

Answers

Mark Scheme

1. Hinge joint
2. Oxygen is used/needed/required (1) in aerobic respiration/to release energy (1) CO₂ is a waste product/is produced (1) during aerobic respiration/during exercise/by the working muscles (during exercise) (1)
3. Fulcrum/Pivot (1) Load/resistance (1) Effort/force (1)
4. Aorta
5. (a) Pulse Raiser, Stretching/Mobilisation, Skill Practice/Drills (b) Increase oxygen delivery to working muscles, increased muscle temperature, increase range of motion, practice skill movements for the game.
6. Knowledge and understanding of training methods/long-term effects (A01) Factual statement about training method, for example, interval training involves periods of high intensity work followed by rest periods for recovery. Links made between the stated training methods and adaptations, for example, Fartlek training can cause a drop in resting heart rate. Application of knowledge, linking training methods/long-term effects to sprinting (A02) The sprinter needs power from plyometric training (AO1) for an: explosive start; drive/push from the blocks; to accelerate (AO2) Fartlek training will improve cardiovascular fitness (AO1) which is not required by the sprinter as their race is short duration (AO2) Interval training at high intensity will increase speed, (AO1) so the sprinter can complete the race in a quicker time (AO2) Interval training at high intensity will cause adaptations to fast twitch muscle fibres (AO1).
Evaluation of topic – making reasoned judgments about the value of the training methods and their adaptations to sprinting (A03) Plyometrics involves depth jumping (AO1), which helps the sprinter develop power needed for an explosive start; drive/push from the blocks; to accelerate (AO2) without power the sprinter cannot exert as much force and therefore cannot accelerate as quickly at the start making them slower than their opponents, therefore plyometrics is of value in a training programme (A03) Plyometrics causes an increase in stored energy in the muscle (AO1) which allows the sprinter to accelerate faster/accelerate for longer (AO2) as the sprinter can create more powerful muscle contractions due to the increase in immediately available energy reserves in the muscle (AO3) Fartlek training will improve cardiovascular fitness (AO1) which is not required by the sprinter as their race is short duration (AO2) The only value would be if they included lots of hill runs to increase intensity otherwise this could be detrimental to his performance, slowing him down (AO3) None of the methods develop reaction time (AO1), which is essential for a sprinter to move out of the blocks as soon as the gun sounds (AO2) therefore the sprinter should also include reaction time training so that all required aspects of fitness are trained within their programme (AO3).

7. Quadrieps
8. Transport (system) (e.g. nutrients to cells; waste, e.g. urea) (1) Maintains blood pressure/blood volume (1) Regulates body temperature (1)
9. Slow twitch – The steeplechase athletes require slow twitch/type I muscle fibres when running (1) as this fibre type is: resistant to fatigue/has a high aerobic capacity/needed when running for a sustained period of time (1) allowing the athlete to complete the 3000m without (the muscles) fatiguing/need to slow down (due to fatigue) (1).
Fast twitch – When jumping during the race the steeplechase athletes require fast twitch/type II(x)/2x muscle fibres (1) as this fibre type can contract powerfully (1) giving them the height needed to clear the hurdle/allowing them to jump the hurdle without clipping it/clear the hurdle quickly/not lose time clearing the hurdle (1).
10. Cannot lift as heavy loads with the same amount of effort as other levers (1) due to the position of the effort and load from the fulcrum (1) Large effort has to be applied to move a (relatively) small load (1) because the load arm is longer than the effort arm/ the load is further from the fulcrum than the effort (1)
11. Erythropoietin (EPO)
12. Agree (sub-max 2 marks)
Leg power is a component of fitness needed by football players to perform specific skills (1) The test measures the ability to jump up so appropriate for jumping to head the ball / a goalkeeper to launch into a save / other equivalent example (1)
Disagree (sub-max 2 marks)
The test is not sport-specific as would not test power needed to kick a ball / start a sprint towards the ball / other equivalent example (1)
Does not test many aspects of playing football, eg dribbling / marking / other equivalent example (1)
Can be argued that other aspects of fitness are more important, eg cardiovascular endurance to last 90 minutes (1)
13. Fixed
14. Flexion/extension at the ankle.
15. Large surface area of alveoli to allow larger volumes of gases / oxygen and carbon dioxide to move between the lungs and the bloodstream (1) Moist thin walls / one cell thick creating a short distance for diffusion / short diffusion pathway (1) Lots of capillaries around the alveoli so large area for gas exchange (1) Large blood supply to carry gases / oxygen and carbon dioxide (1) Movement of gas from high concentration to low concentration means there is a pressure gradient which allows diffusion to occur (1)

16. Allows visualisation of a successful dive – so they are more familiar/confident with the techniques to be used.

Improves focus/concentration – Allowing them to block out the crowd. Concentrate on the execution of the dive. Less likely to make an error.

