NHS
Blackpool Teaching Hospitals
NHS Foundation Trust

Pulmonary Rehabilitation Resource Book

Patient Information Leaflet

Caring · Safe · Respectful

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Aims of the Programme

- To give you a better understanding of your lung condition
- To reduce your breathlessness
- To improve your exercise tolerance and support you to make lifestyle changes
- To improve your everyday life
- Increase your confidence in managing your symptoms
- “Learn to love your lungs”

Outline of the Programme

Over the next 6 weeks we will be giving you information, practical advice and an exercise programme to improve your breathing and general health. This booklet contains information on your lung disease and will support the education sessions you will receive as part of your course. This booklet contains activities and tasks for you to complete, and we will also use it to signpost you to other sources of information such as websites and leaflets which we feel will be of benefit to you.

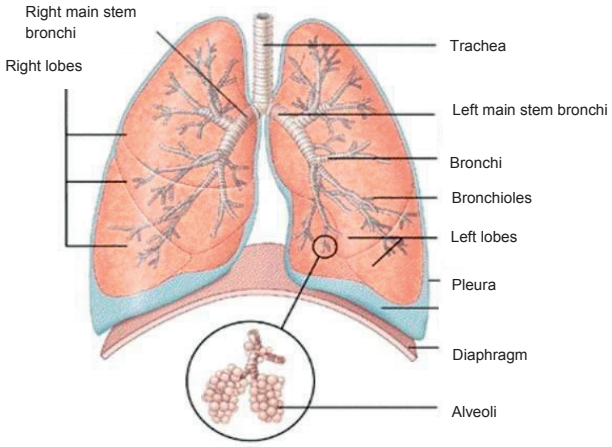
- **Session 1:** My Lungs And What Has Changed?
- **Session 2:** Get Moving
- **Session 3:** Breathing Control
- **Session 4:** Inhalers and Respiratory Medication
- **Session 5:** Exacerbation Management & Action Plan
- **Session 6:** Life After Pulmonary Rehabilitation

Session 1: My Lungs

The lungs lie on either side of your heart and fill the inside of your chest. Normal breathing rate is between 12-16 breaths per minute.

Each time you breathe, air is drawn in through your nose or mouth, down through your throat and into your TRACHEA.

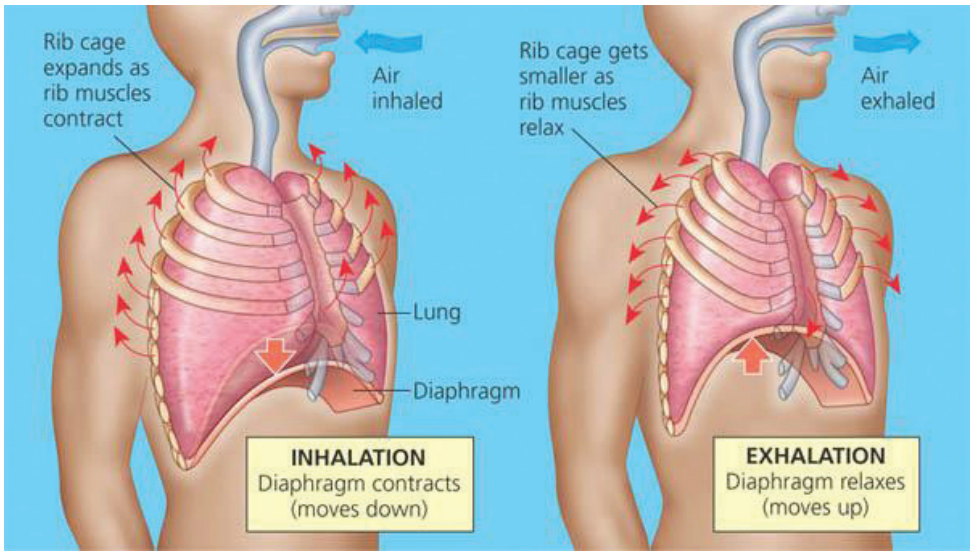
The trachea splits into two smaller air tubes one of which goes to the left lung, the other to the right. The right lung is a little larger than the left one as the left lung has to share its space with the heart.



Both lungs are made up of lobes – three on the right and two on the left.

