

Energy supply and the effects of exercise on the body



UNTAMED
EDUCATION

1.3 Anatomy and physiology

Glucose

Oxygen

Aerobic Respiration

Carbon dioxide

Anaerobic Respiration

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Lactic Acid

Cool Down

EPOC

Energy

Oxygen Debt



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1. Aerobic respiration

- ▶ **Aerobic** _____ is when **we use oxygen** to create energy.
- ▶ We can usually supply enough **oxygen** for **low to** _____ **intensity activities**.



- ▶ _____ **distance/low intensity** sports such as cycling, running and swimming use the aerobic system.

2. Anaerobic respiration

- ▶ **Anaerobic** respiration is when we **do not take enough oxygen** in to **meet** _____ **energy demands**.
- ▶ This might be when we are **working at full** _____ **for a** _____ **amount of time** i.e. **sprinting** or **throwing**.
- ▶ Glucose is **broken down without** _____.
- ▶ As a result a waste product called _____ **acid** is produced which reduces performance.



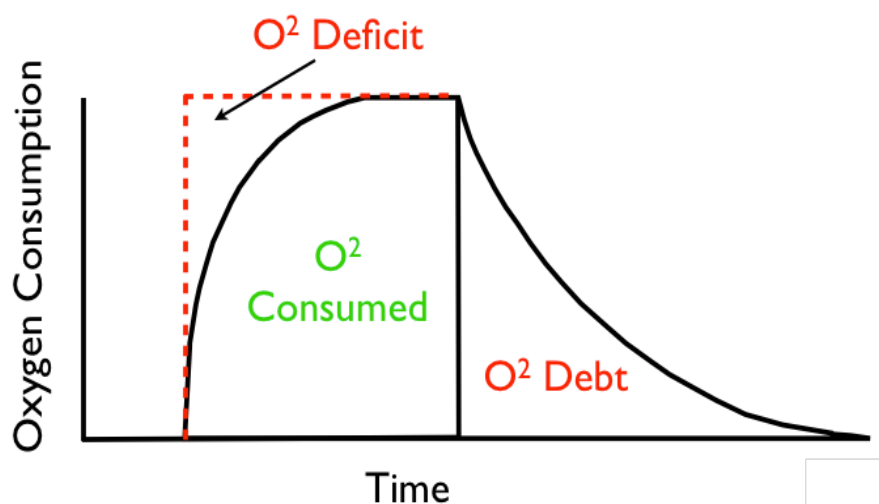
3. Excess Post-Exercise Oxygen Consumption (EPOC)

- ▶ **During recovery** we continue to **consume a large volume of** _____.
- ▶ This **extra amount** that is consumed after exercise compared to rest is called our **oxygen** _____.



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- ▶ When we exercise **anaerobically our oxygen debt** _____ as we are forced to breakdown glucose without oxygen which creates lactic acid.
- ▶ The excess oxygen consumed is used to **remove** _____.



4. Recovery

Cool Down - After taking part in physical activity you should do some _____ **exercise** and **stretch** _____ to aid recovery.

- ▶ Prevents soreness.
- ▶ Elevated heart rate and breathing rate _____ **lactic acid**.

Players can also do a number of other activities to **aid** _____.

1. _____ - Carbohydrates replace energy used in exercise.
2. **Drink** _____ - Rehydrates the body after losing fluids through sweating.
3. _____ - Allows the muscles to repair themselves.
4. **Plunge** _____ **of ice-cold water** - Reduces Delayed Onset of Muscle Soreness (DOMS).
5. **Compression** _____ - Reduces swelling.





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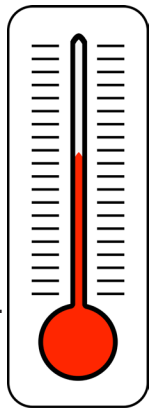
5. Heart Rate

- ▶ When you start to exercise the **heart rate** _____.
- ▶ This coupled with an **increased** _____ **volume** increases the **cardiac** _____ resulting in an increased **blood** _____ and better **oxygen** delivery.
- ▶ The increase in heart rate depends on the intensity of the exercise. Intense exercise results in a **large** _____ in the heart rate.



6. Increased Temperature

- ▶ When **energy** is **produced** and muscles contract _____ is **created**.
- ▶ **Increased muscle** _____ result in a large **increase** in **temperature**.
- ▶ The body redirects the blood to the _____ **of the skin** so it can be removed.
- ▶ **Heat is** _____ through evaporation (sweating), radiation and convection.
- ▶ The _____ becomes **hot**, **red** and **sweaty**.

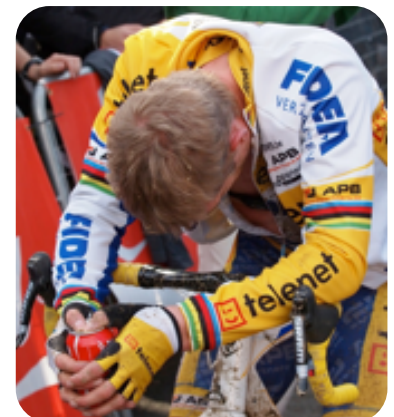


7. Respiratory Changes

- ▶ **Breathing rate** _____.
- ▶ _____ of breathing increases, resulting in an increase in **tidal volume**.
- ▶ **Increased gaseous** _____ of oxygen and carbon dioxide at the lungs.

8. Other changes

- ▶ During prolonged performance and _____ respiration lactic acid is produced. This makes the **muscles** **fatigue** (_____) and you will feel tired.
- ▶ Performers must eventually **stop** due to _____.
- ▶ Feel _____ **headed**.
- ▶ Experience _____.





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9. Long-term effects of exercise

- ▶ **Resting heart rate decreases** (_____). 60 beats per minute in an adult is considered bradycardia.
- ▶ Change in body shape. **Increased lean body** _____.
- ▶ **Improvements in specific components of** _____ such as muscular endurance, cardiovascular endurance, speed, suppleness (flexibility) and strength. These improvements depend on the type of exercise you perform.
- ▶ **Increase in** _____ so you can exercise for longer.
- ▶ **Muscles** increase in **size** and **strength** (_____).
- ▶ Increased **red blood cell** production
- ▶ Arteries (blood vessels) grow _____ and more **elastic** so blood pressure is _____.
- ▶ **Lactic** _____ is removed more efficiently.
- ▶ Decreased _____ time.
- ▶ **Increase lactic acid** _____.
- ▶ **Increased gaseous** _____.

