Component 1 Aerobic & Anaerobic Exercise

Aerobic exercise:

- Uses oxygen for energy production
- Includes activities that are of a long duration
- Includes activities that are of a moderate intensity

Sports and activities:

Long distance cycling

Marathon running

Triathlon

Long distance rowing

Aerobic equation:

Glucose + O_2 ⟶ CO_2 + H_2O + Heat + Energy

Glucose and oxygen are used to release energy aerobically. This process produces carbon dioxide, water and heat (and energy)

Anaerobic exercise:

- Does not use oxygen for energy production
- Include activities that are of a short duration
- Includes activities that are of a high intensity

Sports and activities:

Shot put

Sprinting

Long jump

Weight lifting

Anaerobic equation:

Glucose ⟶ lactic Acid + Energy

Lactic acid is produced as a waste product when carbohydrates are broken down without oxygen during anaerobic respiration

Energy Sources

Carbohydrates

- They are an energy source for both aerobic & anaerobic activities
- Doesn't need oxygen to break down into glucose
- Doesn't give as much energy as fats
- Quicker to break down and release more energy than fats

Fats

- They are an energy source for aerobic activities
- They require oxygen to break down the fat into energy (a type of glucose)
- They are slow to break down
- Once broken down they give large quantities of energy

Component 1 Short Term Effects of Exercise

Short term effects of exercise are the ways your body responds as it starts to exercise. These changes happen so that the body can meet the increased demands to the exercise undertaken

Muscular System:

- Muscle fatigue
- Lactate accumulation
- Oxygen deficit

When we start to exercise there is a demand for energy.
When we work anaerobically, we get muscle fatigue and a build-up of lactic acid. This will create an oxygen deficit

Cardiovascular System:

- Increase in heart rate
- Increase stroke volume
- Increase blood pressure
- Increase cardiac output
- Vascular shunting occurs

Respiratory system:

- Increase depth of breathing
- Increase rate of breathing
- Increase gas exchange
- Increase in tidal volume
- Oxygen deficit

The cardiovascular system & respiratory system work together

When we exercise the demand for oxygen and the removal of carbon dioxide increases. This will increase breathing rate and depth and the rate of gas exchange

Because oxygen is needed for the working muscles, vascular shunting occurs

Heart rate is increased as the blood transports the oxygen and carbon dioxide. This increases blood pressure, stroke volume and heart rate

Cardiac output = Stroke Volume x Heart Rate

Stroke volume = Amount of blood pumped from the heart in 1 beat

Heart rate = Amount of time the heart beats per minute

Cardiac output = Amount of blood pumped from the heart in 1 minute