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June 2019

GCSE Physical Education 1PE0 01

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Introduction

This was the second series for this qualification. The level of difficulty of the paper was in line with the first series, with candidates and centres showing good preparation, achieving the full range of marks across all questions.

The paper begins with some multiple-choice questions; these are designed to be accessible for candidates. The main section of the paper is devoted to one, two, three or four-mark part questions (the question total might be larger than this, but the allocation of marks within the question will have been broken down into parts, eg part (a), (b) and so on).

The final section of the paper comprises two extended response questions.

To access all available marks on 1PE0 01, candidates need to recall knowledge and demonstrate understanding of this knowledge through its application to a range of question scenarios. They will need to demonstrate understanding and higher-order skills of analysis and evaluation in the two, three, four and nine-mark questions.

It was pleasing to see the continued increase in the number of candidates providing well-structured, well-organised responses even to the most challenging questions. Many candidates developed their ideas, following a point through in greater depth for 'describe and explain' questions, rather than only providing a more generalised approach to their responses. Some candidates even correctly identified the Assessment Objectives (AOs) they were addressing within the extended response question, although clearly this is not a requirement.

Question 2 (a)

Candidates were given an image and asked to examine the antagonistic muscle action taking place at the elbow.

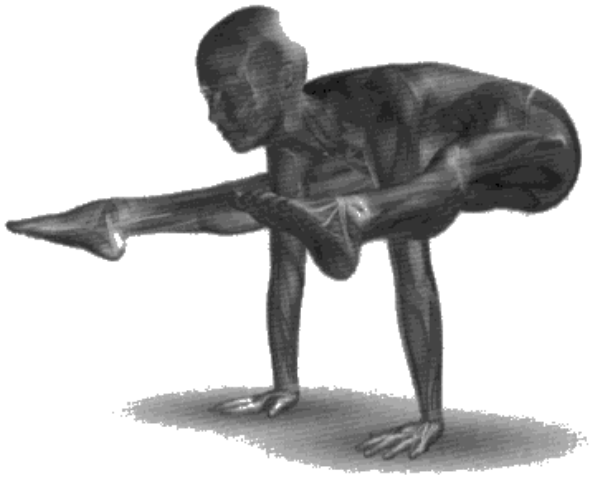
In order to 'examine', there should be some analysis, therefore to gain maximum marks for this question, candidates would need to look at the image and analyse joint and muscle action allowing the elbows to extend as shown.

Most candidates identified correctly the biceps and triceps as being the antagonist pair operating at the elbow or that extension was occurring at the elbow. Many candidates were also able to go on to analyse the role of the biceps and triceps in bringing about this movement.

Where candidates did not achieve three marks, this tended to be due to confusion or contradictory statements over the role of the muscles. For example, no credit would be given for identifying the tricep correctly as the agonist but then stating that this was relaxing.

Whilst many candidates used correct technical language when answering this question, this was not always the case. For example, incorrect responses made reference to muscles flexing and extending, rather than contracting and relaxing.

2 **Figure 3** shows the muscular system of a gymnast.



(Source: © Kjpargeter/Shutterstock)

Figure 3

(a) Examine the antagonistic muscle action taking place at the elbow in **Figure 3** that allows the gymnast to achieve this position.

(3)

The antagonistic pair is the bicep and tricep. There is extension at the elbow created by the flexion of the tricep. Whilst the tricep is flexed the bicep is extended allowing this movement.

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The antagonistic pair, bicep and tricep, have been identified.

Alternatively, a mark would have been awarded for the elbow being extended. As this is an alternative way of achieving the first marking point, only one mark may be awarded.

1 mark

(a) Examine the antagonistic muscle action taking place at the elbow in **Figure 3** that allows the gymnast to achieve this position.

(3)

extension ~~at the elbow~~ of the arms at the elbow is created through the bicep resting and the tricep contracting - they work as an antagonistic pair. The antagonist being the bicep and the agonist being the tricep

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Here, marks are awarded for:

- extension of the arms at the elbow
- tricep contracting/acting as the agonist
- bicep being the antagonist

3 marks

Question 2 (b)

Candidates were told that the body weight of the gymnast in the image was being supported by the bones in the wrist. They were then asked to classify these bones.

Many candidates correctly identified these as short bones. Incorrect responses included the classification of the joint, rather than of the bone type. This emphasised the need for candidates to be familiar with the terminology used within the specification to differentiate between different areas of knowledge.

One other recurring incorrect response was 'small' bones rather than 'short'.

(b) The gymnast in **Figure 3** is supporting her body weight using the bones in the wrist.

Classify the bones of the wrist.

(1)

Small bones - ~~eat~~ carpals.

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0 marks

(b) The gymnast in **Figure 3** is supporting her body weight using the bones in the wrist.

carpals

long ~~fem~~
short
flat head
irregular SPM

Classify the bones of the wrist.

(1)

short

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1 mark

Question 2 (c)

For this part of the question, candidates were asked to explain, using examples, two functions of the skeletal system that would help the gymnast move her lower body into the position shown in the image.

As the question specifically referenced the lower body any links to the upper body were not credited, emphasising the need for candidates to take time to read questions carefully, even under potentially stressful examination conditions.

The required functions were muscle attachment or the use of joints. Support was also accepted. Other functions such as protection and blood cell production were not accepted, due to the question context.

As the use of examples was specifically requested in the question a mark was available for these within the explanation. This was often the mark achieved by candidates. For example, the ball-and-socket joint at the hip allowing flexion to lift the legs in the position shown was often cited correctly.

Whilst some candidates did achieve maximum marks for this question, the requirement to provide two functions was quite challenging, therefore many candidates achieved well for one function but not necessarily for two.

