

GCSE PE Structured questions

1a Applied anatomy and physiology

Understand the structure and functions of the skeleton

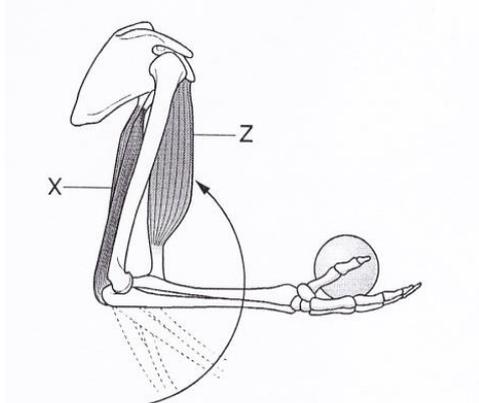
1. Describe the main functions of the skeletal system that keep the body healthy and active. [4]
2. How does the skeletal system provide a framework for movement? [4]

Understand the structure and functions of synovial joints

3. Explain the function of synovial fluid in joints. [3]
4. Describe, using an example of a named hinge joint, the structure of a synovial joint. [4]

Understand the movements involved at different joints

5. Using the diagram of an elbow joint:



- (i) Name muscle X [1]
- (ii) Name muscle Z [1]
- (iii) Identify which muscle is the agonist [1]
- (iv) Identify which muscle is the antagonist [1]

6. Explain, using a practical example for each, what is meant by abduction and adduction. [4]
7. Name the **two** bones that form the shoulder joint. [2]
8. Name the **three** bones that form the elbow joint. [3]
9. Name the bones that form the knee joint. [2]
10. Name the **three** bones that form the ankle joint and state the type of synovial joint found at the ankle. [4]

Understand the names of the major muscles causing movements

11. Identify **two** major muscle groups of the upper body that are used when performing a standing throw of a ball. [2]
12. Name the muscles that cause movements at the knee joint. [2]
13. Name the muscles that cause movements at the ankle. [2]

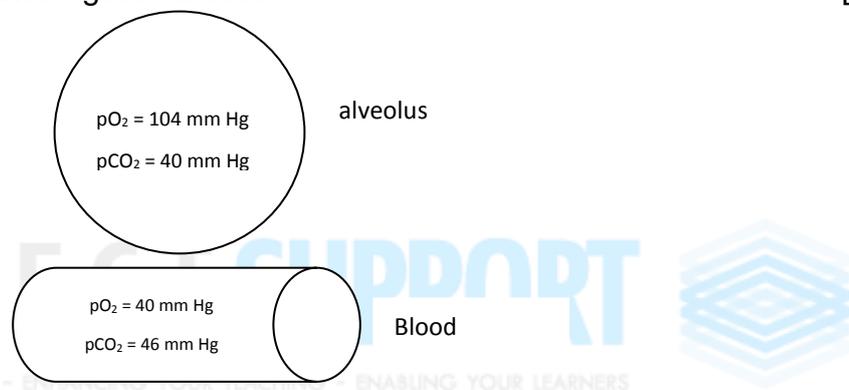
1b The structure and function of the cardio-respiratory system

Understand the pathway of air into and out of the lungs

1. When we breathe in, air enters our nose and mouth. Identify the other structures through which air passes before entering our lungs. [4]
2. Define tidal volume and state its average value. [2]

Understand gas exchange at the alveoli and the features that assist in gaseous exchange

3. The diagram shows the concentrations of oxygen (pO_2) and carbon dioxide (pCO_2) in the alveoli and lung capillaries. Use the information in the diagram to explain how these gases move. [3]



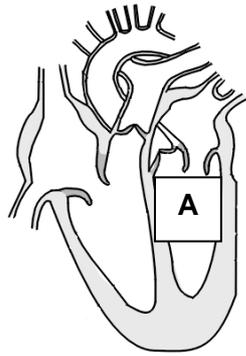
4. State **three** factors that assist the process of diffusion in the alveoli. [3]

Understand the structure and function of blood vessels

5. State the type of blood vessels that carry blood away from the heart. [1]
6. List **three** features of veins. [3]
7. State the term used to describe the narrowing of small arteries to re-distribute blood? [1]

Understand the structure of the heart

8. Name the heart chamber labelled A in the diagram. [1]



Understand the order of the cardiac cycle and the pathway of the blood through the heart

9. Describe the route taken by deoxygenated blood from when it enters the heart until it becomes oxygenated. [4]
10. Describe the route taken by oxygenated blood from when it becomes oxygenated until it leaves the heart. [4]

Understand the terms cardiac output, stroke volume and heart rate, and the relationship between them

