



Getting Ready for...

KS5 (A Level) PE

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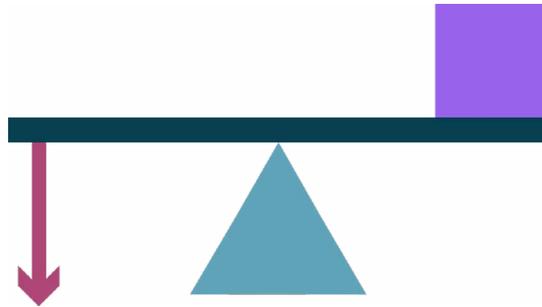


Activities

1. Types of levers

A lever is a rigid bar that turns about an axis to create movement. Levers contain a fulcrum, load and effort. There are first class, second class and third class levers.

- What does a fulcrum do in a lever?
What is the load in a lever?
What is the effort in a lever?
- What are the differences in the three types of levers? To help, you could draw diagrams to label each of the three classes of lever.
- To extend your knowledge further, can you give an example of a sport that each of the levers can be used in?



2. Body planes and axes

Planes divide the body into sections. Axes allow movements to take place in one of the planes.

- The sagittal plane is one of the planes, what are the other two called?
- How do these planes divide the body into sections?
- The frontal axis allows for flexion and extension. What movements does the sagittal axis allow?

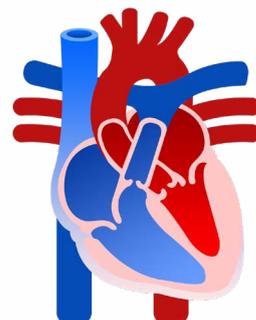
To extend your knowledge further, can you name a sporting action where an athlete twists around more than one axis?

- Can you describe what planes and axes are used in a forward roll?
- Can you name a movement type that moves between the transverse plane and the vertical axis?

3. The structure of the heart and the cardiac cycle

The contraction and relaxation of the heart muscle constitute the heartbeat. The heart beats at an average rate of 70 beats per minute. This cyclical repetition is called the cardiac cycle.

- What are the four chambers of the heart called?
- What is the role of the septum?
- Can you explain the cardiac cycle and the pathway of blood through the heart from the right atrium?





Can you extend this further to include oxygenated and deoxygenated blood?

- Arteries normally carry oxygenated blood and veins normally carry deoxygenated blood. What are the two exceptions to this that are connected to the heart?
- There are two circuits in the cardiac cycle called the pulmonary and the systemic. What is the difference between them?
- Heart rate is the number of times a heart beats per minute.
- What is stroke volume?
- What is cardiac output and how do you calculate this?

4. Aerobic and anaerobic exercise

Whether the body uses oxygen in order to perform a physical activity determines if that activity is aerobic (with oxygen) or anaerobic (without oxygen).

Anaerobic exercise only lasts for short periods of time. The anaerobic respiratory system supplies energy very quickly for sports where the activity only lasts a few seconds, such as vaulting in gymnastics or throwing a javelin.

- What is the energy equation for anaerobic exercise?
- When could a footballer use anaerobic exercise in a game?
- What does lactic acid cause in the body?
- What does EPOC stand for in relation to anaerobic exercise?

Aerobic exercise lasts for longer periods of time. The aerobic respiratory system is responsible for producing the majority of our energy while our bodies are at rest or taking part in low-intensity exercise for longer periods, such as jogging or long-distance cycling.

- What is the energy equation for aerobic exercise?
- Can you say what food types the body gets its glucose from?

5. Long term effects of exercise

During exercise, the body systems respond immediately to provide energy for the muscles to work. After regular and repeated exercise, these systems adapt to become more efficient. These adaptations are classed as long-term effects of exercise.

- Muscle hypertrophy increases the strength of muscles, tendons and ligaments. Give an example of a type of exercise that could produce muscle hypertrophy.