In many cases, candidates received two marks for each function, omitting the 'explanation' mark, gaining credit for identification of the function and giving an appropriate example.

(c) Explain, using examples, **two** functions of the skeletal system that help the gymnast move her lower body into this position.

(i) Function 1

(3)

One function is movement which allows her to get her legs into this position. By her gluteus maximus ~~contracting~~ and relaxing and her hip flexors and abdominals contract to cause flexion at the hip.

(ii) Function 2

(3)

The skeletal system supports the body which allows all her weight to be carried by just her wrists as the carpals are weight baring bones. They come under the category short bones.

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Function 1

- example of the muscle action allowing flexion at the hip (1)

Function 2

- the function of support (1)
- the example of her wrists taking her body weight (1)

3 marks

(c) Explain, using examples, **two** functions of the skeletal system that help the gymnast move her lower body into this position.

(i) Function 1

(3)

the skeletal sytem allows movement . as joints a their. the gymnast elbow joint is allowing to extent their arms. And their knee joint is allow them to extent there leg at the knee.

(ii) Function 2

(3)

the skeletal system allows muscle attachment to bone aiding movement. At the elbow the tricept attached to the ulna ~~allows~~ contracts to extesion of the arm at the elbow. And at the knee the quadricept attached to the tibula ~~allows~~ contracts to allow extesion at the knee.

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Two marks for the two correct functions

Two marks for the examples of each function, linked accurately to the image in the question

4 marks

(c) Explain, using examples, **two** functions of the skeletal system that help the gymnast move her lower body into this position. F, F, T

(i) Function 1

(3)

One function is muscle attachment. The muscle contracts and pulls the bones to create movement. Therefore allowing her to raise her lower body into that position, for example the quadriceps which is attached to the femur.

(ii) Function 2

F, F, T

(3)

Another function is joints for movement. The joint allows certain movements to be possible, for example the knee joint allows extension at the knee. Therefore allowing her to straighten out her leg in this position.

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Function 1

- muscle attachment (1)
- the explanation of contracting and pulling the bone to generate movement (1)
- the example of the quadriceps contracting to allow the position in the image (1)

Function 2

- the function of joints for movement (1)
- the explanation that joints allow certain movements to be possible (1)
- the example of the possible range of movement at the knee to match the position in the image (1)

6 marks

Question 3 (a)

Candidates were supplied with an image of an individual jumping high during a practice shot in basketball. The image was not in the context of a game situation, but a lone player taking a shot. The question asked candidates to explain the main muscle fibre type used to get the height required whilst taking the shot. The word 'main' was in bold for emphasis.

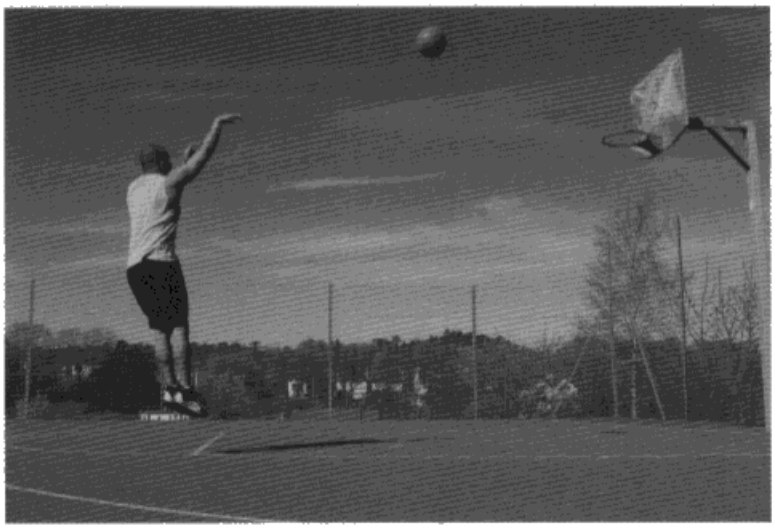
The full range of marks continued to be accessed by candidates for this question. Type IIx was the fibre type required for one mark. To gain the 'explain' marks, candidates needed to talk about the nature of the action, eg explosive and a characteristic of the fibre type that allowed it to produce the necessary power, eg contracts forcibly.

Of the three available marks, it was the characteristic of the muscle fibre type that made it suitable for the activity, that was often omitted. Candidates who selected any other fibre type did not gain credit.

It is important when answering this type of question that candidates state why the fibre type would be used, and not just a characteristic, eg that they fatigue quickly. Whilst this is true it does not explain why they are used.

Some candidates used 'energy' rather than power or force, and this was not credited.

3 **Figure 4** shows a basketball player jumping to shoot at the basket.



(Source: © icsnaps/Shutterstock)

Figure 4

(a) Explain the **main** muscle fibre type that is used to jump high when taking the basketball shot.

(3)

The main muscles fibre is fast twitch ~~fa~~ as the basketballer doesn't need oxygen jumping up

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Examiner Comments

The candidate attempts to justify the use of fast twitch fibres because the movement does not require oxygen, rather than focusing on what the movement does need and how this fibre type can support that.

1 mark

(a) Explain the **main** muscle fibre type that is used to jump high when taking the basketball shot.

(3)

type 2 fibre type as it helps exert a lot of energy when jumping

ResultsPlus
Examiner Comments

A mark is given for fibre type but no marks are awarded for 'energy'. The fibres use energy to generate the required power or force.

1 mark

(a) Explain the **main** muscle fibre type that is used to jump high when taking the basketball shot.

(3)

The main muscle fibre type is fast twitch Type IIx muscle fibre, which has a high force of contraction and high speed of contraction. It is suited to anaerobic, power events, but fatigues quickly. This fibre type is very useful for the basketball player to do such an explosive, powerful action ~~such as~~ that is ~~doing~~ a jump shot. The fast twitch Type IIx muscle fibres contract quickly and with force to allow him to jump high.