11. State the relationship between cardiac output, stroke volume and heart rate. [1]
12. Give **three** short term effects of exercise on the heart. [3]

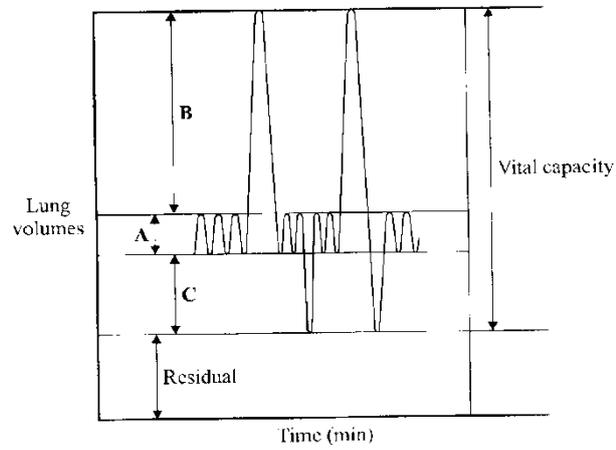
Understand the mechanics of breathing as the interaction of the intercostal muscles, ribs and diaphragm

13. Name the muscles that cause inspiration at rest. [2]
14. Describe the changes that enable breathing to increase during exercise. [3]

Understand and interpret lung volumes through spirometer traces

15. Identify the lung volumes are used during exercise. [3]

16. Identify the lung volumes represented by the labels A and B. [2]



1c Anaerobic and aerobic exercise

Understand the idea of aerobic and anaerobic exercise during differing intensities

1. Give an example from a team game of aerobic exercise and an example of anaerobic exercise. [2]
2. State the type of exercise that the equation 'glucose → energy + lactic acid' summarises. [1]
3. Write an equation to summarise aerobic energy production. [2]

Understand the recovery process from vigorous exercise in terms of Excess post-exercise oxygen consumption (EPOC)/oxygen debt

4. Explain the function of EPOC. [2]
5. State **two** factors that may affect the duration of EPOC. [2]

Understand methods to help recover from strenuous exercise

6. Describe two ways of avoiding DOMS. [2]
7. Describe how ice baths speed up recovery. [2]

Understand the immediate effects of exercise (during exercise)

8. Describe the immediate effects of exercise. [3]

Understand the short-term effects of exercise (24 to 36 hours after exercise)

9. Suggest how lactic acid produced in our muscles, and briefly describe the effects of lactic acid. [4]

10. Describe **three** short-term effects of exercise. [3]

Understand the long-term effects of exercise (months and years of exercising)

11. Describe **four** long term effects of exercise on muscles. [4]

2 Movement analysis

Understand the different classes of levers found in the body

1. The diagram represents the lever system operating at the elbow joint during the extension phase of a throw



- (i) State the class of lever that operates at the elbow during extension. [1]
- (ii) Identify which parts of the lever system at the elbow that labels A and B represent. [2]
2. Sketch and label a third class lever system. [2]
3. Sketch and label a second class lever system. [2]

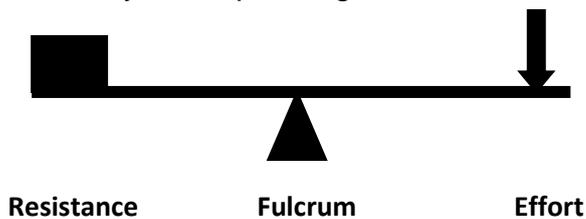
4. Identify which type of lever system operates at the ankle during plantar flexion and state the name of the agonist involved. [2]

Understand the mechanical advantages of different lever systems

5. State the mechanical advantage of a second class lever system. [1]



6. Sketch the effort arm and the resistance arm on the diagram of a third class lever system operating at the ankle. [2]



7. Identify the commonest class of lever found in the body and state the mechanical advantage of this type of lever system. [3]

Understand how muscles work to cause movements

8. Using an example from a sport of your choice, state what is meant by an isometric muscle contraction. [2]

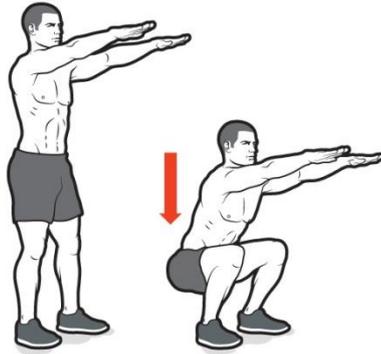
9. State the term used to describe the way muscles work in pairs to cause movement. [1]

10. The diagram shows a weight training exercise



- Identify the main agonist and the main antagonist during the exercise shown. [2]

