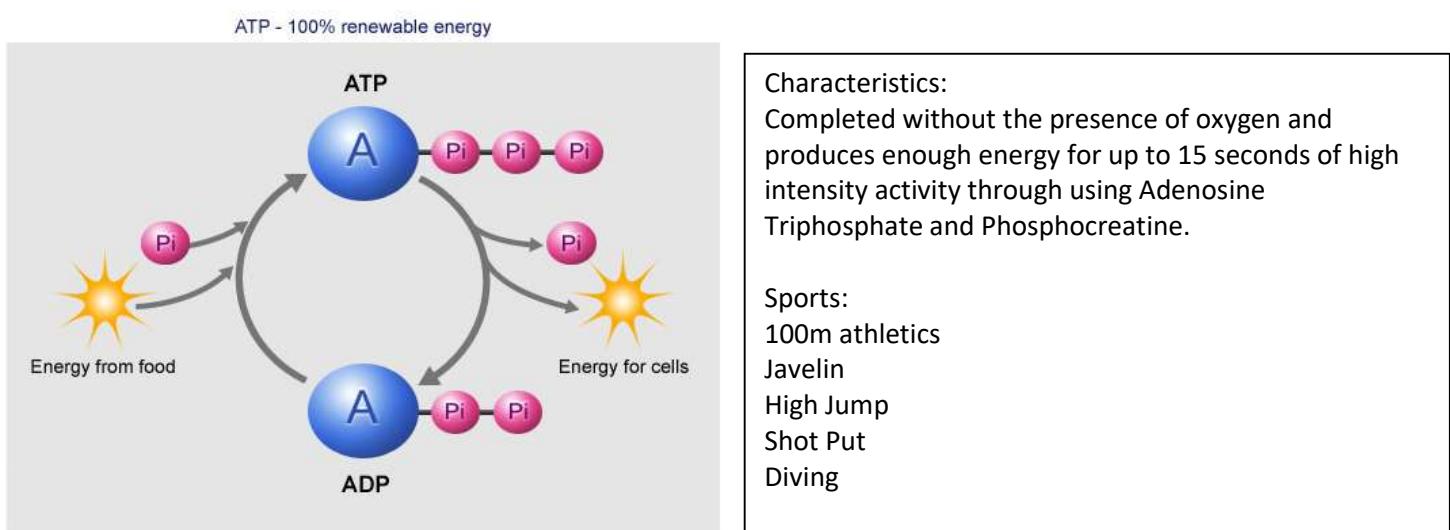


Unit 5 Assignment B Energy Systems

Checklist and Knowledge Organiser

Success Criteria	Evidence Required	Included?
2B.P5	<p>Describe the function of the ATP-PC Energy System:</p> <ul style="list-style-type: none">-Create a poster-Explain the steps of the respiration process to create energy-Key characteristics of the system-Sports that use this energy system-Include images	
2B.P5	<p>Describe the function of the Glycolysis Energy System:</p> <ul style="list-style-type: none">-Create a poster-Explain the steps of the respiration process to create energy-Key characteristics of the system-Sports that use this energy system-Include images	
2B.P5	<p>Describe the function of the Aerobic Energy System:</p> <ul style="list-style-type: none">-Create a poster-Explain the steps of the respiration process to create energy-Key characteristics of the system-Sports that use this energy system-Include images	
2B.M5	<p>How do sports use both the anaerobic and aerobic energy system:</p> <ul style="list-style-type: none">-Create a poster-Pick 2 sports to discuss-Explain how they use the ATP-PC energy system, provide examples-Explain how they use the Glycolysis energy system, provide examples-Explain how they use the Aerobic energy system, provide examples-Include images	
2B.D2	<p>Compare and contrast how the energy systems are used in sports with different demands:</p> <ul style="list-style-type: none">-Create a poster-Pick 2 different sports e.g. football and 100m sprint-Describe the similarities (compare) of how the 2 sports use the 3 energy systems-Explain why that is-Describe the differences (contrast) of how the 2 sports use the 3 energy systems-Explain why that is	

