

# Breathing pattern disorders

Information for patients



## What are breathing pattern disorders?

Breathing pattern disorders are patterns of overbreathing, where the depth and rate of breath are in excess of the body's needs.

There are two main types of breathing pattern disorder:

### Hyperventilation/over-breathing

This occurs during exciting or stressful situations such as before an examination or when you move quickly to get out of danger. You may experience symptoms such as a racing heart, tingling in your fingers and breathlessness, which normally disappear once the stressful period is over. If your breathing does not return to normal after the stressful event is over the symptoms may continue. This can occur in people experiencing anxiety.

### Dysfunctional breathing (DB)

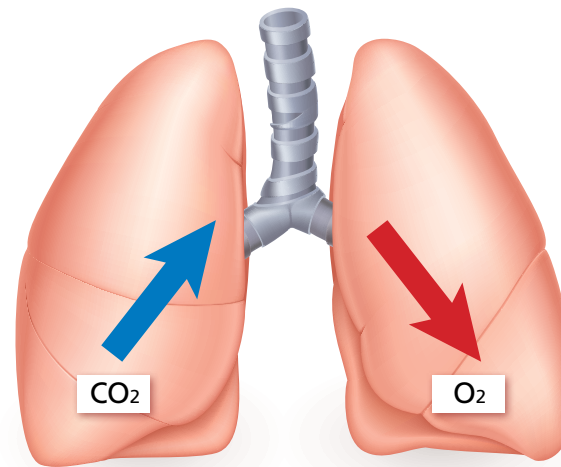
This can occur with physical exertion, strong smells, cold weather, stress or other triggers. People who have DB tend to breathe rapidly through the mouth, hold tension in their shoulders and breathe using the upper chest. This can cause symptoms of hyperventilation. You may notice chest and throat tightness, chest pain around the breast bone and breathlessness.

Approximately 6-12% of the population experience chronic breathing pattern disorders, but some people are more affected than others.

Chronic (long-term) changes in your breathing pattern can be very subtle and may happen over a long period of time.

## Understanding what happens when you breathe

We breathe in air containing a mixture of oxygen ( $O_2$ ) and carbon dioxide ( $CO_2$ ). When you breathe out the air contains less oxygen and more carbon dioxide. This is because the body uses some of the inhaled oxygen to help support its processes, and creates carbon dioxide as a result. However, carbon dioxide is not just a waste product; it has a vital role in the body's processes.

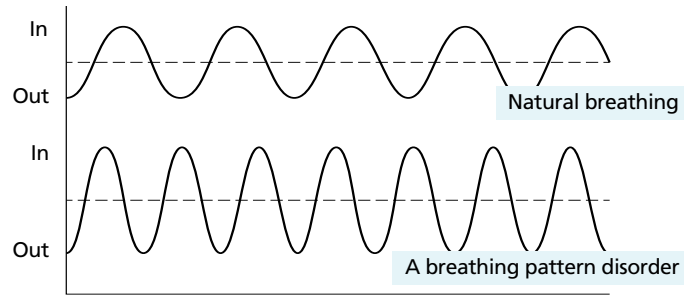


## What happens when you hyperventilate?

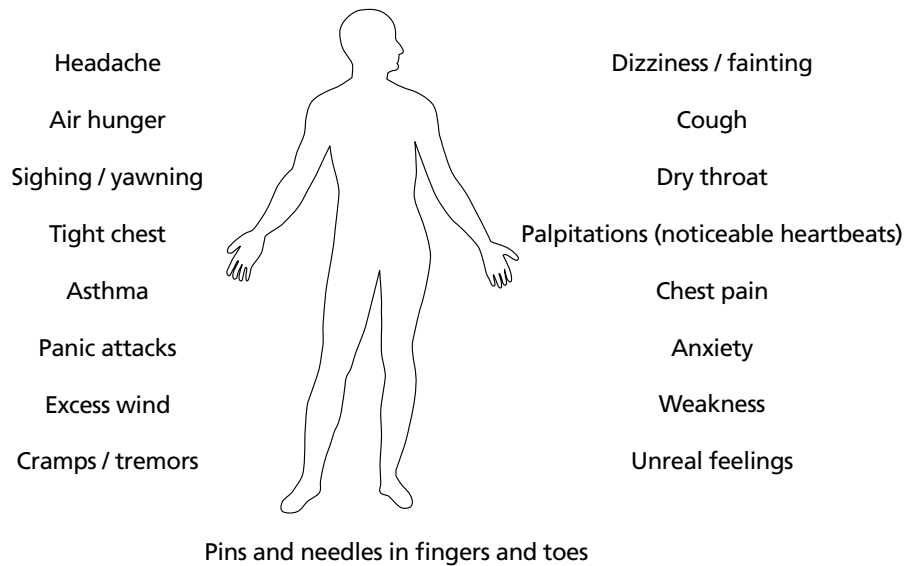
Breathing becomes faster and/or deeper. This results in more carbon dioxide being exhaled from the lungs and less being available throughout the body. Overbreathing can be useful in a stressful situation (for example when you're under pressure, such as in a job interview) as it prepares the body for action. Lower levels of carbon dioxide promote hormones such as adrenaline to stimulate the body and increase the heart and breathing rate.