11. The diagram shows the action during the downward phase of a squat.



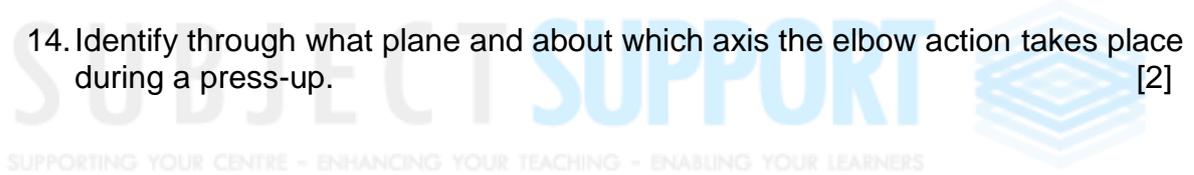
Identify the main agonist and the type of muscle contraction occurring during this action. [2]

12. Describe the function of tendons and how that differs from the function of ligaments. [2]

Understand the planes and axes of different movements

13. Identify the plane and axis of the hip joint action during running. [2]

14. Identify through what plane and about which axis the elbow action takes place during a press-up. [2]

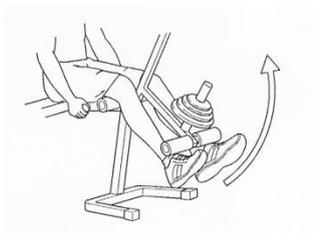


15. Identify the plane and axis involved in a cartwheel. [2]

16. Identify the plane and axis involved in an ice-skating spin. [2]

Understand the types of movements that occur at different joints

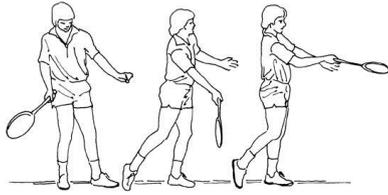
17. The diagram shows a leg exercise.



Use the diagram to identify:

- (i) The name and type of joint involved in the movement. [2]
- (ii) The articulating bones associated with this movement. [2]
- (iii) The type of movement taking place. [1]

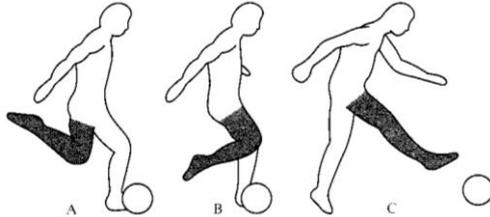
18. The diagram shows a badminton serve



Use the diagram to identify:

- | | | |
|------|--|-----|
| (i) | The names of the bones forming the shoulder joint. | [1] |
| (ii) | The name of the type of joint found at the shoulder. | [1] |
| (ii) | The name of the joint action taking place at the shoulder. | [1] |
| (iv) | The name of the main agonist causing this movement. | [1] |

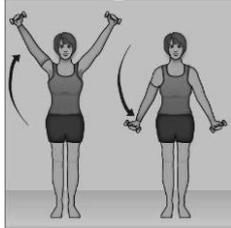
19. The diagram shows a player kicking a ball



Use the diagram to identify the joint action taking place at:

- | | | |
|------|-----------------------------------|-----|
| (i) | the hip, and | [1] |
| (ii) | the knee, during the sequence A-C | [1] |

20. The diagram shows performing a weight training movement



A B

- (i) Identify the correct term for each of the movements A and B shown. [2]
- (ii) Identify the plane and axis involved in these movements. [2]

21. The diagram shows a cricketer bowling.

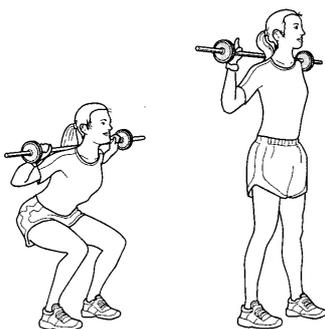


Identify the **two** actions occurring at the shoulder during the sequence shown and state the name of the agonist muscle for each action. [4]

Understand the names of the muscles causing movements at different joints

22. Name the main agonist that causes extension at the knee. [1]

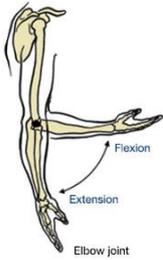
23. The diagram shows the upward phase of a squat



Identify the main agonist causing the movements at:

- (i) the hip [1]
- (ii) the knee [1]
- (iii) the ankle [1]

24. The diagram shows the movements possible at the elbow joint



Identify the main agonists causing the movements shown. [2]