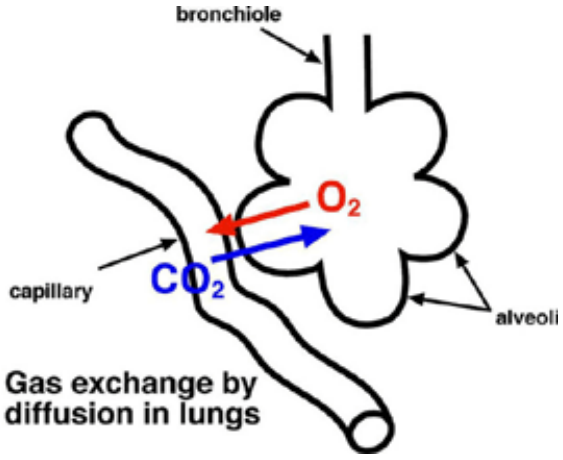
The inside of your lungs looks like a giant sponge. It is a mass of fine tubes, the smallest of which end in tiny air sacs called ALVEOLI. There are 300 million or so of these alveoli and if they were spread out they would cover the size of a tennis court. These alveoli have very thin walls which are criss-crossed with the finest of blood vessels called capillaries.

The lungs are protected by the rib cage; between the ribs are muscles that are essential for breathing. Below the lungs sits a dome shaped muscle called the DIAPHRAGM, which separates the chest from the abdomen, and is the main muscle of inspiration.



Every part of your body needs oxygen from the air to survive. A complicated system is present in the lungs to absorb oxygen from the air and transfer it into the bloodstream.

The brain is constantly receiving signals from the body about the amount of oxygen that is needed and this will depend on how active you are.



Remember:

So far we know that the respiratory system:

- Pumps air to and from the lung using muscles.
- Exchanges gases from the lungs to the tissues and vice versa.

The lungs also provide a defence system to try to prevent unwanted material, such as germs, from getting into the body.

There are 3 levels of defence:

- The nose
- The cilia
- The cough

The nose is the first line of defence. It filter, warms and moistens the air before it enters our body. Nose breathing is 3 times more efficient than mouth breathing and when you are breathless you tend to mouth breathe.

The cilia are the second line of defence. If particles escape filtration by the nose they are trapped on a sticky mucus blanket called MUCOCILIARY ESCALATOR which is constantly moving mucus upwards towards the throat.

The cilia can be damaged by:

- Smoking
- Dehydration
- Inflammation
- Low levels of oxygen.

The third line of defence is the cough. Normally 100-300mls of mucus is swept to the throat and swallowed every day, but if the cilia are damaged, or there is too much mucus for the cilia to cope with it needs to be coughed up.

British Lung Foundation “The Way the Lungs Work” (2018)

My lungs, what has changed?

Respiratory conditions can affect how efficiently our lungs work. Depending on your respiratory condition, your airways can become fixed, distorted, thickened or variable.

A person's symptoms can also vary dependent on their diagnosis.

✎ **TASK**

What is your lung condition?

_____

_____

What are your symptoms?

_____

_____

_____

Remember:

Breathlessness is a symptom of all respiratory conditions and can be managed, it is also important to remember that breathlessness is a normal physiological reaction to exertion.

Respiratory Conditions

SYMPTOMS	BRONCHIECTASIS	COPD CHRONIC BRONCHITIS	COPD EMPHYSEMA	ASTHMA COPD OVERLAP SYNDROME	ASTHMA PURE	FIBROSIS
AIRWAYS	distorted	fixed	fixed	variable/fixed	variable	scarred
PROBLEMS	big airways mucus pooling	overproduction mucus damaged cilia	reduced elasticity damaged airsacs	inflamed linings damaged cilia	inflamed linings	reduced elasticity tough/leathery lungs
CAUSES	injury/insult to lungs possibly in childhood	smoking	smoking or hereditary	hereditary or smoking	hereditary	unknown some occupations or medications
BREATHLESSNESS	maybe	yes	yes	yes	yes	yes
COUGH	yes	yes	yes	maybe	maybe	yes
SPUTUM	yes	yes	yes	maybe	maybe	maybe
WHEEZE	maybe	maybe	yes	yes	yes	maybe
REPEATED INFECTIONS	yes	yes	maybe	maybe	maybe	maybe

Session 2: Keeping Moving

Everyone should do some form of exercise regularly and people with chronic breathlessness are no different. You may be more afraid to exercise because you believe that getting breathless is harmful. In fact people who get breathless on activity don't like how that feels and find themselves doing less and less. This inactivity works against you, leading to muscle weakness, joint stiffness, poor circulation, weight gain and depression.

