OCR (A) Biology GCSE

PAG 06: Physiology, Responses, Respiration

Practical Notes

Physiology, Responses, Respiration

Aim

To investigate and monitor changes in pulse, ventilation rate and recovery following exercise.

Equipment

- Stopwatch
- Spirometer
- Soda lime
- Oxygen tank
- Nose-clip
- Motion sensor with data logging software eg. Kymograph

Method for measuring pulse rate

1. Hold out one hand with the palm facing upwards while bending you elbow slightly.
2. Hold your wrist with the first and third finger of your other hand, pressing until you can feel your pulse.
3. Take your pulse by counting the number of pulses in 1 minute, using a stopwatch.
4. Perform an exercise eg. star jumps for a set duration or set number of repetitions.
5. Repeat steps 1-3 after completing the exercise, and record your results in a table.

Method for measuring ventilation rate

1. Set up and calibrate the spirometer, making sure there are no leaks.
2. Select a participant: the participant should be healthy with a good level of fitness.
3. Have the participant sit down and put a nose clip in place. Close the 2-way tap and connect the mouthpiece to the surrounding air, have the participant breathe normally into the mouthpiece to familiarise themselves to the spirometer.
4. Turn the 2-way tap to connect the participant to the spirometer chamber at the end of their expiration.
5. Start timing for 1 minute and record the number of normal breaths taken.
6. Perform an exercise for a set duration or set number of repetitions.
7. Repeat steps 3-5.
8. Clean the mouthpiece and repeat for another participant.

Risk assessment

Make sure the participant for the second part is healthy and able to partake in rigorous exercise.
The teacher should be made aware if a participant is asthmatic or diabetic.
Care must taken when using soda lime.

Sources of error

The intensity of the exercise may be different with different participants and is difficult to be regulated, so the results of part two may be affected.