

# 4.2.2 Response to exercise

## AQA GCSE Biology (Higher)

### Question and answer notes

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#### How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.
- **Memorise** the answer.
- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

#### How do the body's energy needs change when a person goes from resting to exercising?

When a person goes from resting to exercising, the amount of energy that the body needs per second increases. This is because exercising uses energy at a faster rate than resting does.

**How does the body respond to the increased need for energy when a person goes from resting to exercising? How do these changes help?**

When a person goes from resting to exercising, the body responds to the increased need for energy in the following ways:

- Increasing the breathing rate
- Increasing the breath volume
- Increasing the heart rate

These changes increase the rate at which oxygen is supplied to the muscles by the blood. This allows the muscle cells to carry out aerobic respiration at a faster rate, which means that more energy is supplied per second.

**What happens if a person is exercising and their muscles do not receive enough oxygen?**

If a person is exercising and their muscles do not receive enough oxygen, then their muscle cells will carry out anaerobic respiration to meet their energy needs. This leads to a buildup of lactic acid. If this continues for a long period of time, the muscles become fatigued and stop contracting effectively.

**What is oxygen debt?**

When anaerobic respiration takes place in a person's muscles, lactic acid builds up. The blood transports this lactic acid from the muscles to the liver. In the liver, the lactic acid is converted back to glucose. This process uses oxygen. Therefore, even though anaerobic respiration does not use oxygen at the time that it happens, oxygen is needed later to break down the lactic acid that it produces. This is called oxygen debt.