

# Biological Systems and Processes

## Lesson 6 - The Effects of Exercise on Respiration

CSZ Biology

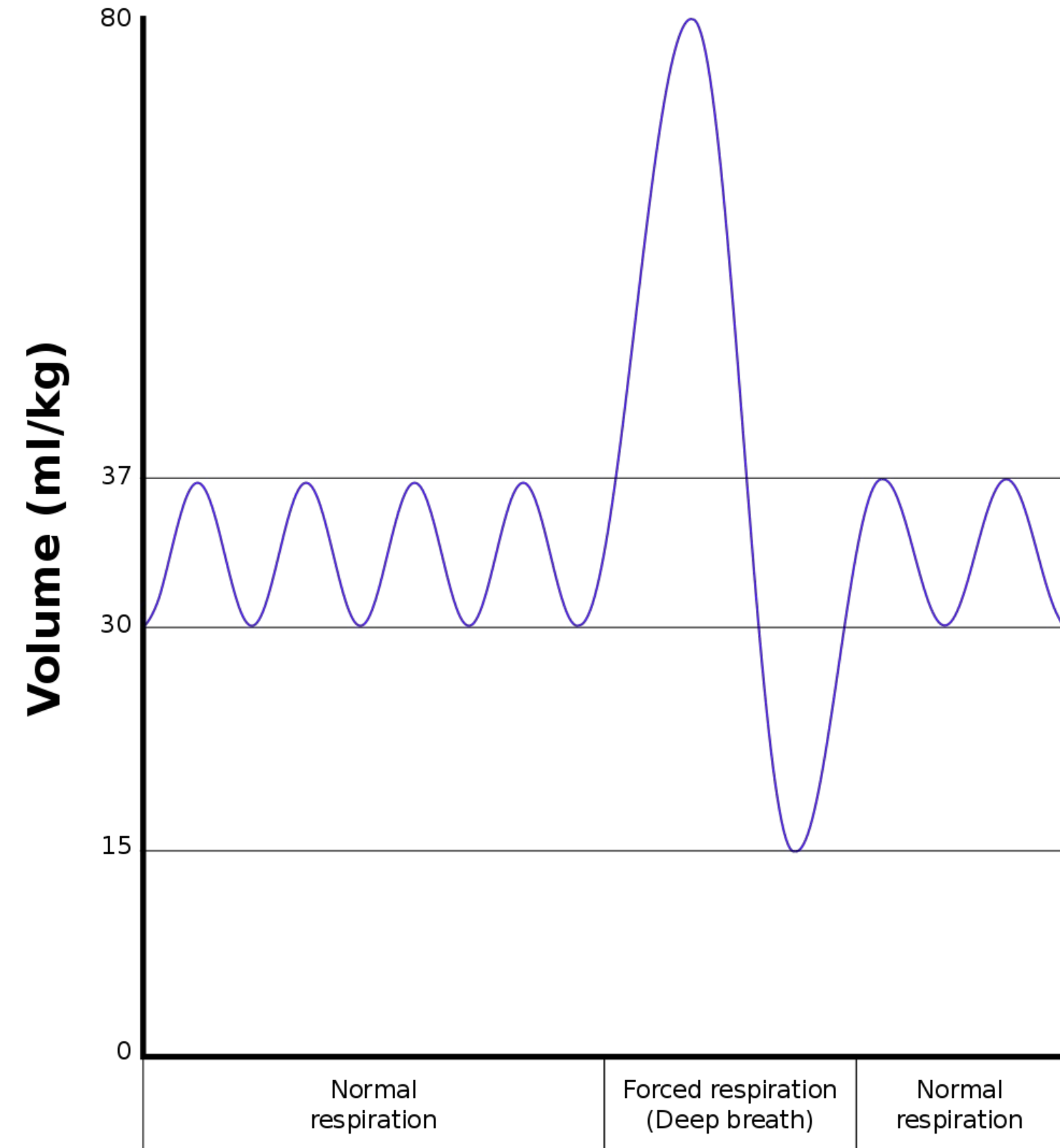
Miss Hindle



# Breathing Rate

This is a spirometer trace.

1. What is the volume of air inhaled during a deep breath?
2. What is the volume of air inhaled in a single normal breath.
3. How many breaths did this person take whilst this spirometer was on?
4. What would the breathing rate of this person be if this was taken over 30 seconds?



Vihsadas at English Wikipedia., Creative Commons, Wikimedia



# Quick Quiz...

1. To carry out more respiration, what reactants will the body need more of?
2. How do these reactants get around the body?
3. When your heart beats faster what does this do to the blood?
4. What do you do to get more oxygen into your body?



## Complete this summary:

During exercise your \_\_\_\_\_ rate and \_\_\_\_\_  
rate increase to get more \_\_\_\_\_ into the blood and  
then to muscle cells



# Effects of exercise...

Condition	Description of change	Explanation
Heart rate		
How hard the heart beats		
Breathing rate		
Breathing depth		
Blood flow to muscles		



# Effects of exercise...

Condition	Description of change	Explanation
Heart rate	Heart rate <u>increases / decreases</u>	To pump <u>more / less</u> blood to the muscles to deliver more / less oxygen and glucose
How hard the heart beats	The heart beat <u>harder / softer</u>	To pump a <u>larger / smaller</u> volume of blood
Breathing rate	Breathing rate <u>increases / decreases</u>	To maintain concentration gradients and get <u>more / less</u> oxygen in and <u>more / less</u> carbon dioxide out
Breathing depth	Breathing depth <u>increases / decrease</u>	To maintain concentration gradients and get <u>more / less</u> oxygen in and <u>more / less</u> carbon dioxide out
Blood flow to muscles	Increases <u>more / less</u> the harder you exercise	Muscles need a <u>bigger / smaller</u> supply of oxygen and glucose so they can respire <u>more / less</u> and release <u>more / less</u> energy



# Exam Style Question

1. Explain why the muscles need more blood flowing to them during exercise (4 marks)

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# Exam Style Question

2. Explain why breathing rate is higher when running than it is walking (4 marks)

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