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The candidate:

- identifies the correct fibre type (1)
- gives a relevant characteristic of that fibre type that makes it suitable (1)
- gives a relevant characteristic of the activity that demands the use of that fibre type (1)

3 marks

Question 3 (b)

This question asked candidates to describe what happens to blood flow during vascular shunting.

'Describe' questions ask for an account of something: there is no need to provide reasons, therefore all that was required for this question was an account of the changes in blood flow.

Typical correct responses were well-phrased and succinct, describing the increase in blood flow to active areas through vasodilation and the decrease in blood flow to inactive areas by vasoconstriction. This would have been sufficient for maximum marks.

If candidates were unfamiliar with the terminology of vasodilation/vasoconstriction full marks could still be achieved by describing the increase/decrease in the lumen in the blood vessel.

(b) During a game of basketball vascular shunting takes place.

Describe what happens to blood flow during vascular shunting.

(4)

During vascular shunting blood flow is increased to the muscle or the system that needs it the most. For example, when you have a meal, vascular shunting occurs to send the blood to the digestive system so the food can be dealt with faster and processes can occur faster. So blood flow normally decreases to places where it isn't needed during vascular shunting, and is needed to reduce amount of lactic acid.

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The increased blood flow to the active areas and decreased blood flow to inactive areas are described. However, there is no description of how this is achieved.

2 marks

(b) During a game of basketball vascular shunting takes place.

Describe what happens to blood flow during vascular shunting.

(4)

vascular shunting diverts the blood flowing round the body as the blood vessels that are leading to inactive areas constrict (vasoconstriction) and blood vessels leading to active areas dilate (vasodilation). This allows more blood flow to needed in game contracting working muscles and less blood flow to digestive system etc as they are not in use.

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This is a complete description of vascular shunting.

4 marks

Question 3 (c)

Some candidates had difficultly differentiating between Q03(b) and Q03(c). Part (c) was an 'explain' question and set in a specific activity context requiring application of knowledge, rather than just the recall of knowledge required in (b).

The issue with this was that these candidates often repeated responses suitable for (b) by describing the process of vascular shunting. Many candidates did, however, gain a mark by explaining the importance of oxygen being delivered to the working muscles.

High-scoring responses included information about oxygen to muscles, the use of this oxygen for energy and then linked this to a delay in fatigue.

Marks could also have been gained by referring to carbon dioxide transport or temperature control. Whilst these were accessed, it was with much less frequency.

(c) Explain **one** reason why vascular shunting is necessary during a game of basketball.

organs.

(3)

During basket ball the lower body such as the hamstrings, tibialis anterior are working for harder than the upper body, blood flow must be increased to the lower body through vasodilation and decreased to the upper body through vasoconstriction to maximise the amount of blood and oxygen to the working muscles.

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A mark is awarded for the last line of the response, where reference is made to oxygen for the working muscles.

1 mark

(c) Explain **one** reason why vascular shunting is necessary during a game of basketball.

(3)

Vascular shunting is important because more blood flow to working muscle means that more oxygen is being used to make energy so you won't get fatigued as easily. Moreover it means that ~~as oxygen is being~~ by products such as carbon dioxide can be removed quicker.

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Marks are awarded for:

- oxygen transport (1)
- the oxygen being used for energy (1)
- the impact of this, that they will not get fatigued as easily (1)

3 marks

Question 4

Candidates were presented with a table to complete in this question. There were two tasks associated with the question, the first, to identify a short-term effect of exercise on the three named body systems. The second was to give an example of the importance of this short-term effect on the performer during exercise.

Whilst some candidates confused the respiratory and cardiovascular systems, generally, candidates demonstrated good knowledge of the short-term effect of exercise on the body systems. The muscular system proved more challenging.

Common incorrect responses focussed on long-term adaptations rather than short-term effects, or lacked clarity. For example, some candidates made reference to more oxygen to the working muscles as the importance of increased tidal volume, rather than increased oxygen intake (or equivalent).

Short-term effects on the cardiovascular (CV) and respiratory systems were the most frequent correct answers. The importance of the cardiovascular system in terms of oxygen transport was also often identified correctly, therefore a large number of candidates achieved at least 3 of the available 6 marks for this question.

4 Exercise causes short-term effects on our body systems.

Complete **Table 2** by:

(a) Stating **one** short-term effect of exercise on each of the named body systems.

(b) Giving a specific example of the importance of this short-term effect on the performer during exercise.

	(a) Short-term effect of exercise	(b) Importance to the performer exercising
Cardiovascular system	To lower heart rate (1)	To allow the performer to complete excercise for long durations of time (1)
Muscular system	To become stronger (1)	To be able to lift bigger weights in weight-lifting (1)
Respiratory system	To lower ~~heart~~ ~~rate~~ breathing rate. (1)	To ensure they are not getting out of Breath (1)

Table 2

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The answer links to adaptations, rather than the short-term effect of exercise on the body systems.

0 marks

	(a) Short-term effect of exercise	(b) Importance to the performer exercising
Cardiovascular system	Cardial output increases (1)	More oxygenated blood to the working muscles (1)
Muscular system	Heart rate increases (1)	More ~~blood deoxygenated~~ blood pumped ~~to rest~~ out of the heart to the body (1)
Respiratory system	Breathing rate increases (1)	Allows more oxygenated blood (1)

Table 2

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(a) Two marks – no mark awarded for short-term effect on the muscular system.

(b) One mark for importance of increased cardiac output in increasing oxygenated blood flowing to the muscles.

