



St Mary's GCSE PE

Mid Topic Test – Movement Analysis/ Physical Training

Mark Scheme

Multiple-choice questions

Q1. Which of the following best describes isometric contractions?

(1 mark)

Marks for this question: A01 = 1

A

Q2. Lactic acid occurs when an athlete's body is:

(1 mark)

Marks for this question: A01 = 1

D

Q3. Which of the following is not an immediate effect of exercise?

(1 mark)

Marks for this question: A01 = 1

B

Q4. The SPORT acronym stands for which of the following when referring to principles of training?

(1 mark)

Marks for this question: A01 = 1

B

Q5. The sit and reach test measures which component of fitness?

(1 mark)

Marks for this question: A01 = 1

D

Q6. Which of the following best describes a FIRST class lever?

(1 mark)

Marks for this question: A01 = 1

B

Levers & Mechanical Advantage

Q7. When performing a chest pass in netball the elbow extends. NAME, DRAW and LABEL the lever system operating at the elbow during this type of movement

(3 marks)

Marks for this question: A01 = 3

Award **one** mark for identifying the lever system as a FIRST class lever

Award a further **two** marks for drawing and labelling the lever system, as shown below:



Maximum 3 marks

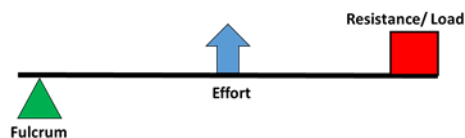
Q8. When running, the knee joint works as a lever system. NAME, DRAW and LABEL the lever system operating at the knee during running.

(3 marks)

Marks for this question: A01 = 3

Award **one** mark for identifying the lever system as a THIRD class lever

Award a further **two** marks for drawing and labelling the lever system, as shown below:



Maximum 3 marks

Q9. When running the ankle joint works as a second-class lever. State TWO mechanical advantages of a second-class lever.

(2 marks)

Marks for this question: AO1 = 2

Award **one** mark for each of the following points up to a maximum of two marks.

- Moves heavy weight (1)
- Permits large force to be applied (1)

Maximum 2 marks

Basic Movements

Q10. Distinguish between adduction and abduction movements.

(2 marks)

Marks for this question: AO1 = 2

Award **one** mark for each of the following to a maximum of two marks.

- Adduction – movement of the limbs towards the midline of the body (1)
- Abduction – movement of limbs away from the midline of the body (1)

Maximum 2 marks

Q11. Describe the movements occurring at the knee and name the agonist muscle involved in the action of kicking a ball.

(2 marks)

Marks for this question: AO1 = 2

Joint action – Extension of the knee (1)

Agonist – Quadriceps/ quadriceps group (1)

Maximum 2 marks

Q12. Complete the following table to describe the type of contraction, main agonist muscle and joint movements occurring at the elbow during a push-up.

(2 marks)

Marks for this question: AO1 = 2

	Type of contraction	Main agonist muscle	Joint movement/ action
Upward phase	Concentric	Triceps	Extension
Downward phase	Concentric	Biceps	Flexion

Maximum 2 marks

Planes of movement/ Axes of rotation

Q13. When a performer runs during a 100m sprint, through which plane of movement do their legs move?

(1 mark)

Marks for this question: AO1 = 1

Award **one** mark for the following:

- Sagittal plane

Maximum 1 mark

Q14. As part of a training programme, a performer completes star jumps. In which plane and in what axis are these movements performed?

(2 marks)

Marks for this question: AO1 = 2

Award **one** mark for each of the following:

- Frontal plane
- Sagittal axis

Maximum 2 marks

Q15. When a Discus thrower performs their throw, in which plane and in what axis does their movement occur?

(2 marks)

Marks for this question: AO1 = 2

Award **one** mark for each of the following:

- Transverse plane
- Longitudinal axis

Maximum 2 marks

Health & Fitness/ The Components of Fitness

Q16. Define the term HEALTH.

(1 mark)

Marks for this question: AO1 = 1

A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (1).

