Cystic Fibrosis Trust

Autogenic drainage

A physiotherapy breathing exercise

May 2022

Name			
DOB		**Hospital number**	
Physiotherapy recommendations			

In partnership with

ACPCF
Association Of Chartered Physiotherapists In Cystic Fibrosis

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Contents

Introduction

If you have cystic fibrosis (CF), you may produce mucus in your lungs which is thicker and stickier than the mucus produced by people who don't have CF. This thick mucus needs to be cleared.

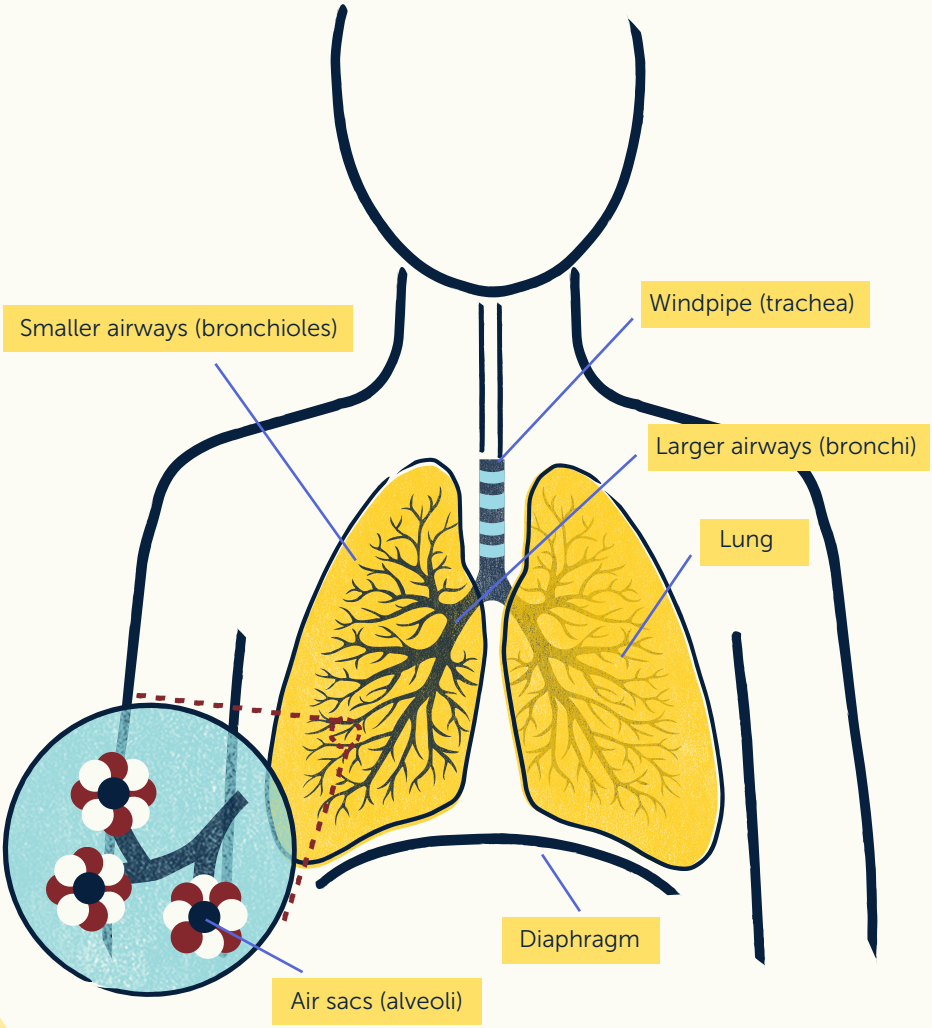
You might be shown breathing exercises to do as physiotherapy or to add into your physiotherapy routine with a device (machine or equipment). The two main types of breathing exercises used in CF are the active cycle of breathing techniques (ACBT) and autogenic drainage (AD). This resource explains about AD. For information on ACBT, please visit our website at **cysticfibrosis.org.uk/physioleaflets** or contact our **Helpline**.

AD is a series of breathing exercises which uses high flows of air to move mucus from the smaller airways, up into the larger airways so it can be cleared with as little effort as possible. AD can be taught to adults and children, and with the help of a parent or carer, AD can be used in babies too.

Your physiotherapist will teach you how to do AD and you can use this leaflet as a guide while you are learning.

Mucus, sputum, or secretions? People use different words to talk about the mucus in their lungs. Some people call it something different if it's in their lungs or if it has been coughed out. You can use the words you like, but here we will use the word mucus.

What are lungs like inside?



It's helpful to know a bit about your lungs first. Inside your ribcage there are two lungs that fill with air. Inside each lung are thousands of air tubes called airways. These airways move air containing oxygen from your mouth to little air sacs at the end of each airway. The air sacs are called alveoli. When you breathe, air is sucked down through the airways to the air sacs.

Inside the air sacs, oxygen passes into your blood vessels and goes off around the body where it is needed. At the same time, waste gases (including carbon dioxide) are passed from your blood vessels back into your airways to be pushed out as you breathe out.