3 marks

	(a) Short-term effect of exercise	(b) Importance to the performer exercising
Cardiovascular system	Increased Stroke Volume. (1)	more oxygenated blood can be pumped to the working muscles. (1)
Muscular system	Increased temperature of the muscles. (1)	Lowers the chance of injury to the muscles. (1)
Respiratory system	Increased tidal volume (1)	more oxygen can be inhaled to cope with the increased amounts being used. (1)

Table 2

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This response gained full marks.

6 marks

Question 5 (a)

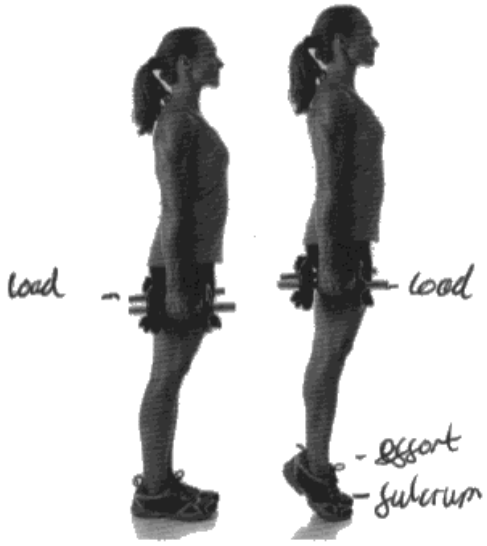
This question asked candidates to identify the class of lever in use when moving from standing to going onto toes. An image was also provided, therefore the movement being described was clear.

Many candidates identified correctly the second-class lever system.

Incorrect responses tended to be either first-class or third-class levers, with similar frequency.

Occasionally, candidates would state the name of a plane, instead of the required lever system.

5 **Figure 5** shows a performer during a weight training session.



(Source: © Nicholas Piccillo/Shutterstock)

Figure 5

(a) Identify the class of lever system in use when the performer moves from standing onto her toes in **Figure 5**.

(1)

Lever class 3

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No marks were awarded for this response.

0 marks

(a) Identify the class of lever system in use when the performer moves from standing onto her toes in **Figure 5**.

(1)

Seund class lver

ResultsPlus
Examiner Comments

One mark was awarded for the correct identification of the second-class lever system.

1 mark

Question 5 (b)

This question asked candidates to give another example of the use of this level system, in any sporting situation.

This was designed as a very accessible question, which gave candidates much scope when choosing a relevant example. The majority of candidates took advantage of this opportunity, securing the available mark.

Where the mark was not achieved, this tended to be because the response had not been linked to a sporting activity. Alternatively, it was because the response was too vague. Candidates might name a sport such as football, rather than providing an example from a specific sporting situation within football, eg at take-off, when jumping to head the ball.

(b) Give another example of the use of **this** lever system, at the ankle, in a sporting situation of your choice.

(1)

high jump.

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No marks were awarded.

0 marks

(b) Give another example of the use of **this** lever system, at the ankle, in a sporting situation of your choice.

(1)

Plantar-flexion ~~etc~~ when pushing of the ground when sprinting.

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Credit is given for the example of pushing off the ground when sprinting.

1 mark

Question 5 (c)

This question asked candidates to define mechanical advantage.

Some candidates did this but others focussed instead on the arrangement of the lever system that allowed a mechanical advantage, referring to the length of effort and load arms. Whilst this is good knowledge, it does not address the specific question.

A number of candidates took a different approach, trying to link to mechanical guidance covered on Paper 2, but this could not be credited.

To gain the mark, candidates needed to make clear that a load could be moved with relatively small muscular effort. A wide range of alternative ways of expressing this was accepted.

(c) The lever system being used in **Figure 5** provides a mechanical advantage.

Define the meaning of the term mechanical advantage.

(1)

mechanical is where you use equipment to help get a better feeling of your sport. This is an advantage for the performer in figure 5 to help increase strength in her feet/toes.

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No marks are awarded for this definition.

0 marks

(c) The lever system being used in **Figure 5** provides a mechanical advantage.

Define the meaning of the term mechanical advantage.

(1)

Where the lever's effort arm is longer than the load arm.

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No mark is awarded for the description of the lever system arrangement that would result in a mechanical advantage.

0 marks

(c) The lever system being used in **Figure 5** provides a mechanical advantage.

Define the meaning of the term mechanical advantage.

(1)

Mechanical advantage is lifting a big load with a small amount of effort. This is a second class lever.

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Credit was given for the definition of mechanical advantage.

1 mark

Question 6

This question tests candidates' knowledge of planes and body axes.

The majority of candidates received at least one mark for this question, although many candidates received more.

Of the parts to the question, (a) and (b) appeared more accessible than (c) and (d).

6 Complete the following statements about movement patterns.

(a) Movement patterns occur in body planes and around

axis .

(1)

(b) There are three main body planes: sagittal, transverse and

~~vertical~~ frontal .

(1)

(c) A tucked front somersault takes place in the sagittal plane around the

frontal axis .

(1)

(d) A full twist occurs in the transverse plane around the

vertical axis .

(1)

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4 marks

Question 7 (a)

This question asked for definitions of the terms health and fitness.

To gain the available mark for the definition of health, which candidates found to be the more challenging of the two definitions, candidates needed to identify the three aspects of health, stating that health was more than just being 'free from disease', ie that it involved physical, social and emotional health.

All four factors needed to be present in the health definition: if one was missing, no mark was awarded.

7 Health and fitness can be affected by exercise.

(a) Define the terms health and fitness.

(i) Health

(1)

a state of complete emotional, social and physical well-being.

(ii) Fitness

(1)

the ability to meet the demands of the environment

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Credit is given for the definition of fitness.

1 mark

7 Health and fitness can be affected by exercise.

(a) Define the terms health and fitness.

