Hyperventilation syndrome

Information for patients
Therapy Services - Surgical
What is it?

Hyperventilation means overbreathing, that is, breathing in more than your body needs to.

When we breathe our lungs take up oxygen from the air and release carbon dioxide.

Oxygen is the body’s fuel and carbon dioxide is the body’s waste gas.

In normal lungs, once the blood has enough oxygen it cannot take up any more, but if we hyperventilatel (breathe faster or deeper) we can lower the levels of carbon dioxide in the body.

Low levels of carbon dioxide affect the chemistry of the blood and can cause a number of panic or stress feelings.

Hyperventilation can be **acute** or **chronic**.

**Acute hyperventilation**

This happens as a natural reaction to stress, where you breathe deeper and faster. This can happen before tests or after a frightening experience where you might feel weakness at the knees or butterflies in the stomach for example.

Normally these feelings disappear after the stress is over and breathing returns to normal. However, the problem can become chronic if breathing doesn’t return to normal after the stress has stopped.
Chronic hyperventilation

If you breathe too fast or too deep for any length of time, the levels of carbon dioxide in your blood drop below normal. Your brain then registers this new low level as being normal.

This means that it is much easier and more common to experience stress symptoms that affect many different systems within your body, a bit like changing a thermostat.

![Diagram showing the relationship between stress, hyperventilation, low carbon dioxide, stress hormones, and symptoms.](image-url)
Symptoms

Heart
Palpitations, chest pain, fast heart rate.

Brain
Dizziness, faintness, blurred vision, headaches, numbness, tension, anxiety, "unreal" feelings, occasional hallucinations.

Lungs
Shortness of breath, wheeze or tightness, sighing/yawning, unable to take a deep enough breath.

Stomach
Problems swallowing, heartburn, burping, bloating.

Muscles
Cramps, muscle pains, tremors, spasm.

General
Weakness, tiredness, lack of concentration, sleep disturbance, nightmares, sweating, pins and needles.

Who suffers from hyperventilation syndrome?

1 in 10 people may suffer from chronic hyperventilation syndrome at some point in their lives.

People who worry a lot, stress about being on time, or live stressful lives, for example, are more likely to suffer.

Women tend to be affected when they are younger and men when they are middle aged.
How is breathing affected?

There are a number of muscles that are used when you breathe depending on how much activity you are doing.

The neck, shoulder and rib cage muscles are made from muscle fibres that tire easily and use a lot of oxygen (fuel).

The diaphragm is a large sheet of muscle that lies below your lungs. It is made of muscle fibres that do not tire easily and use less oxygen.

The abdominal (stomach) muscles are normally relaxed when you breathe, but can work hard when you are breathless.
Good breathing

Normally during good breathing, when you breathe at rest, about 70-80% of the work is done by the diaphragm and 20-30% is done by the muscles of your neck and rib cage.

Abdominal breathing

1. On breathing in, the dome of the diaphragm moves down.
2. The abdominal wall is relaxed and pushed forward by the diaphragm during the breath in.
3. The neck and rib cage muscles hold the chest wall in a stable position.
4. The rib cage does not expand.
Bad breathing

During bad breathing, breathing is mainly done by your neck and rib cage muscles moving the top part of the chest. Breathing in this way means that more oxygen is used during breathing and less oxygen gets into your blood. This type of breathing also leads to neck and shoulder tension.

Chest breathing

1. On breathing in the diaphragm hardly moves.
2. The abdominal wall is held stiff.
3. The neck and rib cage muscles work to lift the chest up and out.
4. The rib cage expands.
Home exercises

Always try and follow the "Good Breathing Pattern"

1. Breathe through your nose

This slows the air down as it enters your lungs, helps moisten the air you breathe, and filters out bugs and dust.

2. Breathe from your diaphragm

Let your tummy swell as you breathe in and let it fall gently as you breathe out. This saves energy when you breathe so you don’t have to breathe as fast.

3. Correct the way you breathe

Breathe in slowly for 2 seconds and out for 2 seconds then rest for 1 second.

Remember in 1…2…and out 1…2.. and stop.

Repeat this for 3 minutes every hour.

Yawning, sighing and coughing (that does not produce sputum) can expel large amounts of carbon dioxide from the lungs. It is important to try and avoid these actions by swallowing, or lessen their effect by holding your breath for a few seconds afterwards.

Coughing to expel sputum should not be avoided.
If you have any problems please contact your physiotherapist.

Physiotherapist:

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Contact number:

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