**Anaerobic Energy Systems Revision**

1. **What does the term anaerobic mean?**

In the absence of oxygen

1. **Name the first energy system and the fuel it uses**

The first energy system is the Alactacid System (ATP/PC). Fuel source is Creatine Phosphate that is stored in cells

1. **Explain how ATP releases energy.**

ATP provides energy for activities that last no longer than 1-2 seconds. The energy is released by the breaking of the chemical bonds. The last phosphate molecule breaks off to produce energy

1. **What is ADP?**

Adenosine Diphosphate is what remains after the last molecule of ATP breaks off. ADP relies on the fuel of Creatine Phosphate so that it can regenerate back to ATP.

1. **Where is creatine phosphate found?**

Creatine Phosphate is found in cells in the muscle

1. **Explain how CP assists to resynthesis ATP**

The Creatine Phosphate molecule splits, providing energy for the separated phosphate to join together with the ADP compound to reform back into ATP

1. **What type of intensity and duration of activity would predominantly use the ATP/PC system?**

High intensity – 85-100% max, 10-12 seconds

1. **Provide (3) examples of activities /sports that are use the ATP/PC system**

100m sprint, shot put, high jump

1. **Approximately how long does the CP stores last in the body?**

Exhausted within 10-12 seconds

1. **How long does it take to recover the used CP stores?**

Takes 2 minutes to be restored

1. **Name the second anaerobic energy system**

Lactic Acid (glycolytic system)

1. **What fuel does the lactate system use to make ATP?**

Carbohydrates – glucose in blood and glycogen in storage form

1. **Explain the what the term ‘anaerobic glycolysis’**

The lactic acid system is anaerobic and because glycogen is the only fuel, the degradation process is called anaerobic glycolysis

1. **What is the by-product of glycogen breakdown to ATP in this system?**

Lactic acid and heat

1. **How does the lactic acid impact on the body?**

It builds up within the muscle cells and causes fatigue

1. **What is the approximate duration for this energy system?**

30 sec at 85% max effort, 3-4 mins at 70-80% effort and 30 mins at 60% or less. This system is predominately used from approx. 30 sec into exercise to 3 mins

**Aerobic Energy System**

1. **Outline the features of the Aerobic energy system?**

Requires oxygen for activity that lasts longer than a few minutes. Is the third energy pathway. Glucose and fat (and sometimes protein) are broken down in the presence of oxygen to produce ATP.

1. **What becomes available to the muscles to allow for ATP production in the aerobic system?**

Carbohydrates, fat and sometimes protein

1. **What is Aerobic Glycolysis and identify its by-product?**

It is the breakdown of glucose/glycogen and fat in the presence of oxygen to produce ATP. By-products are carbon dioxide and water

1. **Name the (3) fuels that can be used by this energy system**

Carbohydrates, fat and protein

1. **Why is fat not the preferred source of fuel during activities of medium to high intensities?**

Fat requires more oxygen for metabolism than carbohydrates

1. **What does the term ‘Hitting the Wall’ mean?**

The point at which the body changes its main fuel supply from glycogen to fat is called ‘hitting the wall’. Fatigue occurs because fat requires more oxygen for metabolism than does carbohydrate. This increases the runner's body temperature and rate of respiration.

1. **Under what conditions does the body use Protein to synthesis ATP**

Under extreme conditions when fat has been exhausted as a fuel source. The body will turn to protein to synthesise ATP