(i) Health

(1)

Health - the complete state of social, physical and emotional well-being, not merely the absense of disease or infirmity

(ii) Fitness

(1)

fitness = the ability to meet the demands of the environment.

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Both marks are awarded because both definitions contain the required information.

2 marks

Question 7 (b)

This question required candidates to apply their knowledge of health and fitness.

In Q07(b)(i), candidates were asked how exercise can affect health. To gain both marks, it needed to be clear what exercise does for health, eg release serotonin, and what this improves – in this case, emotional health.

Responses could focus on any aspect of health, eg exercise can increase bone density, which improves physical health or exercise provides an opportunity to mix with others, improving social health.

Popular correct responses tended to relate to the release of serotonin and improved emotional health.

In Q07(b)(ii), candidates were asked how exercise can affect fitness. To gain both available marks, there needed to be clear reference to a training method or fitness class (ie the form of exercise) and either the component of fitness it could improve, or a relevant training adaptation for that training method or fitness class. For example, weight training for increasing strength or an aerobics class increasing cardiovascular fitness or causing a drop in resting heart rate.

Health seemed more accessible for candidates than fitness in this part of the question.

(b) State, using an example, how exercise can affect health and fitness.

(2)

(i) Effect of exercise on health

~~health can be improved b~~

mental health can be improved by execise because during execise a feel good hermone called serotonin is released in the body. making you ~~feel~~ feel better.

(ii) Effect of exercise on fitness

(2)

Exercise can improve a persons fitness. ~~interval~~ continous training is a form of execise and it is aimed to improve a cardiovascular fitness.

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Marks are awarded for:

(i)

- exercise causing the release of serotonin (1)
- which leads to improved mental health (1)

(ii)

- exercise in the form of continuous training (1)
- improving cardiovascular fitness (1)

4 marks

(b) State, using an example, how exercise can affect health and fitness.

(2)

(i) Effect of exercise on health

If you go to a local gym or take a class to do exercise, you could make new friends and meet new people, positively impacting social health, and improving physical health simultaniously.

(ii) Effect of exercise on fitness

(2)

Exercise increases a persons fitness. Lifting 5kg weight for 10 reps, 2-3 times a day will cause muscular hypertrophy.

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Marks are awarded for:

(i)

- exercise improving your social health (1)
- due to meeting new friends (1)

(ii)

- lifting weights (a form of exercise) (1)
- causing the training adaptation muscular hypertrophy (1)

4 marks

Question 8

Most candidates achieved at least one mark for this question, possibly drawing on their own PEP experience to help address the question. The question asked candidates to explain why it was important to use fitness tests to monitor a training programme.

Important information is given in the question, which most candidates used to help guide their responses. In particular, that this question concerned monitoring a programme, ie not the initial set up, and that it was about making sure the training was effective.

Whilst some candidates ignored this additional information and talked about initial fitness testing and the reasons for this, most gained a mark for explaining that it was important because it allowed them to track their progress or to check that they were making progress.

Candidates gained further credit by developing this a little further, acknowledging that this allowed them to see if the programme was working.

To gain the final mark, the impact of this was also required, ie that you could amend the programme if it did not appear to be working. This was the most popular correct approach but not the only approach. Marks were also awarded for linking progress to being motivating and that this encourages further commitment to training.

A common error when addressing this question was to focus on the use of fitness tests for initial target setting, rather than the monitoring role required. It is important that candidates try to avoid repeating question words in their response. For example, to check the training was effective or to monitor the training, was deemed too vague for credit.

8 To make sure training is effective it should be monitored.

Explain why it is important to use fitness tests to monitor a training programme.

(3)

fitness testing is used to assess a persons fitness levels before a training programme. This is good as you can see how the performer started and see which ~~areas~~ components need working on the most, this can help tailor training to suit what is best for the individual. you would test again to see if the training is effective and if it needs adaptations

(Total for Question 8 = 3 marks)

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A mark is awarded here.

This is not for the initial explanation about why test fitness before you start training, but for the statement at the end of the response 'to test again to see if the training needs adapting'.

1 mark

8 To make sure training is effective it should be monitored.

Explain why it is important to use fitness tests to monitor a training programme.

(3)

During a training programme, you need to see if the programme is helping the ~~train~~ person training, whether it's too hard, too easy, or not meeting their required goal. Using tests throughout the programme can help keep track of their progress or if anything needs to change in the programme so that the person training can get their full fullfillment / goal.

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Marks were awarded as follows:

- whether the programme is too hard or too easy (1)
- by keeping track of progress (1)
- to see if anything needs changing (1)

3 marks

8 To make sure training is effective it should be monitored.

Explain why it is important to use fitness tests to monitor a training programme.

(3)

Fitness tests are ~~play~~ practical tests taken to calculate your ability in different ~~parts~~ components of fitness. These results can then be compared against normative data or results from peers. This is important when monitoring a training program as it can help you see improvements or changes in the results, which can keep you motivated to continue the training programme and reach the end of your goal.

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Examiner Comments

Three marks were awarded for the final three lines of the response.

Question 9 (a) (b)

This question continued the theme of fitness testing. Candidates were given two components of fitness. In Q09(a) they were asked to identify a fitness test used to measure this component of fitness, and in Q09(b) to state a different sport or physical activity where each component of fitness would be an advantage.

When asking for any correct 'name' it is important that specification terminology is given, eg rather than 'Cooper's run' candidates should have referred to the cardiovascular fitness test as the 'Cooper 12-minute run' (or other suitable test).

Unlike other parts of the examination, this question allowed a very broad example in (b) because the question asked only for a sport or physical activity, rather than a specific technique. This meant that providing the sport or physical activity required the component of fitness, then marks could be awarded. Marks could still be awarded for the sport, even if the fitness test was stated incorrectly. The reason for this was that the sport had to link to the given component of fitness, not the fitness test.