However, if this overbreathing becomes more permanent, the brain recognises this lower level of carbon dioxide and accepts it as being normal. Consequently, the body is constantly on alert.

The graph below shows the difference in the depth and rate of breathing when comparing a person breathing naturally to a person with a breathing pattern disorder.



### Possible signs and symptoms of breathing pattern disorders



Everyone will experience different signs and symptoms.

### What are the potential causes?

Breathing pattern disorders may sometimes be a sign of other underlying medical problems. Some examples are listed below.

#### Psychological

- Depression
- Anxiety
- Stress

#### Drugs

- Overdose of aspirin
- Using a Ventolin inhaler
- Hormonal drugs such as progesterone
- Alcohol
- Caffeine
- Nicotine

#### Medical conditions

- Anaemia (lack of iron)
- Asthma
- Pneumonia
- Blood clot on the lungs
- Fluid on the lungs
- COPD/Emphysema

#### Others

- High altitude
- Fever (high temperature)
- Hormones
- Exercise

## Treatment

Whether you hyperventilate or have DB, there are several methods that you can use to help:

- Recognising that you are overbreathing and changing to a more controlled method of breathing
- Being aware of normal breathing rates both at rest and during activity
- Nose breathing rather than breathing through your mouth
- Abdominal breathing pattern re-training
- Considering lifestyle factors such as diet, sleep hygiene and relaxation

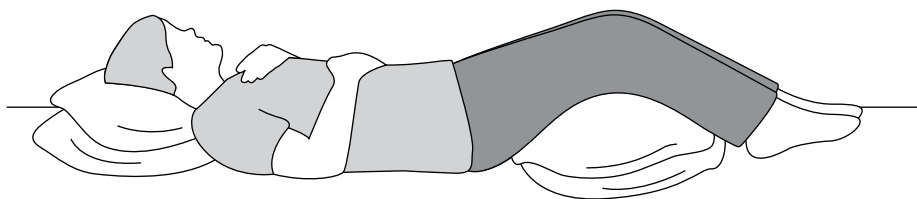
Before you are able to change your breathing to an optimal (more natural) pattern, it's important to recognise how you breathe at the moment.

## What is an optimal breathing pattern?

At rest, optimal breathing is approximately 12-16 breaths per minute. The air enters and leaves the nose in a gentle and controlled manner. The main muscle used for breathing is the diaphragm (muscle under the ribcage).

## Identifying your normal breathing pattern

Lie in a comfortable position with a pillow under your head and knees. Place one hand on your chest and one on the top of your tummy.



Watch and feel which of your hands move most as you breathe in and out. This will help you to understand which part of your lungs you use the most.

It may also be worthwhile discussing with close friends and family to see if you have habits such as frequently yawning, coughing and sighing.

During your appointment with the physiotherapist they should help you identify your normal breathing pattern and alter it. Please use this guide in conjunction with their advice.

## Breathing control

The best way to help yourself breathe in a more natural way is to sit in a comfortable armchair or lie on the bed and ensure that you are as 'soft' as possible. Release any tension in your neck and shoulders.

Place one hand on your chest and one on the top of your tummy. Focus your thoughts on breathing the air towards your stomach, using your diaphragm, filling your lungs with a small breath (consider the size of a Coke can). Concentrate on the out breath.

Ensure that your breath size and rate do not increase as you practise this. You may find it takes a few minutes before you are able to achieve this style of breathing. If you are still struggling, try to practise in a lying, rather than a sitting position. You may also find that placing your hands behind your head helps.

When you have successfully completed this exercise, make sure that your breathing does not suddenly 'increase in size', for example through sighing, yawning or coughing. During breathing control you may find that you feel 'hungry' for air. This sensation is perfectly normal and may be a result of the levels of carbon dioxide increasing to a more normal level. Try to 'swallow away' the urge to gasp for air. You will find that as you continue to practise this style of breathing that this sensation will diminish.

It is worthwhile practising this style of breathing for about ten minutes, twice a day. Although this may sound like a lot to fit into your day, try spacing them in with your normal activities. For example, when reading or during advert breaks whilst watching TV. If you are practising in a lying position, do so when you go to bed and again when you wake up.

It is important that you concentrate on your breathing pattern as soon as your symptoms start, and try out the exercises you have been practising.

### Breathing and exercise

As your breathing technique improves you will aim to maintain breathing control in standing. Once at this stage, check your pattern of breathing whilst you are walking. Try to maintain nose breathing with slow, regular diaphragmatic breaths.