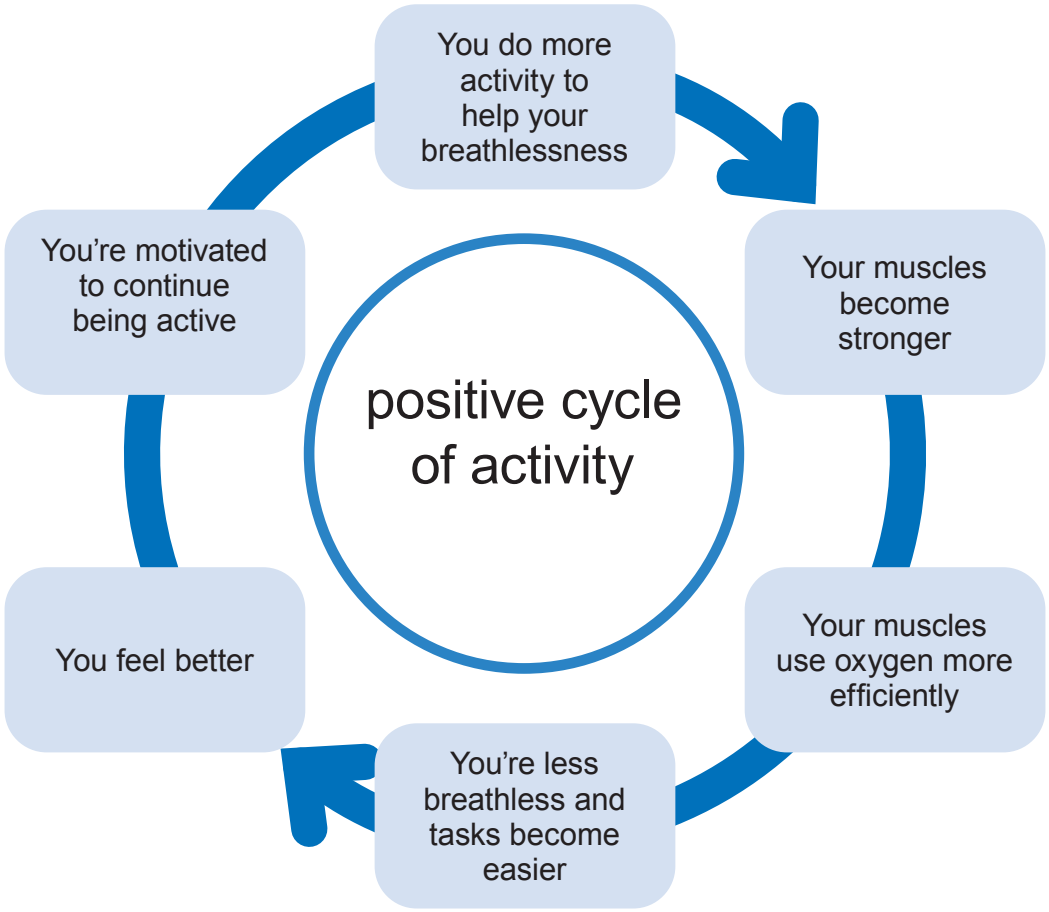
During exercise your breathing and heart rate increase, we need to double our lung intake when we exercise, and our lungs must be able to respond to the body's increasing demand for oxygen. As you start to exercise the muscles send messages to the brain that they need more oxygen, in turn the brain sends signals to the diaphragm and the muscles between your ribs, this causes you to breathe more often. More oxygen will be absorbed from your lungs and carried to the muscles you are using, mainly the arms and legs.

People with a long term lung condition (as described in the table) may find that they cannot supply enough oxygen for their muscles to perform exercises or even just walk, so the lungs work really hard and you then feel breathless.

Through exercise you can train your body so that more oxygen is available to your muscles, making them more efficient. People with severe lung problems can benefit a lot from even small amounts of exercise and it really is worth keeping as active as possible. Exercise cannot fix your lungs but it can make the rest of your body fitter. This will make it easier to deal with the demands of everyday life and you should be able to do more without becoming so breathless.

The benefits of exercise:

- Increased ability to resist infection
- Increased ability to do daily activities
- Strengthens the bones
- Strengthens the breathing muscles
- Increased energy levels
- Increased confidence and well-being
- Increased balance
- Reduces blood pressure
- Reduces the risk of diabetes
- Reduces the risk of heart disease
- Reduces the risk of stroke
- Reduces the risk of having a fall



Home Exercise Programme

It is recommended you do 150 minutes of exercise/activity per week that's 30 minutes 5 x per week.

- Start gradually (pace yourself)
- Feel comfortable
- Find your baseline and progress
- Be in control – DO NOT LET YOUR BREATHLESSNESS CONTROL YOU!

Remember:

- It is not harmful to get out of breath when you exert yourself!
- If you can say a full sentence you're not working hard enough.
- If you can't speak you're working too hard.

Visual aid to help you determine how breathless you are feeling

This is a scale that asks you to rate the difficulty of your breathing. It starts at number 0 where your breathing is causing you no difficulty at all and progresses through to number 10 where your breathing difficulty is maximal.

Not breathless	1	2	3	4	5	6	7	8	9	10	Very breathless

✎ **TASK**

LET'S GET MOVING!

What activities / exercise do you do now and how often?

_____

_____

Do you get out of breath doing the above activities / exercise?

_____

_____

Goal Setting

Setting a goal gives you something to aim towards and achieving that goal is great for your well-being and confidence.