17. To identify strengths and / or weaknesses in a performance (1)

To evaluate the success of a training programme (1)

To monitor improvement, eg in strength (1)

To show a starting level of fitness (1)

To inform training requirements (1)

To compare against norms of the group / national averages (1)

18. Commercialisation, Media and Business.

19. AO1 – Knowledge of agility and reaction time, eg

Agility – changing direction at speed, whilst maintaining control

Reaction time – time taken to initiate response to a stimulus

AO2 – Application to the 100m, eg

100m sprint does not need agility because it is run in a straight line and therefore changing of direction is not required

100m does need reaction time because runners start in a stationary position and have to react to the gun (stimulus) at the start

AO3 – Analysis/evaluation of the importance of agility and reaction time in 100m, eg

Agility – any changes in direction could result in leaving a lane and being disqualified

Agility – need to change direction is unlikely. However, athlete may change their positioning within their own lane

Reaction time – 100m is the shortest outdoor sprint event and therefore reaction time at the start of the event is usually crucial to success

Reaction time – is a major component impacting on overall time taken to complete the 100m sprint

Reaction time – it is possible to win a race with a poor reaction time start

Neither agility nor reaction time is as important as speed

20. **Advantage**

The sponsor will gain increased exposure of brand/be more recognised/ (1) increased profits (1)

Disadvantage

Someone they sponsor may be tested positive for drugs (1) giving the sponsor a poor reputation/cause a drop in sales (1)

If the team/performers are unsuccessful team (1) could have a negative impact on sales

21. Carbohydrates, Fats, Protein

22. Reduce risk of obesity (1)

Less chance of coronary heart disease /stroke (1)

Reduce risk of osteoporosis/ Increased bone density (1)

Reduce risk of type II diabetes (1)

Reduced blood pressure/cholesterol levels

23. By eating a high carbohydrate diet before the race (1) and by tapering/reducing their training levels in the days leading up to the competition (1) the runner maximises their glycogen stores in their muscles prior to the event (1), therefore, the marathon runner can maintain pace for longer reducing their overall marathon time (1)

24. Ball and Socket

25. As arousal level increases, so does the level of performance (1)

Until it reaches an optimum point at around moderate arousal level (1)

Once past this optimum point, performance decreases as they have become over aroused and become too anxious

26. Heart disease (1)

Diabetes (1)

Poor self-esteem (1)

27. **Knowledge and understanding of mechanical and manual guidance (A01)**

Definition of mechanical guidance

Definition of manual guidance

Advantages of mechanical/manual guidance e.g. good for beginners/increases confidence.

Disadvantages of mechanical/manual e.g. over-reliant

Application of knowledge of use of guidance with a beginner in swimming(A02)

Mechanical guidance is where the coach uses an aid to move the performer into correct position (AO1) for example they would use a float (to practice legs only technique) (AO2)

Manual guidance is where the performer is physically moved by the coach into correct position (AO1) for example moving the legs in the breaststroke action (AO2)

Both types of guidance allow the correct feel of the skill to be developed (AO1) for example, use manual guidance to demonstrate the breaststroke leg action and then practice with mechanical guidance (isolating the skill being learned).

Evaluation of topic – making a reasoned judgment about the advantages and disadvantages of these types of guidance with a beginner in swimming (A03)

A disadvantage is that the swimmer will become too reliant on mechanical guidance if used for too long so will never learn to swim therefore it is important not to rely on it for too long.

A disadvantage becomes too reliant on mechanical guidance and be too afraid to try the technique without support so will never learn to swim therefore it is important not to rely on it for too long.

An advantage is manual guidance allows the swimmer to practice the correct technique safely in the pool

Although manual guidance can help give the feel of the movement having the coach in such close proximity may be upsetting.

Combination of both manual and mechanical guidance would be useful when teaching swimming to beginners but visual/verbal guidance would also be required, e.g. being told to point your toes.

28. Specific, Measureable, Achievable, Realistic, Time bound/frame

29. Maximum heart rate (220 bpm) minus age / 220 – age

30. Weight Bearing i.e. aerobics/running