9 Fitness tests are designed to test specific components of fitness.

Complete **Table 3** by:

(a) Stating the fitness test used to measure the component of fitness.

(b) Stating a different sport or physical activity, for each of the components, in which an excellent rating would be an advantage.

Component of fitness	(a) Fitness test to measure the component of fitness	(b) Sport or physical activity in which an excellent rating would be an advantage
Cardiovascular fitness	12 minute cooper run. (1)	long distance cycling. (1)
Speed	30M sprint (1)	100M sprint. (1)

Table 3

ResultsPlus
Examiner Comments

All aspects are correct.

4 marks

Component of fitness	(a) Fitness test to measure the component of fitness	(b) Sport or physical activity in which an excellent rating would be an advantage
Cardiovascular fitness	Beep test (1)	Marathon (1)
Speed	40m sprint (1)	100m sprint (1)

Table 3

ResultsPlus
Examiner Comments

Marks are awarded for correct identification of activities requiring the stated components of fitness.

2 marks

Question 9 (c)

Candidates were presented with a data table containing fitness tests and ratings. All ratings were excellent, with the exception of the one-minute press-up test, which was poor. Using this data, candidates were asked to state the component of fitness that needed to be the focus for improvement.

Whilst this might appear quite simplistic, there were some stages the candidate had to work through to arrive at the result. Whilst many found this accessible, a significant number did not. Such candidates stated the name of the test, rather than taking this one step further, by using the test to identify the component of fitness it measures.

Answers, therefore, tended to be one-minute press up test or muscular endurance. Occasionally, a candidate would state strength, incorrectly, as the component of fitness.

(c) Georgia is a long distance swimmer. She took part in some fitness tests. Her ratings for these fitness tests are shown in **Table 4**.

Fitness test	Rating
Illinois agility run test	Excellent
Vertical jump test	Excellent
One-minute press-up test	Poor
Harvard step test	Excellent

Table 4

Identify, using the data in **Table 4**, the component of fitness Georgia should focus on to improve her long distance swimming.

(1)

muscular endurance

ResultsPlus
Examiner Comments

1 mark

Identify, using the data in **Table 4**, the component of fitness Georgia should focus on to improve her long distance swimming.

(1)

one - minute press up test - Strength

ResultsPlus
Examiner Comments

No marks awarded

0 marks

Question 9 (d)

This question also had a layer of complexity for the candidate, but one with which they coped well.

The candidates were asked to explain one fitness class that could help improve performance in the Harvard step test. Candidates were not told the component of fitness this tested therefore first they had to make that decision before deciding on a fitness class that would work on the correct component of fitness – all this for the first mark.

The fitness classes should have been taken from those listed in the specification, and be relevant to aerobic fitness, eg spinning. The explanation should then identify the component of fitness improved and the impact this would have on the Harvard step test performance, eg decreasing heart rate at end of test due to improved CV fitness. Those candidates that gave this type of response understood this fitness test.

No marks were awarded if an inappropriate fitness class was selected, eg Body Pump. Whilst this is an effective fitness class, it is not designed specifically to improve CV fitness.

(d) Explain **one** fitness class Georgia should attend to make her performance in the Harvard step test even better.

(3)

Spin classes. ~~Through~~ In cycling classes, there are elements of

① Spin classes

② This trains the cardiovascular system as it uses ~~anaerobic~~ aerobic respiration of the muscles

③ Therefore, this would improve her cardiovascular endurance and her heart rate would ~~def~~ return to normal ~~faster~~ faster in the Harvard step test.

(Total for Question 9 = 8 marks)

ResultsPlus
Examiner Comments

A well thought-through response.

Marks were awarded as follows:

- an appropriate class has been identified (1)
- its link to improving CV fitness has been referenced (1)
- the impact of this on performance in the Harvard step test 'heart rate return to normal faster' has been given (1)

3 marks

(d) Explain **one** fitness class Georgia should attend to make her performance in the Harvard step test even better.

(3)

One fitness class she could attend is a mountain climbing group. That is because they will be walking on an incline for a long period of time. This would mean she would get used to the incline of the bench but also decreasing her heart rate whilst doing so.

(Total for Question 9 = 8 marks)

ResultsPlus
Examiner Comments

The candidate tries to apply knowledge and think around the issue, but does not identify an appropriate fitness class from the specification.

0 marks

(d) Explain **one** fitness class Georgia should attend to make her performance in the Harvard step test even better.

(3)

She should do yoga because this helps increase flexibility which will help Georgia be over excellent, which will help her get a better score onthe harvard step test.

ResultsPlus
Examiner Comments

Yoga is not primarily used to improve CV fitness.

0 marks

Question 10 (a)

Most candidates gained a mark for identifying Fartlek training correctly, from the information provided in the question. They used information such as running through woodland on one day, around the park on another and the beach on yet another day, to make this accurate judgement.

Incorrect responses covered a range of training methods, from plyometrics to interval training.

10 Maddie is a 15-year-old cross-country runner. She trains regularly for her event.

An outline of one week of her training is shown in **Table 5**.

Day of week	Activity	Length of session
Sunday	Run at varying intensities through woodland	60 minutes
Monday	Rest	
Tuesday	Laps around the park varying her pace, running at 60% – 80% of her maximum heart rate	75 minutes
Wednesday	Rest	
Thursday	Run at varying intensities along the beach	60 minutes
Friday	Rest	
Saturday	X-country race	

Table 5

Use the information in **Table 5** to answer all parts of this question.

(a) Identify the training method Maddie is using in her training sessions.

(1)

Fartlek

ResultsPlus
Examiner Comments

Correct identification of Fartlek training

1 mark

Use the information in **Table 5** to answer all parts of this question.

