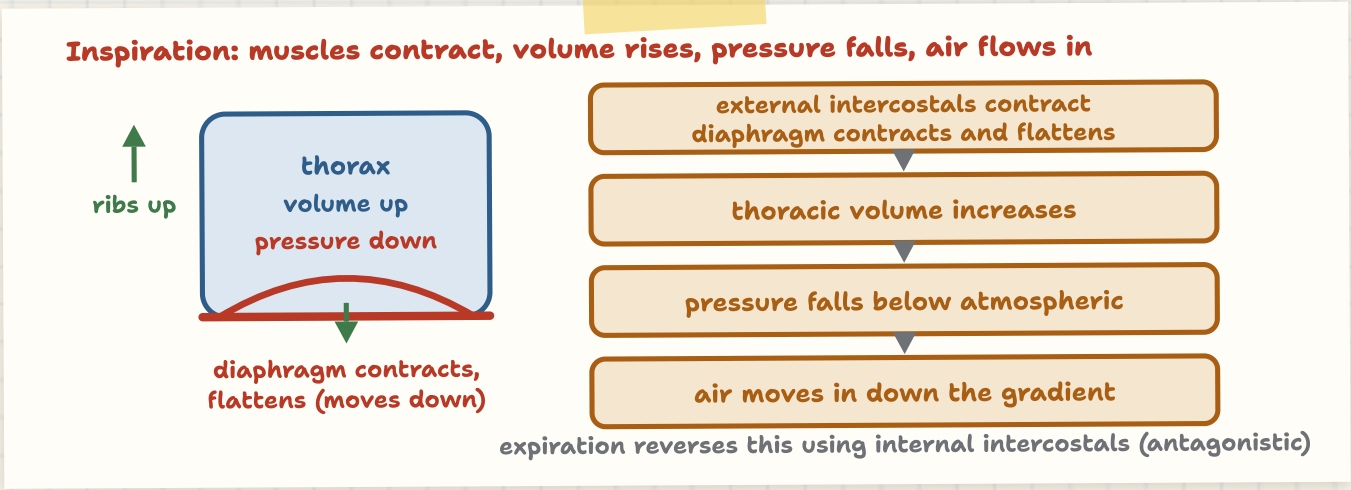
# Ventilation: How Breathing Works

Inspiration happens when the external intercostals and diaphragm contract, raising thoracic volume and lowering pressure below atmospheric.




## Key terms

| | |
|---|---|
| **inspiration** | air moves into the lungs; an active process using muscle contraction. |
| **external intercostal muscles** | contract to move the ribs up and out during inspiration. |
| **diaphragm** | a sheet of muscle that contracts and flattens during inspiration. |
| **thoracic cavity** | the chest cavity; its volume increases and pressure falls on inspiration. |
| **antagonistic muscles** | muscles that work in opposite ways: the internal intercostals contract in forced expiration. |
| **pressure gradient** | air flows from higher pressure outside to lower pressure inside the lungs. |

## I can...

- [ ] Mechanism of breathing: role of the diaphragm and the antagonistic interaction between external and internal intercostal muscles bringing about pressure changes in the thoracic cavity

**EXAM TRAP**

Air is not sucked in. Muscles change the volume of the thorax, which lowers the pressure below atmospheric, and air then moves in down a pressure gradient. Always state the cause before the result.

## 5 marks: what earns them

1. External intercostal muscles contract, moving the ribs up and out
   Not: intercostal muscles relax; internal intercostals contract
2. Diaphragm contracts and flattens
   Not: diaphragm relaxes; diaphragm moves up
3. Volume of the thoracic cavity (chest) increases
   Not: lungs get bigger with no cause stated
4. Pressure in the lungs / thorax decreases to below atmospheric pressure
   Not: pressure decreases with no comparison to atmospheric
5. Air moves into the lungs down a pressure gradient
   Not: air is sucked in / pulled in / drawn in with no gradient

**Remember**

Muscles contract, ribs up, diaphragm down.

Volume up, pressure down.

Air flows down the gradient.



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