Remember:

Goals should be **"SMART"**
S – Specific. M – Measurable. A – Attainable. R – Realistic. T – Time specific.

✎ TASK

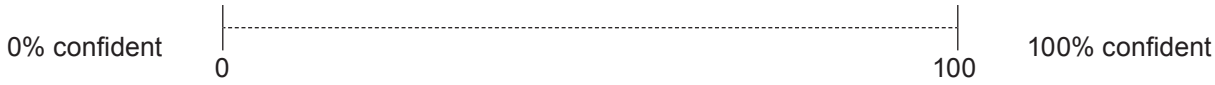
Write down your own personal goal, display it somewhere obvious at home, tell your friends or family, get some support and encouragement, and reward yourself when you succeed!

Short Term Goal (what would you like to achieve by the end of the programme):

_____

_____

Now check how confident you are that you will be able to achieve your goal:



If your confidence is less than 50%, then you need to work with your goal and make it more Specific and Achievable.

Long Term Goal (Think about this after you have completed that programme)

_____

_____

Session 3: Breathing Control

Breathing control means breathing gently, using the least effort, with your shoulders supported and relaxed.

✎ **TASK**

What do you currently do when you become more breathless?

_____

_____

Remember:

If you experience an acute attack of shortness of breath:

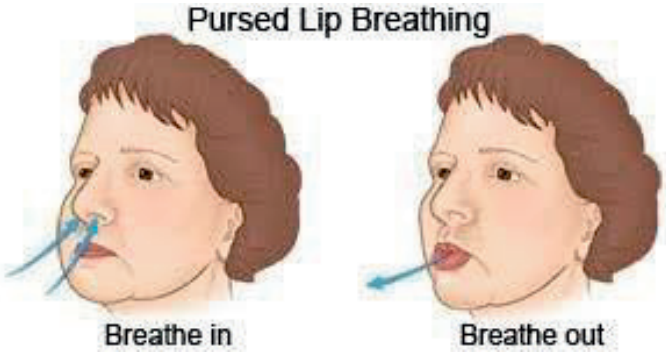
- Stop and find a comfortable position
- Stay as calm as possible; relax your shoulders
- Start pursed-lip breathing
- Slow down your breathing by taking more time to breath out than you would to breathe in
- Start to breathe in through your nose
- Continue to pursed-lip breathe until your breathing is back under control.

Pursed lip breathing

This technique can be used whenever you need to help to control your breathing. You can use it whilst doing an activity that makes you short of breath.

How do I do pursed lip breathing?

- Breathe in gently through your nose.
- Purse your lips as though you were going to blow out a candle or blow a whistle.
- Blow out with your lips in this pursed position.
- Try to blow out for as long as is comfortable <u>without</u> forcing your lungs to empty.



Blow-as-you-go

This technique should make tasks easier. It discourages you to hold your breath when completing a task that might be difficult or cause shortness of breath.

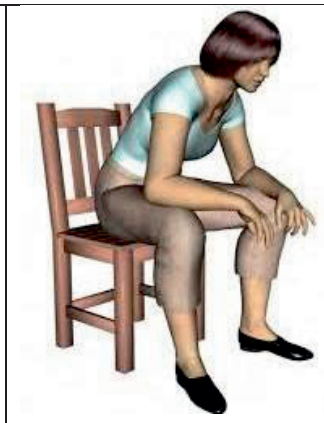
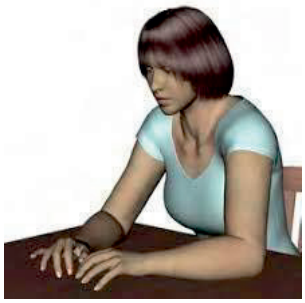
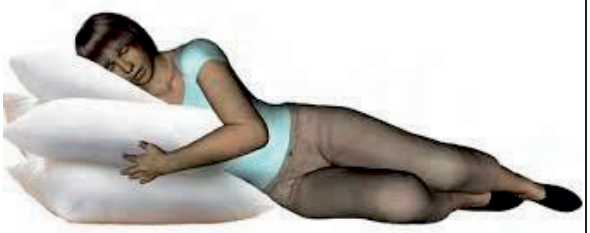
How do I do blow-as-you-go?

- Breathe in before making the effort.
- Then breathe out while making the effort.
- For example, when lifting a heavy box, breathe in before you complete the task and breathe out as you lift the box.
- It can be useful to use pursed lips as you blow out.

Paced breathing

This is a useful technique when you are on the go, for example climbing stairs or even walking on the flat. You pace each step to your breathing. This can also be used together with pursed lip breathing and blow-as-you- go.

The positions shown below will help you to control your breathing. When you are in any of these positions it is important to relax.