The diaphragm, which is below your lungs, is the main muscle for breathing.

There is more information about how your lungs work and also about how CF affects the lungs, in our resource called '**Physiotherapy: keeping your lungs healthy**' which you can find at **cysticfibrosis.org.uk/physioleaflets**

Your airways are larger nearer your windpipe, but divide into smaller and smaller tubes until they reach the air sacs.

How does autogenic drainage work?

During autogenic drainage (AD), you make changes to your breathing to increase the movement of air in your airways. AD helps the air to move into your smaller, narrow airways which can become blocked or swollen. Air moving into these small airways will help move mucus up and out into your larger airways. Once the mucus has moved to your larger airways, it will be easier to clear.

How to do your AD treatment

Getting started

- If you take any inhalers or nebulisers before your physiotherapy (airway clearance), take them now.
- Blow your nose and huff or cough if you feel like you need to clear any mucus from your nose or from the back of your throat.
- Choose a relaxed, comfortable position so your breathing does not feel difficult.
- Drinking lots of water during the day may help make the mucus looser, so it's easier to clear.

There is a diagram on page 8. You can follow the diagram as you do your AD.

The test breath – where is the mucus?

- Relax, breath normally before starting AD.
- Take a deep breath in (so your lungs are completely full of air), then pause for three to four seconds before you start to breathe out.
- Breathe out as far as you can (empty your lungs completely). It helps to push gently with your tummy muscles towards the end of your breath out.
- Listen for a 'crackling' sound.
- If it's loud at the beginning of your breath out it means some mucus is already near your throat and is almost ready to be coughed up. Clear this first with a huff or cough.
- If the crackles are quiet or high pitched, or heard near the end of the breath out, the mucus is deep in your lungs.

It is important to know what these noises mean, because they tell you where the mucus is. If you know the different sounds, you will be able to change your breaths to help you either move mucus or clear it. A physiotherapist might call listening for different types of crackle sound 'listening for feedback'.

Moving mucus from deep in the lungs

• After listening for the crackles with your test breath, continue using the AD breathing.

• It is important to breathe out as far as you can, without wheezing or coughing, until you hear the crackles.

• To start with, you might need tocompletely empty your lungs of air at each breath out.

• Breathing like this will start to movethe mucus that is deep in your lungs (in your small airways).

• Remember your breath in shouldbe slow and just a little bit bigger than the size of your normal resting breath.

• Continue with your AD breathing and start to take in deeper breaths as you hear the crackles get louder or as you start to feel the mucus move.

As you take a deeper breath in you won't need to keep emptying your lungs each time because the mucus should be moving up through your airways. If you're unsure about the technique, take another look at the diagram.

• While breathing, it may help to put your hands on the front or sides of your chest – you may be able to feel the crackles as well as hear them.

Coughing

Try not to cough for as long as you can during your AD breathing.

• You might find it helps to swallow or to go back to normal breathing for a rest. If you can do this, a larger amount of mucus will collect.

• The aim is to collect the mucus high up in your lungs near to your throat, so it can be cleared with just one or two huffs or coughs once it has collected.

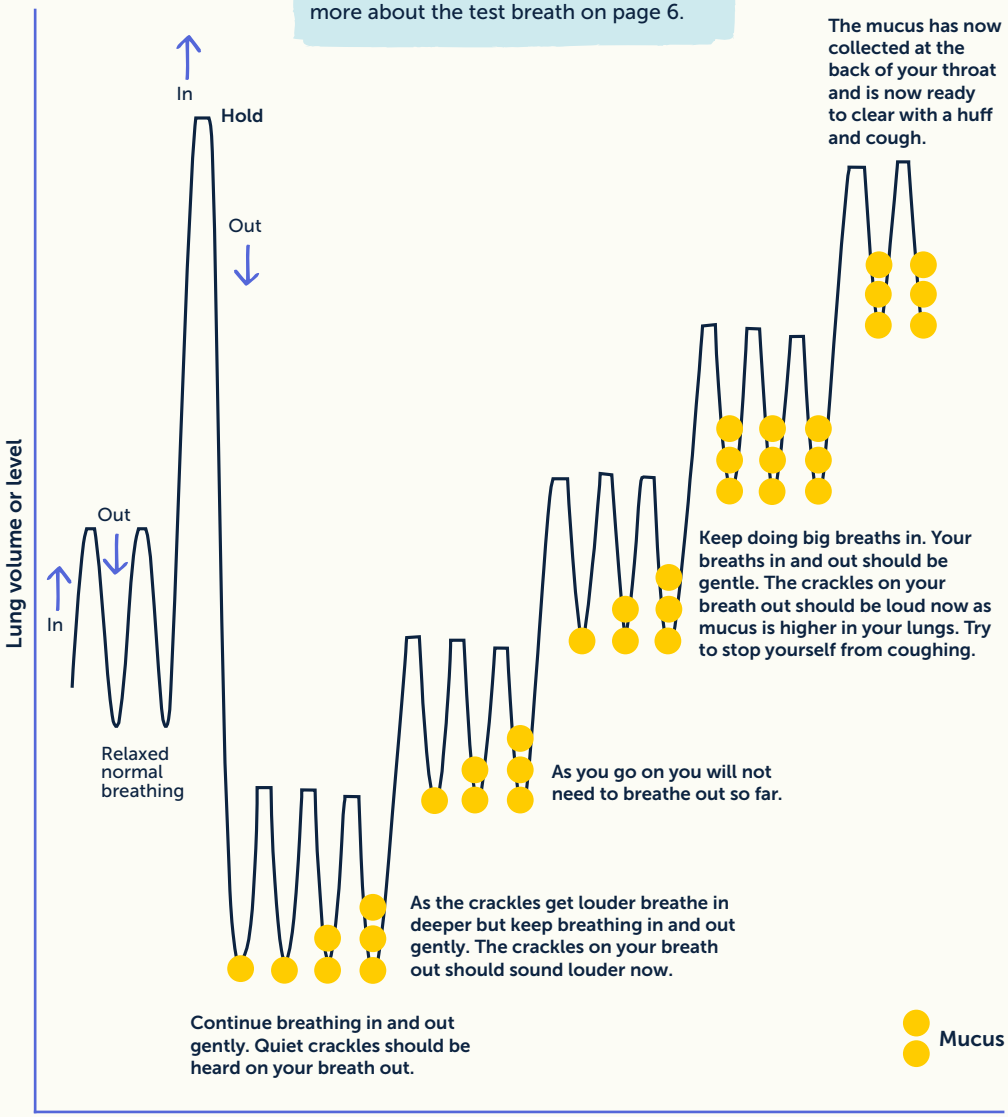
• After you have coughed, rest for a few minutes, and then repeat the AD breathing from the start.