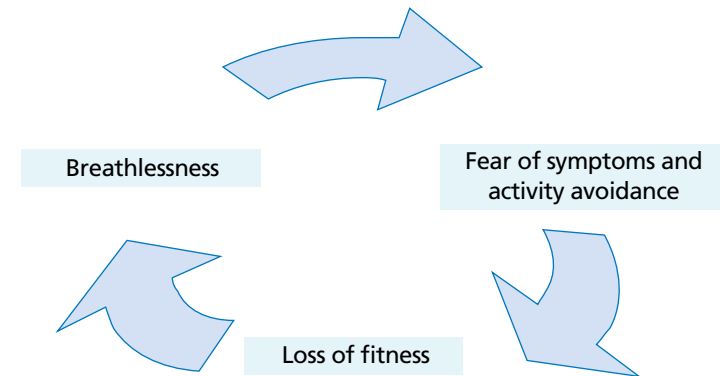
If you find this difficult you may benefit from counting your steps as you breathe in and out. For example, breathing in for two steps and out for three steps. You may want to try a different ratio of steps to breaths in and out, but check and discover what works for you. Additionally, you may want to keep your hand on your tummy to encourage you to breathe diaphragmatically. Remember to keep your shoulders loose.

If you exercise strenuously it's normal to breathe through the mouth, and use your upper chest and accessory muscles. However, your diaphragm should always be used first before the upper chest.

### Lifestyle changes

It's important to slow down and set realistic goals to save energy. Have short breaks between activities in order to let go of unnecessary tension. Allow time to breathe slowly and gently.

Remember that breathlessness is not harmful, but merely a signal to slow down or stop, recover and check breathing before continuing. It's important not to avoid activities that make you breathless as this can then lead to loss of fitness.



Try to recognise the situations that bring on overbreathing, for example stressful meetings or phone calls. Spend a few minutes calming your breathing down before the stressful situation. Concentrate on keeping a steady rhythm until the situation is over. You may also like to consider stress factors in your life and decide whether or not it is possible to change or avoid these triggers.

### Speech

Coordinating breathing and talking is a common problem in breathing pattern disorders where speech interferes with the background rhythm of breathing. Some people experience difficulties with voice projection and vocal tone, others find their throat feels 'tight' on talking or their voice fades out.

Common causes include over expanding the upper chest when starting to speak, forgetting to pause for breath during speech or speaking to the very end of the out breath, followed by a gasping in breath.

To obtain good speech control it is important to continue to use the abdominal, low-chest breathing pattern as discussed previously. Take a relaxed deep breath out before speaking, breathe in softly through the nose to start and speak slowly. Your physiotherapist can practise these techniques with you in your treatment sessions.

## Sleeping

Some people find that their sleep is disturbed because of their breathing. If you can control your breathing during the day, this can be carried over into the night and you should sleep better.

The following tips may also help improve your sleep:

- Following a relaxing routine before going to bed, for example, having a bath or reading.
- Sometimes relaxation methods may help you to get to sleep or return to sleep once awoken. Possible techniques are discussed on the next page, and you could also use your breathing control exercises.
- Replace caffeinated tea and coffee and hot chocolate with decaffeinated options, warm milk, herbal teas or water based drinks.
- Avoid daytime napping.
- Avoid late and/or spicy meals and alcohol late at night.
- Try to reduce your daily stress levels so that you are not worried or anxious when you go to bed in the evening.

## Relaxation

Sit or lie down comfortably in a quiet place. Make sure you're not too hot or too cold and unlikely to be disturbed.

### Visualisation

Close your eyes and think of a pleasant situation that you feel calm in. For some people this will be a beach, desert island or a meadow. Try to visualise the colours and sounds that might occur in this place.

Feel the weight of your legs and arms sinking into the sand/ground. Hear the sounds of the sea splashing in and out, the birds singing in the trees, or feel the gentle heat of the sun on your face.

When you feel ready, slowly come out from the scene and open your eyes.

### Body awareness

Become aware of each of your limbs in turn. Feel the weight of your leg, from foot up to your hip, sinking into the mattress. Transfer this feeling up each leg in turn and allow this feeling of heaviness to spread into your back and then through to your arms. Take the time to consider whether one of your legs is warmer or heavier than the other one. Continue to allow the feeling to spread up towards your head and let your head rest back onto the pillow.

### Contract and relax (Laura Mitchell technique)

During this technique the idea is to contract and lengthen the muscles. Starting with your arms, pull your shoulders down towards your feet. Relax. Then contract and move your elbows out to the side. Relax. Stretch your fingers, thumbs and hands. Relax. Continue this idea into your legs... roll out your legs. Relax. Gently point your toes down (avoiding cramp). Relax. Press your body into the supporting surface. Relax. Push your head into the supporting surface. Relax. Clench your jaw, then release.

These exercises help the body feel the difference between tension and relaxation.

Discuss other forms of relaxation, for example exercise, music, massage and hobbies with your physiotherapist.

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