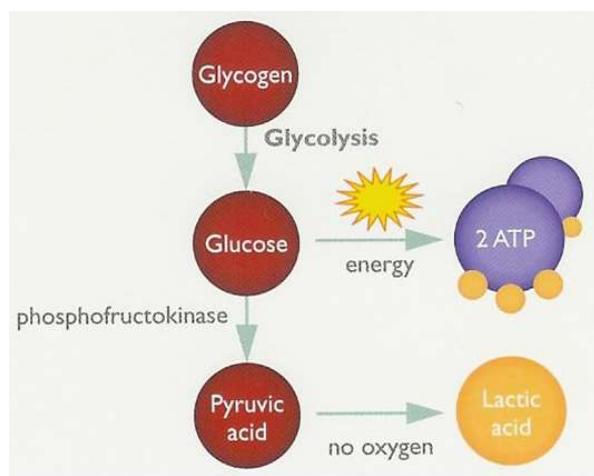
ATP-PC Energy System:



Respiration Process:

- Stored ATP in the muscles is broken down to release the third phosphate, which creates up to 5 seconds of energy.
- ADP following this breakdown
- Phosphocreatine (PC) is broken down to release its phosphate
- The phosphate joins with ADP to reform more ATP
- This produces a further 10 seconds of energy
- Stores of ATP and PC then run out and Glycolysis is needed

Glycolysis Energy System:



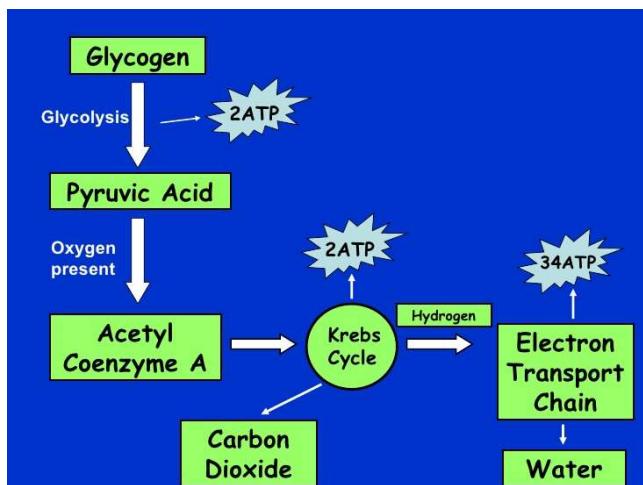
Characteristics:
Completed without the presence of oxygen and produces enough energy for up to 4 minutes of moderate to high intensity activity through using stored glycogen.

Sports:
400m athletics
800m athletics
200m swimming
Gymnastics floor routine

Respiration Process:

- Glycogen is broken down via glycolysis into glucose
- Glucose is broken down by the enzyme phosphofructokinase and this produces 6 phosphates and so 2 ATP and energy for approximately 4 minutes
- As no oxygen is present a by-product called Lactic Acid is produced
- Too much lactic acid affects performance and needs to be broken down which can only happen if oxygen is present

Aerobic Energy System:



Characteristics:

Completed with the presence of oxygen and produces enough energy for anything over 90 seconds of low to moderate intensity activity through using stored glycogen and fatty acids.

Sports:

Marathon
10km open water swim
Road cycling
Football
Rugby

Respiration Process:

- During the first stage, Glycogen is broken down via glycolysis in the presence of oxygen to produce glucose and 2 ATP
- Pyruvic acid is also produced and this is broken down in the presence of oxygen to produce Acetyl Coenzyme A, the breakdown of fatty acids will also produce this too
- Acetyl Coenzyme A enters the second stage of the process which is called the Krebs Cycle
- During the Krebs Cycle 2 ATP are produced and the by-products of carbon dioxide (which is breathed out) and hydrogen is produced
- The hydrogen moves onto the third stage of the process which is called the Electron Transport Chain
- During the Electron Transport Chain 34 ATP are produced and the by-product water is produced