Your notes

GCSE PE: revision notes

Aerobic and anaerobic exercise

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Aerobic exercise

- **Aerobic** means "with oxygen". It is used when exercise is at a low to moderate intensity and lasts a long time, such as a marathon.
- **Aerobic** respiration: **glucose** + oxygen → energy + carbon dioxide + water.
- The heart and lungs can supply enough oxygen for the demand, so there is no build-up of **lactic acid**.

Anaerobic exercise

- **Anaerobic** means "without oxygen". It is used for short, high-intensity bursts, such as a 100 m sprint or a shot put.
- **Anaerobic** respiration: **glucose** → energy + **lactic acid**.
- **Lactic acid** builds up in the muscles and causes fatigue, so **anaerobic** exercise can only last a short time.
- Most sports use both: a footballer jogs aerobically but sprints anaerobically.

EPOC (oxygen debt)

- **EPOC** (excess post-exercise oxygen consumption) is the extra oxygen taken in after exercise to recover.
- It explains why breathing and heart rate stay high after hard exercise.
- The extra oxygen is used to break down **lactic acid** and restore the body to its resting state.

Recovering from exercise

- Cool down: keeping breathing and heart rate raised helps remove **lactic acid** and reduces muscle soreness.
- Diet: rehydrating with water or sports drinks, and eating carbohydrates to refuel.
- Ice baths and massage reduce swelling and help blood flow to remove waste.

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Key terms

Aerobic	Using oxygen to release energy; for long, low to moderate intensity exercise.
Anaerobic	Releasing energy without oxygen; for short, high-intensity exercise.
Lactic acid	A waste product of anaerobic respiration that causes fatigue.
EPOC	Excess post-exercise oxygen consumption: the extra oxygen needed to recover after exercise.
Oxygen debt	Another name for EPOC.
Glucose	The sugar that is broken down to release energy.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is the word equation for aerobic respiration?
2. What is the word equation for anaerobic respiration?
3. Which event mainly uses anaerobic respiration?
4. Which event mainly uses aerobic respiration?
5. What waste product of anaerobic respiration causes fatigue?
6. What does EPOC stand for?
7. Why do you keep breathing hard after a sprint?
8. Which recovery method helps remove lactic acid?

Answers

1. Glucose + oxygen → energy + carbon dioxide + water
2. Glucose → energy + lactic acid
3. A 100 m sprint
4. A marathon
5. Lactic acid
6. Excess post-exercise oxygen consumption
7. To repay the oxygen debt and remove lactic acid
8. A cool down

What to do next

Practise 11 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

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