1. Sitting leaning forward		2. Sitting leaning forward at a table	
3. Sitting upright		4. High side lying	
5. Standing leaning forward		6. Standing leaning back	

Fan Therapy

When breathless you instinctively go to open a door or window to “get some fresh air”. A cool draft from a hand held fan can help reduce the feelings of breathlessness. Use a hand held fan about 6 inches away from your face and direct it onto your nose, mouth and sides of cheeks.

Diaphragmatic Breathing

The diaphragm is a large, dome-shaped muscle located at the base of the lungs. The diaphragm is the most efficient muscle of breathing. Diaphragmatic breathing is intended to help you use the diaphragm correctly while breathing to:

- Strengthen the diaphragm
- Decrease the work of breathing by slowing your breathing rate
- Decrease oxygen demand
- Use less effort and energy to breathe

How to do Diaphragmatic Breathing

1. Put one hand on your chest and the other on your abdomen
2. Close your eyes to help you relax and focus on your breathing
3. Slowly breathe in through your nose, with your mouth closed. If you’re relaxed, the air will reach low in your lungs. Your abdomen will move out against your hand. If your breathing is controlled, the hand on your chest will hardly move
4. Breathe out through your nose. Your abdomen will fall gently. Imagine all the tension in your body leaving as you let the air out
5. Try to use as little effort as possible and make your breaths slow, relaxed and smooth. With every breath out, try to feel more relaxed and calm. Gradually try to breathe more slowly

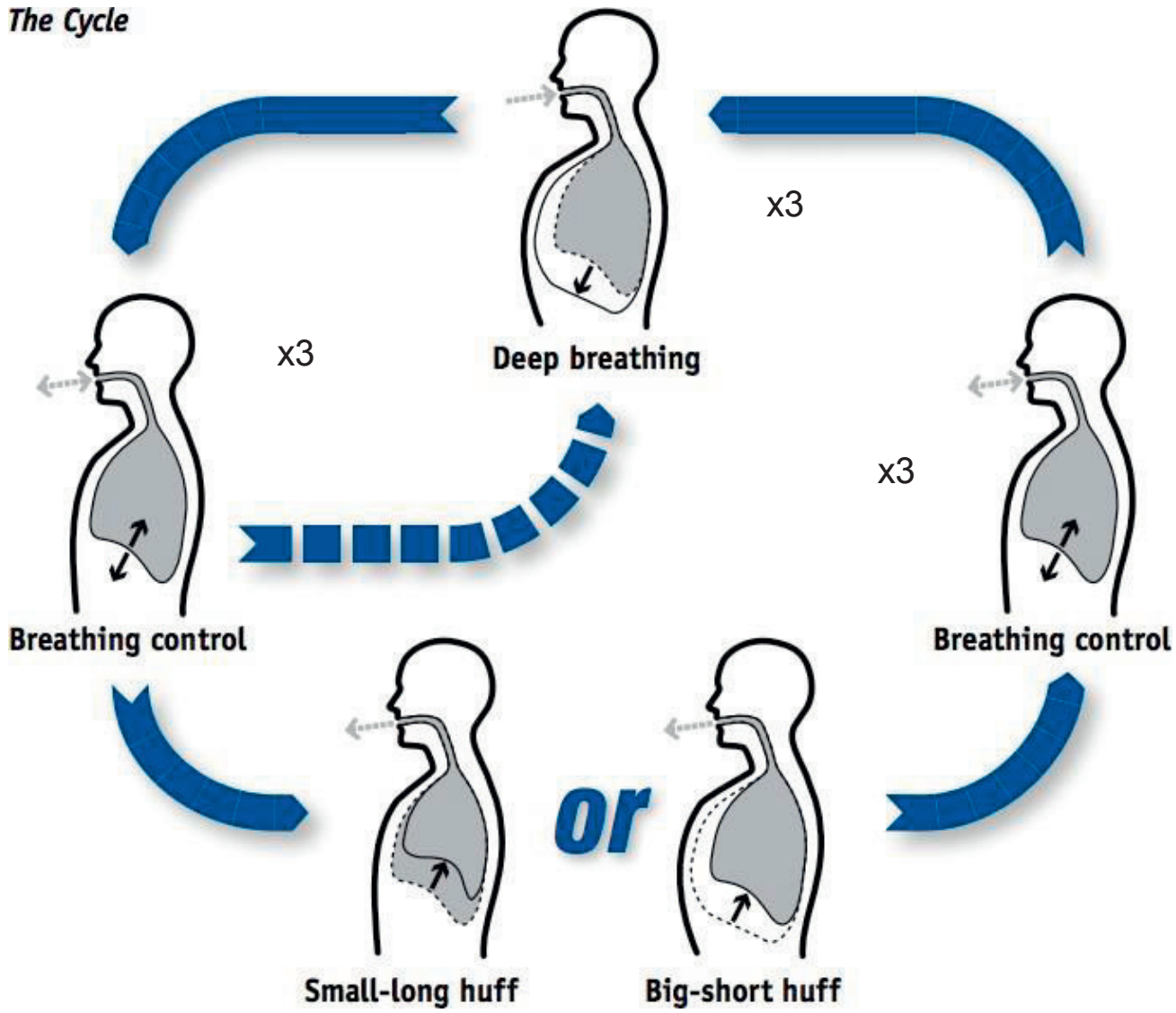
Deep Breathing

Deep breathing exercises help to inflate all areas of the lungs, particularly the lower parts. It uses all the muscles of inspiration and if you hold your breath at the end for up to 4 seconds it can allow full inflation.