Maximum 1 mark

Q17. Name a sport that requires participants to have good reaction time. JUSTIFY your answer.

(2 marks)

Marks for this question: AO1 = 1, AO2 = 1

Award **one** mark for any sporting example that requires reaction to a stimulus, e.g. reacting to the gun in sprinting (1)

Award one mark for justifying the answer by describing/ explaining:

- The stimulus
- The time taken to start to initiate the movement

Maximum 2 marks

Q18. What is balance, and, using examples, why is it needed in both team and individual sports?

(3 marks)

Marks for this question: AO1 = 1, AO2 = 2

Award **one** mark for a suitable definition:

- Balance is the ability to maintain the centre of mass over the base of support. Balance can be static (still) or dynamic (whilst moving)

Award **one** further mark for each of the following for a maximum of **two** marks:

- It is needed in team games – Static, e.g. to hold a position ready to take a set shot in basketball (or any other suitable static example). Dynamic, e.g. when dribbling in football (or any other suitable dynamic example).
- It is needed in individual sports – Static, e.g. when holding your balance during a golf swing (or any other suitable static example). Dynamic, e.g. when maintaining balance during a gymnastics floor routine (or any other suitable dynamic example).

Maximum 3 marks

Q19. Identify THREE components of fitness required by a gymnast.

(3 marks)

Marks for this question: AO1 = 3

Award **one** mark for each of the following for a maximum of **three** marks:

- Flexibility
- Strength
- Balance
- Power
- Coordination
- Muscular endurance
- Speed

Maximum 3 marks

Benefits & Limitations of Fitness Testing

Q20. Suggest ONE benefit and ONE limitation of using fitness tests.

(2 marks)

Marks for this question: AO1 = 2

Award **one** mark for any of the following benefits up to a maximum of one mark.

- To identify strengths and/or weaknesses in a performance.
- To inform your training requirements
- To show a starting level of fitness
- To monitor improvement
- To gauge the success of a training programme

- To compare against norms of the group/ national averages
- To motivate/ set goals
- To provide variety to a training programme.

Award **one** mark for any of the following benefits up to a maximum of one mark:

- Tests are not often sport specific and can be too general.
- They do not replicate movements of activities.
- They do not replicate competitive conditions required in sports.
- Many of the tests have questionable reliability.
- The tests must be carried out using the correct procedures and protocols, otherwise scores will not be accurate or valid.

Maximum 2 marks

Q21. Would the sit and reach test be an appropriate test for a ballet dancer? Justify your answer.

(3 marks)

Marks for this question: A01 = 1, A02 = 2

Award **one** mark for:

Yes, because a ballet dancer needs to have good flexibility around a range of joints and it is a vital component of fitness for a ballet dancer.

Award a further two marks for two of the following:

- The sit and reach test can help identify strengths/ weaknesses in the dancers hamstring/ lower back flexibility.
- The test can inform training requirements of the flexibility of these muscle groups.
- The test could gauge the success of a training programme the dancer has been working through.
- To monitor improvement in the flexibility of the hamstring and lower back muscles.
- However, the test is not specific to the movements produced in dance.
- The test is not dance specific as it only measures flexibility in the hamstrings and lower back but flexibility is required in many other joints for a ballet dancer.

Maximum 3 marks

Q22. Would the Illinois Agility test be appropriate for a netball player? Justify your answer.

(3 marks)

Award **one** mark for:

Yes, because netball requires players to change direction at speed, in order to dodge, lose or mark opponents, etc. It is a vital component of fitness for a netball player.

Award a further two marks for two of the following:

- The Illinois agility test can help identify strengths/ weaknesses in the netball players' agility.
- The test can inform training requirements in agility.
- The test could gauge the success of a training programme the netball player has been working through.
- To monitor improvement of agility.

- However, the test is not specific to the movements produced in netball.
- The test is not fully specific as it only measures agility and not other vital components of fitness required for netball.