• You may find it helpful to try another test breath before you start. Use the test breath to check where the mucus is in your lungs.

• Keep doing this breathing exercise until your chest feels as clear as possible and you can't hear any more crackles.

AD diagram

Before you start do a test breath
Take an AD breath in and fill your lungs. Hold it for three to four seconds. Breathe out and empty your lungs, gently squeezing your tummy muscles. There is more about the test breath on page 6.



Using the diagram

- **On the left of the diagram the air is being fully pushed out of the lungs with each breath out.**
    - This is low lung volume breathing which you use to unstick the mucus from the small airways.

- **Moving across the diagram to the right the breaths change. The breaths out don't go out so far and you don't completely empty your lungs of air.**
    - This is mid lung volume breathing which is used to collect the mucus in the middle airways.

- **Stay at each of the levels (lung volume) until the crackle sound gets louder or you feel the mucus move upwards.**

- **At high lung volume breathing, you are preparing to clear the mucus from your large airways with your huff and cough.**

Remember

Your own AD might look different to the diagram.

- You might stay at a level (lung volume) for longer or move on more quickly. Listen to the crackle sounds and do the stage you need to move the mucus up to where it can be coughed out.

Your physiotherapist can help you to learn what the different levels (lung volumes) will sound and feel like.

After the mucus is cleared

If you take any inhalers or nebulisers after your physiotherapy, take them now.

Talk to your physiotherapist if you have any questions about doing AD. You can use this information to help you while you're being taught how to do AD by your physiotherapist.

Remember to do daily physical exercise as well, as this will help you move the mucus from deep in your lungs as well as helping you stay fit and healthy.

Using a tube to help keep the back of the throat open.

Further information

Find more information resources about living with cystic fibrosis at **cysticfibrosis.org.uk/information**.

Our Helpline is open 10am – 4pm Monday to Friday. It's available to anyone looking for information or support with any part of cystic fibrosis, a listening ear, or just to talk things through.

You can contact our friendly team by:

- phoning **0300 373 1000** or **020 3795 2184**

If you are worried about the cost of the call please let us know and we'll call you back.

- emailing **helpline@cysticfibrosis.org.uk**
- reaching out on all our social media channels

Visit **cysticfibrosis.org.uk/helpline** for more information.

We welcome your feedback on our resources.

You can also ask for this resource in large print or as a text file. Email **infoteam@cysticfibrosis.org.uk.**

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If you want to learn to do autogenic drainage (AD) as your airway clearance, please speak with your physiotherapist. This leaflet can be used as a guide while you learn to do it, but AD must be taught by a physiotherapist who will decide if this is suitable for you.

This resource was originally written with assistance from **Ali Gates, Oxford Adult CF Centre**, and **Dr Paula Agostini, Birmingham Heartlands Hospital**.

Updated and reviewed in 2022 by the **Cystic Fibrosis Trust**, **Ali Gates and Louise Warnock, Oxford Adult CF Centre**, members of the **Clinical Advisory Group** and people with cystic fibrosis through engagement of the Trusts Involvement Programme.

Cystic Fibrosis Trust

Cystic Fibrosis Trust is the charity uniting people to stop cystic fibrosis. Our community will improve care, speak out, support each other and fund vital research as we race towards effective treatments for all. We won't stop until everyone can live without the limits of cystic fibrosis.

Since 1964, we've supported people with cystic fibrosis to live longer, healthier lives – and we won't stop until everyone can live without limits imposed by CF.

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