- What impact can exercising regularly have on your bones?
- What are the long-term effects of exercise on the cardiovascular system?
- What is capillarisation? What are the benefits of it?

6. Types of muscle fibres and contractions

In GCSE PE, students are taught about the 3 muscle types; cardiac, smooth and skeletal.

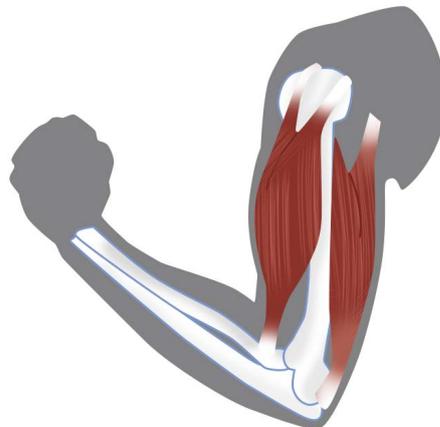
Within skeletal muscles, there are three types of fibre. Type one (I), type two a (IIa) and type two b (IIb). Each fibre type has different qualities in the way they perform and how quickly they fatigue (get tired).

- Can you describe each muscle fibre and what type of physical activity it is suited for? To help, you could describe how quickly each contracts and how quickly muscles fatigue.
- What is the difference between concentric and eccentric muscle contraction?
- To extend your knowledge further, find out what an isometric muscle contraction is and name an example of an activity where this is used.

7. Antagonistic muscle pairs

When a muscle contracts, it exerts a pulling force on the bones it is attached to, causing movement at a joint.

- What is the difference between an agonist (also known as a prime mover) and an antagonist muscle?
- Using the bicep curl as an example, what do the bicep and tricep muscles do in extending and flexing the arm? To help, you could say which one is the agonist and antagonist in the extension (straightening of the arm) and flexion (bending of the arm) phases of the bicep curl.
- What is the purpose of synergist and fixator muscles? To extend, can you give an example of when these would be used in a sporting movement?



8. Sports psychology: mental preparation

To succeed and perform their best, athletes need to use their minds as well as their bodies. Mental techniques help to control emotions, manage stress and improve participation and performance.

- What are the four mental preparation techniques?

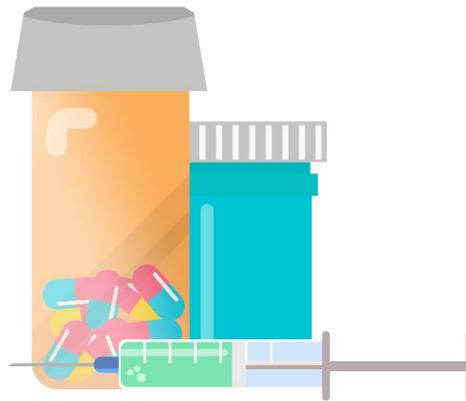


- Imagine you are going into a top sports competition. How could you use these four techniques to prepare yourself for this competition? To help, think about confidence, stress levels, concentration and aspirations.
- In this competition, how could you use different types of feedback to help you?

9. Drugs in sport

Some athletes take illegal drugs to enhance their performance. This is known as 'doping'.

- What are the three types of performance enhancing drugs? To extend, say what each drug can do and what their side effects are.
- What impact can taking drugs have on sport if an athlete is caught?
- Why could some athletes be pressured into taking performance enhancing drugs?



10. Principles of training

- Plan a 6 week training programme for a sport of your choice.
 - What are the principles of training that you need to consider?
 - To help, you will need to include FITT into your training programme. What does FITT stand for and how will it impact on your training programme?
 - What do you need to consider when starting a training programme? To help, you will need to think about aerobic or anaerobic exercise, facilities, rest and recovery, warm up and cool downs.
 - What activities will you have as part of your training programme, and how will you ensure that these are varied to ensure that boredom does not set in?
 - How will you ensure that you can test that your programme works? Would you test heart rates for example?