Maximum 3 marks

Fitness Tests

Q23. Describe the protocol for carrying out the Illinois Agility test.

(2 marks)

Marks for this question: AO2 = 2

Award **two** marks for each of the following points up to a maximum of two marks:

- Equipment required – 8 cones/ markers, a stopwatch, a measuring tape and an assistant/ partner.
- Performer starts face down on the floor
- The test involves running around the cones as fast as possible and is timed in seconds.
- Compare to national averages.

Q24. Identify the component of fitness the Wall Toss Test measures and define that component of fitness.

(2 marks)

Marks for this question: AO1 = 1, AO2 =1

Award **one** mark for the following up to a maximum of one mark:

- Coordination

Award **one** mark for the following up to a maximum of one mark:

- The ability to use two or more different parts of the body together, smoothly and efficiently (or a similar accurate definition).

Maximum 2 marks

Q25. Jamal is a goalkeeper in football and is required to have high levels of flexibility. He has identified, by doing a sit and reach test, that his flexibility requires improvement.

He decided to perform both static and ballistic stretching techniques three times per week for six weeks and monitor the improvement in his flexibility by taking the sit and reach test each week.

- a) Plot Jamal's results from **Fig.1** in a line graph on the graph paper below:

(2 marks)

Marks for this question: AO1 = 2

Award **two** marks for accurate use of axes and plotting the measurements on the graph accurately with a line drawn through them.

- b) Explain why the sit and reach test may not provide Jamal with accurate and reliable data of his overall flexibility needed to be an effective goalkeeper.

(2 marks)

Marks for this question: AO2 = 2

Award **one** mark for one of the following up to a maximum of two marks:

- The test only measures flexibility of the lower back and hamstring muscles
- The test is not specific to the movements produced by a goalkeeper in a game of football.
- The test may not be accurate and reliable.

The Principles of Training

Q26. What does the principle of FREQUENCY refer to?

(1 mark)

Marks for this question: AO2 = 1

Award **one** mark for one of the following:

- Frequency is how often you train.

Maximum 1 mark

Q27. What is meant by the term PROGRESSIVE OVERLOAD?

(2 marks)

Marks for this question: AO2 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

- Working harder than normal
- Gradually and sensibly increasing the intensity of training

Maximum 2 marks

Scenario questions

Rachel is a popular 15-year-old girl who belongs to a 'sporty' family. She attends the local comprehensive school where she is a prefect and sports captain. Rachel is due to take GCSE Physical Education at the end of the school year. She is interested in analysis of her own movement and improving her sporting performance.

Rachel enjoys sport and has represented the school and county at football, swimming and cross-country. Rachel's cross-country running helps her keep fit to play in the midfield for football and to take part in four swimming sessions a week. She also uses the school fitness suite to improve her muscular strength using bicep curl and leg extension activities.

Outside of school, Rachel has been a member of a swimming club, where her mother is a coach, since she was six years old. She has, with a group of friends, just become a member of a newly formed local football club, which is struggling to establish itself. She trains and competes regularly for both clubs.

Q28.

- a) Identify the lever system used to allow Rachel's elbow to flex and extend when completing bicep curls.

(1 mark)

Marks for this question: AO1 = 1

Award one mark for:

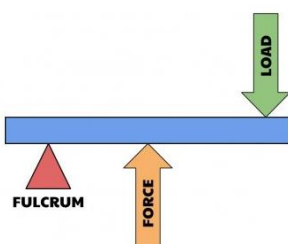
- Third class lever

Maximum 1 mark

- b) Draw and label the lever system used:

(2 marks)

Marks for this question: AO1 = 2



Maximum 2 marks

c) State **THREE** components of physical fitness that Rachel would need when taking part in either football, swimming or cross-country. Explain how these components could improve her performance in that activity.

(6 marks)

Award **one** mark for each relevant component of fitness identified up to a maximum of **three** marks.

Award **one** mark for a relevant explanation of how these **three** components can improve her performance up to a maximum of **three** marks.

END OF QUESTIONS