(a) Identify the training method Maddie is using in her training sessions.

(1)

Interval training

ResultsPlus
Examiner Comments

Incorrect response

0 marks

Question 10 (b)

Using the data provided, candidates were asked to state the component of fitness being trained during these fitness sessions.

Occasionally, a candidate may make reference to an activity rather than a component of fitness, eg long-distance runner but the majority of candidates identified cardiovascular fitness accurately, or one of the many acceptable variations for this component of fitness.

(b) State the component of fitness Maddie is training in these sessions.

(1)

Cardiovascular fitness

ResultsPlus
Examiner Comments

A mark is awarded for identification of the correct component of fitness.

1 mark

(b) State the component of fitness Maddie is training in these sessions.

(1)

Long distance runner

ResultsPlus
Examiner Comments

An activity has been stated, rather than the required component of fitness.

0 marks

Question 10 (c)

For this question, candidates had to explain two principles of training that had been applied, again based on the data provided in the question.

These principles were specificity and thresholds of training. The FITT (Frequency, Intensity, Time and Type) equivalent of these principles was also accepted, as was a relevant principle from the legacy specification – the principle of rest and recovery.

To gain marks, candidates needed first to identify a relevant training principle based on the information provided in order to address the question. A complete range of principles was given across candidate responses, with an attempt to apply them.

Incorrect responses made reference to SMART targets (Specific, Measurable, Attainable, Realistic, Time-bound), components of fitness and training methods, rather than principles of training. When a correct principle was given, normally the justification for the choice was also correct.

(c) Explain **two** principles of training Maddie has applied to her training sessions.

(2)

(i) Principle of training 1

fartlek training - She has used this because she keeps varying her pace and intensity so she doesnt run out of speed/energy so quickly.

(2)

(ii) Principle of training 2

Interval training - because she working with a high intensity for a while when she varies her different speeds.

ResultsPlus
Examiner Comments

Training methods have been identified, rather than training principles.

0 marks

(c) Explain **two** principles of training Maddie has applied to her training sessions.

(2)

(i) Principle of training 1

have a days rest after each training session

(2)

(ii) Principle of training 2

increasing the work done by each day

ResultsPlus
Examiner Comments

No training principles have been stated for 'explanation'.

0 marks

(c) Explain **two** principles of training Maddie has applied to her training sessions.

(2)

(i) Principle of training 1

Maddie has applied rest and recovery to her sessions giving herself a day to rest after each session to avoid overtraining and reversability.

(2)

(ii) Principle of training 2

She has also applied thresholds of traihing stating she will be working the aerobic zone of 60 - 80%.

ResultsPlus
Examiner Comments

Two relevant training principles are identified and explained by referring to the relevant part of the source data, given in the question.

4 marks

Question 10 (d)

For the final part of this question, candidates had to give an example of how progressive overload could be applied to the supplied training plan.

A broad range of responses was accepted, including those that were not very 'progressive'. For example, some suggestions were general about increasing the training time. Others were unrealistic in the increased amount of time that should be added, suggesting an additional twenty minutes or so to each session, on a weekly basis.

(d) Give an example that shows how Maddie could apply the principle of progressive overload to one of her training sessions.

(1)

she should train for 85 minuntes on her thursday session so that the duration of her training is gradually increasing.

ResultsPlus
Examiner Comments

Credit was given for the idea of increasing the length of the session, despite the suggested huge jump in time (an additional 25 minutes).

1 mark

(d) Give an example that shows how Maddie could apply the principle of progressive overload to one of her training sessions.

(1)

Increase the length of each session by 5 minutes.

ResultsPlus
Examiner Comments

1 mark

Question 11 (a)

For this question, candidates were asked to identify the training method in the question image.

Most candidates showed good knowledge, identifying correctly the method of training as plyometrics.

Incorrect responses included a description (box jumping), or other training methods, eg circuit training, continuous training, Fartlek training.

11 **Figure 6** shows Mason during a training session.

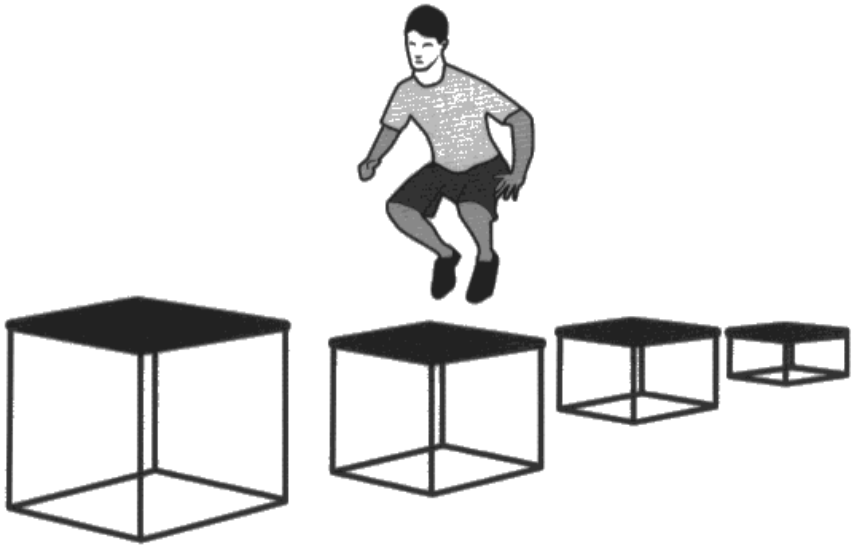


Figure 6

(a) Identify, using **Figure 6**, the method of training Mason is using.

(1)

Circuit training

ResultsPlus
Examiner Comments

0 marks

(a) Identify, using **Figure 6**, the method of training Mason is using.