To practice this type of breathing position yourself first in a comfortable supported way.

1. Place one hand on your abdomen
2. Breathe gently out till you fell your lungs are empty
3. Slowly breathe in through your nose and fill your lungs from the bottom and feel your ribs move outwards. You should feel a slight stretch and feel your lungs are full.
4. If you can hold your breath for a few seconds do so but if you feel lightheaded stop and breathe normally for a few minutes.

Active Cycle of Breathing Technique



Breathing control

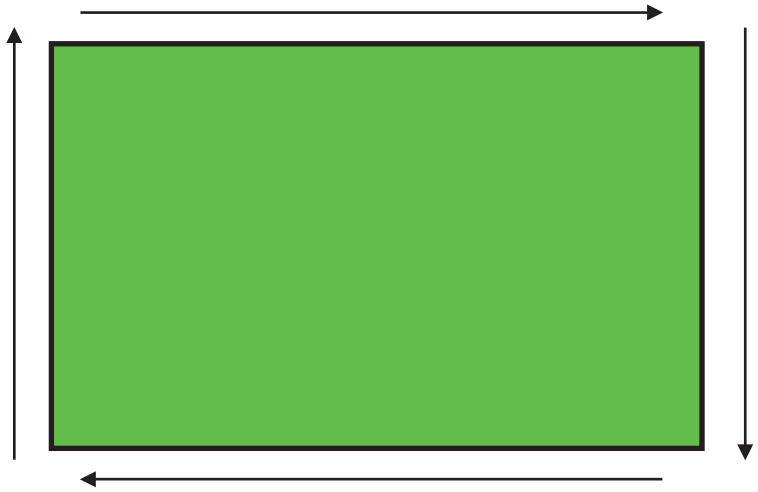
Breathing control is using the least effort to breathe gently. It will help you when feeling short of breath or fearful, anxious or panicked.

How do I do breathing control?

Make sure you are in a comfortable position. For assistance of positions that might help, see previous pictures.

- Breathe in gently through your nose and breathe out through your nose if you can. If this is too difficult, breathe out through your mouth instead.
- Try to let go of any tensions in your body with each breathe out.
- Gradually try to make each breath slower.
- Closing your eyes may help you to focus and relax.
- Do not force your breathing.
- To ensure your breath out is longer than your breath in you can try counting or visualising.
- Count in for 4 as you breathe in; count out for 7 as you breathe out.

Visualising a rectangular can help. Trace your finger up the short side as you breathe in, across the long side as you breathe out.



Relaxed slow deep breathing

Relaxed slow deep breathing is particularly useful when you are active. It should be used before starting an activity that makes you out of breath. It is not a helpful technique if you are already feeling breathless.

Here are some energy-conserving tips:

1. Set realistic goals. Don't think you have to do things the same way you've always done them.

2. Plan and pace your activities. Space out your activities throughout the day. Do not schedule too many things to do in one day. Do the things that take more energy when you are feeling your best.

3. If needed, rest before and after activities.

4. If you become tired during an activity, stop and rest. You might need to finish it on another day or when you feel less tired.

5. Do not plan activities right after a meal. Rest 20 to 30 minutes after each meal.

6. Ask for help. Divide tasks among family and friends.

7. Get a good night's sleep.

8. Do all of your grooming (shaving, drying your hair, etc.) while sitting.

9. If needed, use devices and tools that assist you such as a walker, shower chair, hand-held shower head, bedside commode, or long-handled tools for dressing (such as a dressing stick, shoe horn, or sock donner).

10. Try to arrange your activities so you do not have to climb up and down stairs too many times during the day.

11. Do not push, pull, or lift heavy objects that require you to strain.

12. For more energy-saving tips, tell your doctor you would like to speak to an Occupational Therapist.

Remember:

- Inactivity is harmful to your health so don't be put off by your breathlessness.
- Pushing yourself to keep doing a task without taking rests can result in more breathlessness and the need for longer recovery time.
- Balancing your activity and rest is called pacing.
- Avoid **highs** and **lows** of activity/exercise.
- Do activity/exercise **regularly** ("little and often").
- Make sure exercise is **comfortable** to do.
- Make rest periods **time dependent**, not breathing dependent.
- **Prioritise** and **Plan** activity.
- Set yourself **goals/targets** to achieve.

