GCE PHYSICAL EDUCATION

PE2 UNIT GUIDE

Content Title: Energy Continuum

Key points

- The interchanging of the energy systems during exercise
- The energy system being predominantly used is dependent on the activity being performed
- The predominant energy system being used will depend on the intensity and duration of exercise and the fitness level of the performer

Practical Application/Explanation

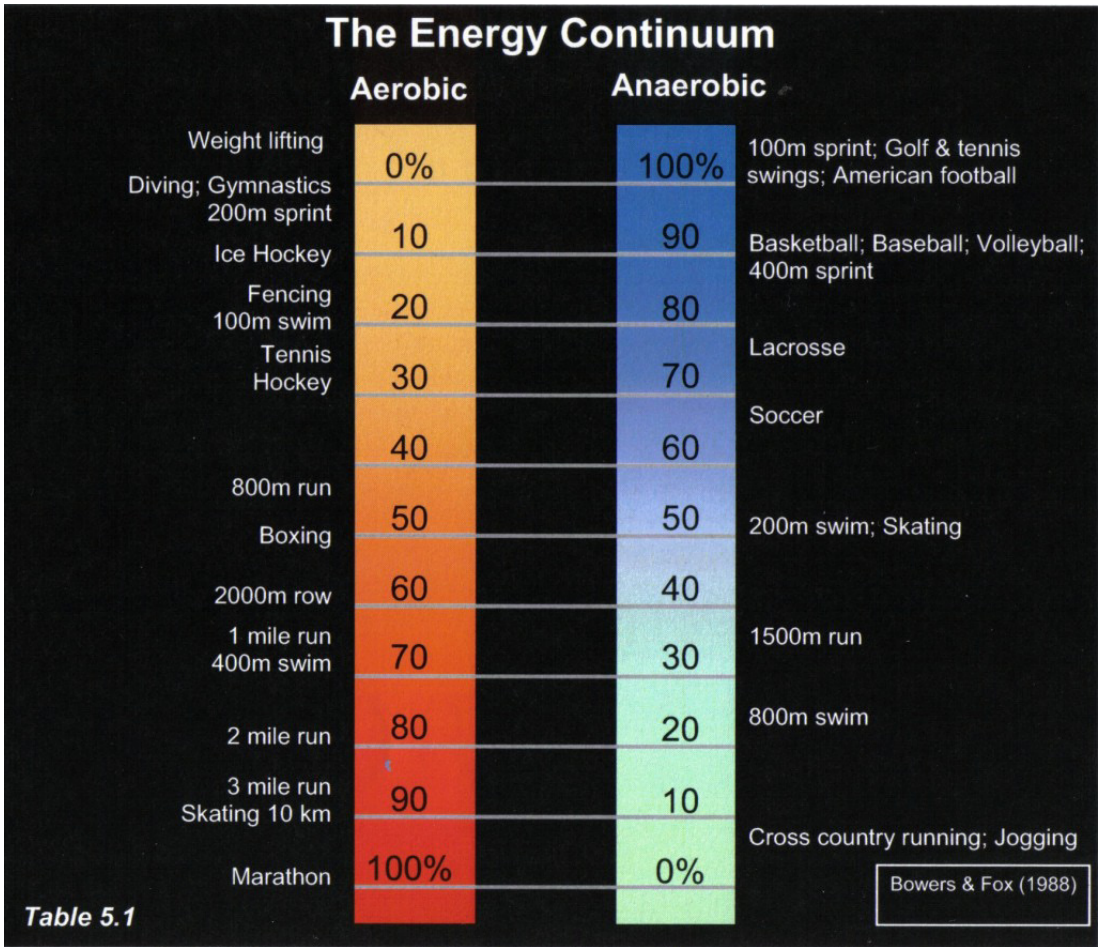
In reality the energy systems never work in isolation and are *all* working at different percentages at different times e.g. when jogging, the body will still be using a very small proportion of the ATP-PC system and whilst sprinting, the aerobic system will also be used albeit in very small amounts. As stated, the percentage use of each of the energy systems will be constantly changing, particularly in game type sports where the intensity and duration of the exercise being performed is constantly changing. For example, during a game of football a wide player may sprint down the line beating defenders using:

85% *ATP-PC*
13% *Anaerobic Glycolysis*
2% *Aerobic*

Then when he stops to prepare to cross the ball when confronted by a defender, the proportion of each system will change because the intensity of the exercise will drop and hence the proportion of the energy systems being used will change:

30% *ATP-PC*
50% *Anaerobic Glycolysis*
20% *Aerobic*

At the end of the match, competition or activity, the proportion of each energy system will be totalled. Examples of this can be seen in the table below.



Quick revision

- **Threshold** - The point at which the predominant energy system being used cannot provide sufficient ATP to maintain the current intensity of exercise e.g. the threshold for the CP system is approximately 10 seconds (after very high intensity exercise) after this the stores are depleted and the anaerobic glycolysis system will become the predominant system to provide ATP.
- **Anaerobic Threshold** – The point that which anaerobic energy production produces more energy/ATP than is being supplied aerobically.
- In most activities we use a mix of all three systems to produce energy/ ATP.

Top Tips:

As with the energy systems, the candidates must link the proportions of the energy continuum to the **intensity** and **duration** of the exercise and fitness level of the performer if appropriate within the answer (see Energy Systems top tips).

Exam Style Questions

1. Energy continuum for a 1500m race

ATP-PC System	Lactic Acid System	Aerobic System
10%	30%	60%

Using the information in the table, explain the energy continuum during a 1500m race. [4]

2. (a)Use a chosen sporting activity to explain when each energy system would be used to replenish A.T.P. [3]

Answers