Respiratory Medicine

Breathing pattern disorders and physiotherapy

This leaflet explains how physiotherapy offered breathing retraining works, how to practice these techniques and manage breathlessness.

Breathing retraining:

Breathing retraining helps you to optimise your breathing pattern and reduce your breathlessness and any other associated symptoms.

Breathing retraining involves the following:

- Improve your understanding of normal breathing mechanics.
- Improve your understanding of optimal breathing pattern.
- Identify and improve your awareness of own breathing pattern.
- Posture advice.
- Breathing control.
- Relaxation.
- Breathing control during activities and exercise.
- Breathing control during acute episodes.

What is a normal breathing mechanics?

Breathing involves two process inspiration, (in breath) and expiration (out breath). During inspiration your lungs expands to fill up with air which contains oxygen which is essential for all cells in our body to function properly. During expiration your lungs reduces in size and gets rid of waste gases such as carbon dioxide from our body.

The main muscle used for breathing is called a diaphragm. The diaphragm muscle is dome shaped, which sits between the lower ribs, breast bone and the tummy. The diaphragm flattens during inspiration to allow air to enter into the lungs and pushes the abdomen slightly out. During expiration the diaphragm relaxes, returns to its dome shape and the abdomen goes in to its original position. There are some muscles around your neck, upper chest and shoulder which are called accessory muscles which will be also used for breathing in certain situations.
What is a normal or optimal breathing pattern?

A normal or optimal breathing pattern should be a gentle, silent, rhythmic average sized breaths with an in breath through nose using the diaphragm (lower chest muscle) at a rate of 12 to 16 breaths/minute and a relatively still upper chest movement. Breathing in through nose is important as it warms, humidifies, filters air and cleanses the air. Nose breathing also make the breathing pattern efficient making the diaphragm work. The diaphragm breathing is the most effective and efficient way to breathe. Unnecessarily using the accessory muscles around your chest, can make you feel tired and cause you to work even harder without any extra benefit.

Identifying your own breathing pattern:

- Lie on your back in a comfortable position. Place pillows under your head and knees.
- Place one hand on top of your chest and the other hand on top of your tummy.
- Breathe in and out normally. Feel and watch the movement of your hands as you breathe in and out.
- Your hand movement will help you identify which part of the chest is moving and improve your understanding of your breathing pattern.
- Your physiotherapist can help you identify your breathing pattern during their assessment.

Breathing control exercises:

**Step 1: Nose and stomach breathing**

- Lie down on a comfortable bed or sofa. Place pillows under your head and knees and loosen any tight clothing.
- Keep your shoulders down and relax as much as possible.
- Keep your mouth closed and breathe in through your nose. If you struggle with nasal problems it is advisable to clean your nose with saline rinse or nasal douching. Your GP, pharmacist or respiratory team can advise on this.
- Keep one hand on your stomach between the belly button and bottom ribs. Place the other hand on your chest.
- Placing one hand each on the sides of the chest around the lower rib cage might be an alternative method to the hands on chest and stomach. Your physiotherapist will advise on this.
- Breathe in and out gently through the nose. Avoid bigger breaths if possible.
As you breathe in, try to keep the upper chest still whilst allowing the gentle rise of your stomach. You will feel the hand on the stomach move or both hands on the sides of the chest move if you have chosen the alternative method. The hands on the upper chest should stay relatively still.

Step 2: Slow breathing

- Practice nose and stomach breathing as step 1.
- Once you feel confident with nose and stomach breathing, try to slow down your breathing by breathing in for a count of ‘one to two or three’ and breathe out for a count between ‘one to three or four’. You may wish to practice this technique using a breathing rectangle. The breath out should be passive, relax and let go.

Once you become more confident, try to slow down your breathing further by allowing a pause of two seconds or two counts at the end of your out breath. Reduce the pause time if you feel increased breathlessness or faint.

Relaxation techniques:

Relaxation techniques can be helpful in mastering the breathing techniques in breathing retraining. There are several relaxation methods available. Some people prefer silence whilst others prefers music or natural sounds or visual imagery, letting go of thoughts and tensing and relaxing from head to toe. Your physiotherapist can provide further advice on this. Relaxation audio and leaflets can be found at www.cuh.org.uk/bis

How to practice breathing control:

Start your breathing practice control initially at rest in lying or sitting in a very comfortable position, (Step 1 and Step 2). It is normal to feel air hunger (need to take a deep breath in) whilst practicing this technique. Try to avoid big breaths if possible, relax and this air hunger will settle over time and practice.
If you find this very difficult, it is advisable to practice even one to two slow breaths at a time or for shorter duration of one to two minutes at first. Practice the breathing control exercises where you are relaxed and not disturbed.

Once you become more comfortable and confident, gradually aim to do longer sessions when resting. If you feel comfortable then the breathing control exercises can be applied to any exercise or task you are doing. It is important to practice breathing control every day even when you are less breathless or asymptomatic as this will help you do it naturally when you are breathless during acute episodes or during any activities or exercises.

**Breathing control during exercises or activities**

Breathlessness during exercise is a completely normal response from the body. The following strategies will help you improve and recover from breathlessness quicker.

**Breathing control:**

Concentrate on nose and diaphragm breathing and maintain a slow breathing during activity or exercise. Keep your shoulders and upper chest relaxed as much as possible. The key is to try and keep your breath out twice as long as the in breath. For example you can use two steps for breath in and four steps for breathing out whilst walking. You can also use the breathing rectangle as discussed above. Pursed Lip Breathing (PLB) can help reduce your breathlessness by controlling your breathing rate down and obtain breathing control better. PLB are also advised by the speech and language therapist (SLT) as a technique to reduce your breathlessness as it can relax the tension around the larynx or voice box. Your Physiotherapist or SLT can advise you about PLB during your treatment.

**Pacing:**

Pacing involves any task such as walking, exercises and activities of daily living like washing and dressing being broken down into small and manageable parts. This should make those tasks easier to complete without as much breathlessness. Try to avoid rushing whilst doing any task. Avoid holding your breath for example when lifting or climbing the stairs. Breathe out on effort such as bending, lifting or reaching.

**Breathing control during acute episodes**

**Breathing control exercises:**

Practice nose and abdominal breathing as step one and two. This will help you reduce the rate of breathing and enable you to relax and gain control of your breathing. The breathing rectangle can help you control your breathing by focusing on longer breath out. You can also use a relaxation or distraction technique along with breathing control exercise.
Positions of ease for breathlessness:
One of the following positions will assist relaxation of your upper chest, encourage you to use the lower chest and help the diaphragm function more efficiently for breathing. Use the breathing control exercises when you are settled into one of these positions.

![Positions of ease](image)

Relaxed Sitting
Forward lean Sitting
Relaxed Standing
Forward lean Standing

Cool air:
Research has shown cool air can reduce the sensation of breathlessness. It reduces the breathing rate by activating receptors around nose and mouth thereby gaining breathing control. Cooling your face with cold water, a hand held or standing fan or a cold draught from an open window can also help to reduce the sensation of breathlessness.

Your physiotherapist today was:

Physiotherapist can be contacted:

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