Management of Stress, Anxiety and Depression

Living with a long term condition can heighten your stress and anxiety levels and this is why it is important to not only remain active, but to take some time out.

If you suffer from anxiety and depression the British Lung Foundation suggests the following;

How can I manage my anxiety?

- try breathing techniques
- talk
- keep active
- keep a diary
- learn to relax
- try mindfulness
- eat healthily

How can I manage my depression?

- keep active
- connect with others
- don’t be afraid to ask for help
- look after yourself
- notice what helps your mood
- treat yourself
- learn to relax
- keep a mood diary
- try self-help
- challenge your thinking

Session 4: Inhaler and Medicine Management

There are three main types of medications used to control respiratory symptoms.

1. Short-acting Bronchodilators

They work by opening up the airways to allow for easier breathing. They can help relieve the symptom of breathlessness. Short-acting bronchodilators start to work within 5 minutes of taking them, because of this they are a reliever medication. These medications are very difficult to take and not effective when taken whilst breathless, and because of this we would advise you to take this medication 5 minutes before activity / exercises. For breathlessness you should be using breathing control strategies in the first instance (please refer back to your breathing exercises, pages 17/18) the effects of these medications can last up to 4 hours.

2. Long-acting Bronchodilators

They also open up the airways whilst working in the background and the effects last for 12 hours or 24 hours to keep your airways open. On your prescription it may state morning or night but please try and take it at the same o'clock time e.g. 8am and 8pm.

3. Long-acting Bronchodilator with a steroid

They work by combining the long acting bronchodilator with a steroid. The steroid component helps reduce inflammation of the airways and therefore reduces symptoms of chest tightness and wheezing. These should also be taken at the same o'clock time, after taking these you must rinse your mouth and brush your teeth to reduce side effects. Breathlessness alone is not an indication for oxygen therapy.

Remember:

You take the short-acting bronchodilator first to open the airways, and always take any inhalers containing a steroid last.

As well as an inhaled medication there are a few people who might also have an Bronchodilator in tablet form. There are two types of these:

1. Theophylines
2. Phyllocontin

Oral Steroids

You may be prescribed oral steroids to treat an exacerbation, either with or without antibiotics. They can help relieve symptoms of wheeze and inflammation.

Antibiotics

They are used for treating exacerbations caused by a chest infection. They treat the bugs caused by a bacterial chest infection, and other symptoms such as a fever, worsening cough or sputum. It is very important that all antibiotic treatment must be taken completely, even if there are signs of improvement.

Mucolytic

Mucolytics are medicines that thin mucus, making it less thick and sticky and easier to cough up.

Long Term Oxygen Therapy

Some people with chronic respiratory conditions can have a lack of oxygen in their blood. The aim of oxygen therapy is to improve the amount of oxygen in your body. Oxygen therapy can be used short term if admitted to hospital with an exacerbation or may be needed on a long term basis if oxygen levels remain low.

Your consultant or respiratory nurse will tell you how much oxygen you need and how long to use it for. Your oxygen prescription may need to be changed if you have an exacerbation.

Remember:

- Oxygen therapy will not stop shortness of breath.
- It is important to stay physically active when you are on oxygen therapy
- If you are planning to travel speak to your health care professional who can help organise your oxygen needs.

Remember:

- It is important to have an annual flu jab. It will prevent you from becoming as poorly.
- It is also important to have a one off Pneumonia Jab. If you have already had this before the age of 65 you will need to have it repeated.

Session 5: Exacerbation Management & Action Plan

An exacerbation is a flare up of your usual respiratory symptoms. An exacerbation can be caused by an infection that is bacteria, virus or fungus. It can also be caused air pollution or unknown origin. 70% of all exacerbations are by infection or pollution. Anxiety can also contribute to exacerbations because anxiety can cause panic attacks.

Remember:

Each exacerbation you have can reduce your lung function if not treated, and therefore can worse your activity levels. Inactivity can play a huge role in contributing to frequent exacerbations. Evidence supports that the more active you are the better your lung function.

Poor inhaler technique can also be a trigger to frequent exacerbations.

Specific Symptoms	Other Symptoms
1. More breathlessness than usual • You find it harder to perform your usual day to day activates **2. Changes in colour, volume, and/or consistency of sputum.** • Your sputum may become yellow or green, sometimes darker. • Your sputum can become thicker	• Cold or flu-like illness • Your reliever inhaler isn't helping • Fever • Fatigue/loss of appetite • Increased cough • Increased wheeze • Confusion • Fluid retention

✎ **TASK**

LET'S GET MOVING!

What are your symptoms in an exacerbation?

