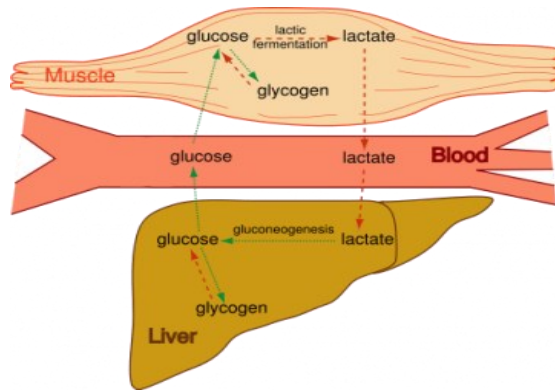


GCSE Physical Education—Short term effects of exercise

Short term effects of exercise on the muscular system

Muscle Fatigue: Usually happens when anaerobic respiration has occurred. Lactic acid is produced as a bi product of this type of exercise and gathers in the muscle or blood causing your muscles to feel painful or tired. Process known as **LACTATE ACCUMULATION**.

Cramp: is a severe form of muscle fatigue that causes the muscle to contract in a painful manner. Caused by Dehydration and onset of Lactic acid usually from a Long hard match/game.

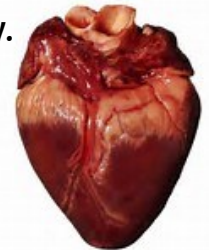


Short term effects of exercise on the CV system

Heart rate: This is the number of times the heart beats per minute. When exercise is performed heart rate will increase.

Stroke Volume: This is the amount of blood pumped per beat. When exercise is performed stroke volume will increase dependent on the intensity of the activity and the individual.

Cardiac Output: This is the amount of blood pumped per minute. When exercise is performed cardiac output will increase as the intensity increases. Two factors determine cardiac output: heart rate and stroke volume **SEE FORMULA BELOW.**



$$CO = HR \times SV$$

Cardiac Output = Heart Rate x Stroke Volume

Short term effects of exercise on the respiratory system

When intense exercise occurs more O₂ is used than you uptake into the body. This shortfall in oxygen creates an oxygen debt. Deep breathing may continue after exercise to ensure that the debt is repaid.

Rate of breathing: The amount of breaths you take per minute increases

Depth of breathing: The depth of each breath also increases.

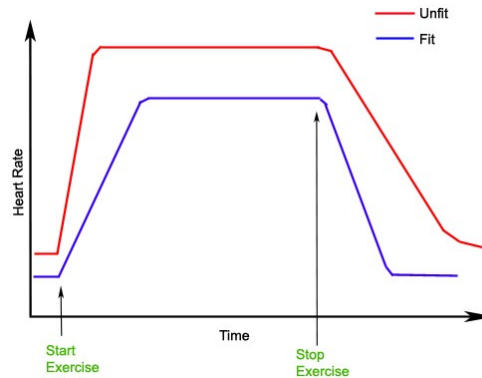
Both of these increase the intake of oxygen and in turn the uptake of oxygen.



Graphical representations of HR, SV, Q at rest and during exercise

Exam-style question

Analyse why the heart continues to beat faster than resting heart rate even when exercise has stopped?
(4 marks)



Exam-style question

Look at the graph below, showing the stroke volumes during exercise for two different athletes. One of the athletes (A) is very fit; the other athlete (B) does not do much exercise.

- Which line belongs to which athlete?
- Explain your answer. (4 marks)

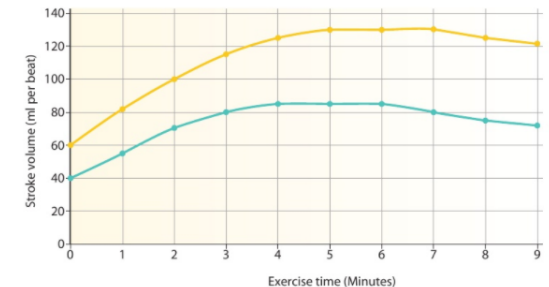


Figure 1.21 Stroke volume graphs for two different athletes