead of coughing. Use both small-long huffs and big-short huffs, moving mucus up into the larger airways to enable it to be coughed out. Huff coughing usually occurs at the end of the cycle but can be done during the cycle (as ACBT is a flexible technique). Small-long huffs move sputum from deep down in your lungs. Take a small breath in and huff out until your lungs feel empty. A big-short huff moves the sputum from higher up in your lungs which is good to move sputum out when you feel it ready to move.

Diagram 1: The active cycle of breathing technique



Where to go for information and support

Contact Alpha-1 Organisation Australia (A1OA)

- Website: www.a1oa.org.au
- Phone: 0450 406 693
- Email: contactus.a1oa@gmail.com

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This brochure is one in a series of information sheets produced by the Alpha-1 Organisation Australia (A1OA). This information is designed to be a guide only and does not replace advice given by your health professional. Any treatment information or brand names are correct at the time of printing. If the information raises concerns or if you have further questions please consult your doctor.

References

1. *The effects of high-fat and high-carbohydrate diet loads on gas exchange and ventilation in COPD patients and normal subjects.* **Kuo CD, Shiao GM, Lee JD.** 1, 1993, CHEST, Vol. 104, pp. 189-196.
2. *Nutrition in chronic obstructive pulmonary disease: a review.* **Rawal G, Yadav S.** 4, s.l. : Journal of Translational Internal Medicine, 2015, Vol. 3, pp. 151-154.
3. *A comparison of active cycle of breathing techniques (ACBT) with other methods of airway clearance therapies in people with cystic fibrosis.* **Mckoy NA, Wilson LM, Saldanha IJ et al.** s.l. : The Cochrane Collaboration, John Wiley & Sons Ltd, 2016.