_____

_____

What is your normal sputum like?

Changes in your colour of sputum (these are changes from what is normal to you) may indicate a bacterial infection and antibiotics are usually required.

What is your normal amount of daily sputum?

Amount of Sputum	Tick
None	
Some (up to a teaspoon)	
A little (up to a tablespoon)	
Moderate (up to 3 tablespoons)	
A lot (a cupful or more)	

What are the actions that you usually take to manage an exacerbation?

_____

_____

Do you take additional medication to manage an exacerbation of your symptoms?

_____

_____

A CAT Score (COPD Assessment Test) can be used to monitor your daily condition. Your answers and test score can be used by you to recognise any subtle changes in your symptoms and activity levels. This can help improve the management of your COPD/ Respiratory condition and recognise when to start treatment.

You should first complete a CAT score when you are well to get a base line of your normal symptoms and activity levels. If you feel unwell then you should complete the CAT score, take the appropriate action and inform your health professional if you need, or have started treatment.

Remember:

Starting treatment early when you are feeling unwell is very important.

Action Plan

Your action plan is important, it is personal to you, and will help you make key decisions in the self-management of your respiratory condition.

An action plan can help you to:

- Recognise an exacerbation
- Know how to start treatment
- Know when to seek further help

Your name:	Today's date:

COPD Assessment Test

How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy 0 X 2 3 4 5 I am very sad

			SCORE
I never cough	0 1 2 3 4 5	**I cough all the time**	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5	**My chest is completely full of phlegm (mucus)**	
My chest does not feel tight at all	0 1 2 3 4 5	**My chest feels very tight**	
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5	**When I walk up a hill or one flight of stairs I am very breathless**	
I am not limited doing any activities at home	0 1 2 3 4 5	**I am very limited doing activities at home**	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5	**I am not at all confident leaving my home because of my lung condition**	
I sleep soundly	0 1 2 3 4 5	**I don't sleep soundly because of my lung condition**	
I have lots of energy	0 1 2 3 4 5	**I have no energy at all**	
		TOTAL SCORE	

COPD Assessment Test and CAT logo is a trademark of the GlaxoSmithKline group of companies.
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RES/QST/09/43163/1 Date of preparation: September 2009.

Session 6: Life After Pulmonary Rehabilitation

Hopefully you now have the confidence to self-manage your condition.

Key Points to remember:

- Remain active
- Pace your activities
- Being breathless is ok
- Use your Active Cycle of Breathing as often as necessary to clear sputum
- Don't reach for your reliever inhaler when breathless use breathing control techniques in the first instance
- Take your medications at the right time in the right order
- Know when you are becoming unwell and follow your action plan/ seeking medical advice when needed
- Stop smoking
- Eat well and stay hydrated
- It importance to look after your mental well-being and don't be afraid to ask for help
- Have you achieved your goal (set on page 13)?

Useful contact details

Department: **Pulmonary Rehabilitation Team**
St Annes Primary Care Centre
Durham Avenue
St Annes on Sea
FY8 2EP

Telephone: **01253 957539**

Notes

NHS
Blackpool Teaching Hospitals
NHS Foundation Trust

Other sources of information:

Department: Pulmonary Rehabilitation Team
Telephone: 01253 957539

Hospital switchboard
Telephone: **01253 300000**

Patient Relations Department

The Patient Relations Department offer impartial advice and deal with any concerns or complaints the Trust receives.

You can contact them via tel: **01253 955589**
or by email: **bfwh.patientrelations@nhs.net**

Further information is available on our website:
www.bfwh.nhs.uk

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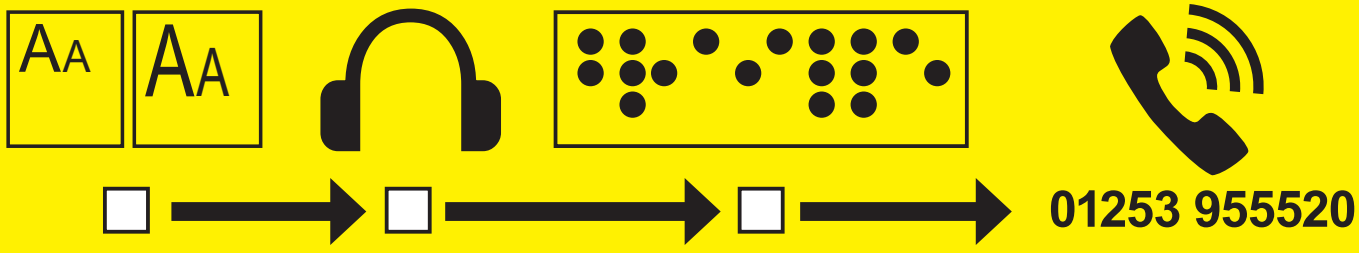

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