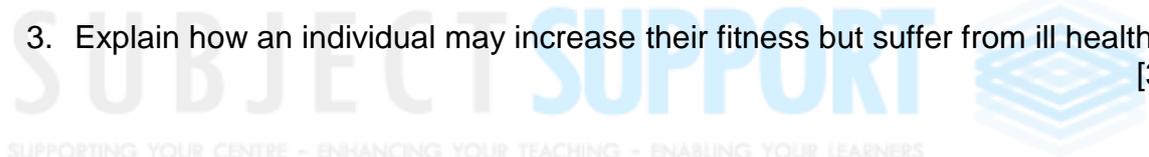
3 Physical training

The relationship between health and fitness

1. Define health. [1]

2. Define fitness. [1]

3. Explain how an individual may increase their fitness but suffer from ill health. [3]



The components of fitness

4. Describe how flexibility can help you lead a healthy lifestyle. [4]

5. Speed is an important component of fitness.
Explain, using **four** different practical examples, how speed can help in the performance of physical activities. [4]

6. Name and describe a suitable test for flexibility. [2]

7. Describe both plyometrics and weight training. [6]

8. Define agility and describe a suitable test to measure agility. [5]

9. Compare the need for cardio-vascular endurance between a long-distance runner and a long jumper. [3]

10. Define strength and identify and describe another component of fitness that is needed for weight-lifting. [2]

11. Identify **two** components of fitness required by a shot putter. [2]

12. Tennis players require high levels of power to be successful. State what you mean by the term power. [1]

13. Balance is an important aspect of weight-training. State what you mean by the term balance. [2]

How to evaluate the need for components of fitness in specific physical activities and sport

14. Name **three** components of fitness needed by a goalkeeper in a team game. [3]

15. Apart from speed, name **two** other components of fitness needed by a 100-metre sprinter. [2]

16. Using examples, suggest why team games players need power. [2]

17. The diagram shows a gymnast performing on the asymmetric bars. Identify **three** components of fitness need for this activity. [3]



18. Do footballers need cardio-vascular endurance? Justify your answer. [2]

19. Do swimmers need to be flexible? Justify your answer. [2]

20. Do tennis players need balance? Justify your answers. [2]

Reasons for carrying out fitness tests

21. Suggest **four** reasons why fitness tests may help a performer. [4]

The protocol and procedures that should be followed when carrying out fitness tests

22. Name and describe a suitable test to measure a person's balance. [4]

23. Describe the Anderson wall toss test. Which component of fitness does it measure? [4]

24. Describe the sit and reach test for flexibility. Justify whether this is a suitable test for a swimmer. [4]

25. Describe the vertical jump test for anaerobic power. Justify whether this is a suitable test for a tennis player. [4]

26. Describe the ruler drop test to measure reaction time. Justify whether this is a suitable test for a 100-metre sprinter. [4]

27. Describe the handgrip dynamometer test for strength. Justify whether this is a suitable test for a rugby player. [4]

The limitations of carrying out fitness tests

28. Using appropriate examples, suggest **three** reasons why fitness tests are limited. [3]

SUPPORTING YOUR CENTRE - ENHANCING YOUR TEACHING - ENABLING YOUR LEARNERS

How qualitative and quantitative data can be gained and used when fitness testing

29. Explain the difference between qualitative and quantitative data. [2]

The principles of training and overload and how they can be applied to training programmes

30. Other than frequency, what are the other components of the FITT principle? [3]

31. The main training principles are overload; specificity; progression and reversibility. Describe **three** of these training principles and give a practical example for each. [6]

The varying training types and the advantages and disadvantages of using them

32. Describe circuit training. [5]

33. Describe the training method of plyometrics. What type of physical activities is plyometrics particularly good for? [4]

34. Describe **four** ways in which continuous training can improve performance in physical activities. [4]

35. Describe **two** advantages and **two** disadvantages of circuit training. [4]



36. Describe **two** advantages and **two** disadvantages of continuous training. [4]

37. Describe **two** advantages and **two** disadvantages of (High Intensity) interval training. [4]

38. Describe **two** advantages and **two** disadvantages of weight training. [4]

39. List **four** safety principles that should be used when training. [4]

Specific training techniques – Altitude training

40. Describe the benefits of altitude training. [4]

41. Suggest why altitude training is not always as effective as it should be. [3]

How training can be structured into seasons

42. Describe the different aims involved when dividing the training year into 'seasons'. [3]

The reasons for warming up and cooling down

43. Using a practical example, explain why a warm up is important before exercise. [4]

44. Describe a cool down exercise and explain why you should cool down after physical activity. [4]

45. Describe an effective warm up in a physical activity of your choice. [5]

