**Anaerobic and aerobic exercise**

**Oxygen debt**

As a result of anaerobic respiration an oxygen debt is created. This is where the body ‘borrows’ oxygen from its stores to enable the breakdown of glucose for energy during anaerobic respiration. After this has occurred we have to pay this oxygen back. This is known as oxygen debt.

**Recovery period**

Following exercise we enter a recovery period where we take in extra oxygen to aid the removal of lactic acid.

Expiration of breath – removes carbon dioxide and other waste products from lungs

Perspiration – temperature control – allows release of excess water

Excretion – removes water and other waste products from lactic acid.

**Aerobic exercise**

This type of exercise occurs in the presence of oxygen.

**Glucose + oxygen = energy+ carbon dioxide + water.**

It is used during continuous activity such as football or a marathon.

**Anaerobic respiration**

This type of respiration occurs in the absence of oxygen.

**Glucose = energy = lactic acid**

**EPOC – ‘Excess Post-Exercise Oxygen Consumption’**

During short, intense exercise energy is created without oxygen (anaerobic). **This is because the athlete is running too quickly to be able to get all the energy they need from oxygen.** Lactic acid is produced as a by-product of this.

1. When strenuous exercise stops, a performer will still be breathing heavily.
2. This is because an athlete needs to repay the ‘oxygen debt’ caused by anaerobic activity.
3. The oxygen that is breathed in removes the lactic acid from the working muscles and this will continue until all the lactic acid is removed.

As well as EPOC the following can occur after strenuous exercise: -Tiredness, -Nausea, –Light-headness and DOMS/cramp.

**Immediate effects of exercise:**

**1. Thermoregulation**

During exercise, heat is generated in the body as a result of the production of energy.

The heat that is produced through muscle contraction raises the core body temperature which causes fatigue.

**2. Increase in heart rate**

As we start exercising heart rate increases and beats with greater force.

**3. Increase in depth and frequency of breathing**

Exercise causes an increase in breathing rate and depth of breathing.

In the **hours** and **days (Short term)** after exercise the body experiences the following effects:

1. **Tiredness and fatigue** (Muscles can become swollen with fluid which leave them feeling heavy. This usually passes within a day or two.)
2. **Light headedness** ( This is often caused by low blood sugar or a drop in blood pressure. Likely to occur after sweating heavily)
3. **Nausea** (sick feeling)
4. **Cramp** is a painful involuntary muscle contraction typically caused by strain of the muscle. Often linked to dehydration and loss of minerals due to sweating.
5. **DOMS**

**Long term effects of exercise (Months or Years):**

* Loss of weight
* Muscular hypertrophy
* Change of body shape
* Cardiac Hypertrophy
* Decrease Resting HR (Bradycardia)
* Increase in specific components of fitness

Weight Loss, Hypertrophy & Body Shape:

Weight Loss is not guaranteed but regular exercise will use up fat stores that supply glucose to the body for energy during exercise.

If exercise is mainly anaerobic there will be a tendency to increase the size of the muscles involved. (Muscular Hypertrophy)

A combination of these two factors may result in a change in body.