(1)

Plyometrics

ResultsPlus
Examiner Comments

1 mark

Question 11 (b) (i)

Continuing with plyometrics, this question asked for an advantage of this method of training.

The majority of candidates gained a mark here for linking the advantage to a development in power. Other correct responses linked to increased strength or the need for minimal (or no) equipment.

(b) State **one** advantage and **one** disadvantage of the training method shown in **Figure 6**.

(i) Advantage

(1)

builds power in your legs

ResultsPlus
Examiner Comments

1 mark

Question 11 (b) (ii)

Remaining on the theme of plyometrics, this question asked for a disadvantage of this method of training.

Injury was the predominant correct response. It is possible, of course, that some candidates were able to deduce this from the image, rather than knowing this to be a potential issue with this method of training.

Incorrect responses identified boredom and the repetitive nature of the activity, the need for specialist equipment and only targeting the lower body.

(ii) Disadvantage

(1)

Could become boring. Therefore decrease motivation as it is the same movements. Therefore decrease motivation. Equipement can be expensive.

ResultsPlus
Examiner Comments

0 marks

(ii) Disadvantage

(1)

can be potentially dangerous, increased injury risk.

ResultsPlus
Examiner Comments

1 mark

Question 12

This question focussed on performance enhancing drugs (PED). Two PED were given in the question. Candidates were asked to state the positive effect of these drugs (from a performance point of view) and then name a sport or physical activity where taking the PED would increase the chance of success.

For anabolic steroids, a popular, correct, response was to increase muscle mass or strength. This PED was often linked correctly by the candidates with power events such as 100m sprint, weightlifting or boxing. Any predominantly power or strength activity would have been credited.

For beta blockers, a popular, correct, response was to slow down the heart rate or reduce the hand shaking. This PED was often linked by the candidates with precision events, such as archery, rifle shooting and diving.

Complete **Table 6** by:

(a) Stating a positive effect of the PED.

(b) Identifying a sport or physical activity where taking the PED would increase chance of success in that sport or physical activity.

	(a) Positive effect of the PED	(b) Sport or physical activity where taking the PED would increase chance of success
Anabolic steroids	Increases Muscle Mass (1)	Weight lifters (1)
Beta blockers	Decreases heart rate for precision sports, For steadiness. (1)	Precision sports like snooker and archery (1)

Table 6

ResultsPlus
Examiner Comments

4 marks

Question 13

This is the first of two extended-response questions. Extended response questions use levels-based mark schemes. Each extended-response question is designed to address the different Assessment Objectives (AOs) by enabling candidates to demonstrate their knowledge (AO1), apply their knowledge to the question context (AO2) and then analyse or evaluate based on the information they have already supplied (AO3).

Each extended response is marked out of 9. The marks are allocated evenly for each assessment objective, AO1 – knowledge; AO2 – application of knowledge and AO3 – analysis and evaluation. This means that to achieve maximum marks, the response must address all aspects of the question.

A different set of command words is used for the extended response questions, for example, evaluate, discuss, assess. The exact requirements for these command words can be found in the specification, but they are used to provide opportunity for candidates to look in depth at the question so that they can meet each assessment objective.

One AO is not more important than another. However, it is expected that before knowledge can be applied it will be stated, and before a reasoned judgement can be made there has to be some information on which to make that reasoned judgement.

Candidates should think about making a point, develop it through the use of an applied example, and then make a reasoned judgement. For example, Q13 asks candidates to examine the importance of the respiratory system at three different points in a tennis match, service, rallying and resting between games.

A good way to approach this type of question, adopted by many candidates, would be to:

- take each phase of the match in turn and state a function of the respiratory system, for example, oxygen intake (AO1)
- link this to the phase in the match, for example by stating that during exercise oxygen demand increases so breathing rate increases during the rally (AO2)
- make a judgement about whether this is important to the performer, based on the information already provided, for example, if they did not supply extra oxygen the working muscles would not be able to generate energy aerobically meaning they would not be able to maintain the quality of their performance in the rally (AO3).

If discussing the recovery period, candidates might say that the respiratory system is also important at this point. Although resting, breathing rate remains high to help remove lactate, so that when the game restarts the muscles are not fatigued and can work at high intensity again. Some candidates also argued quite convincingly why the respiratory system was not critical during the service.

Marks awarded varied for this question, although many candidates did gain marks across each AO. AO1 knowledge marks were more readily gained for statements concerning the role of the respiratory system, eg oxygen in, carbon dioxide out, oxygen for energy and so on.

Incorrect responses, rather than incomplete, tended to occur where candidates confused the respiratory and cardiovascular systems, therefore their focus was on the wrong system. Despite this, some candidates still gained generic knowledge marks for linking oxygen to energy production.

These questions are designed to allow differentiation between responses. The serve was clearly the harder element of the question to deal with, but even so, many candidates still recognised that the serve was anaerobic and therefore provided limited relevance.

for longer. ~~With enough~~ Taking lots of breaths ~~throughout~~ throughout the rally will allow plenty of oxygen to diffuse into the blood helping him release more energy. Working harder for longer means he will be able to ^continue the rally at a high intensity get to balls in good time to play a good shot to hopefully outstay his opponent and winning the point or at least gaining the advantage.

The respiratory sytem is also needed for the removal of waste products like carbon dioxide and lactic acid. During the break the tennis player will take deep breaths to increase the concentration gradient, the more O2 will diffuse into his blood and more CO2 will be removed. Breathing in more O2 and having more in his blood will allow him to repay any oxygen debt he has. The extra O2 will break down any lactic acid that has formed. This will help remove any muscle cramps or fatigue he may be feeling to enable him to carry on working when the game restarts at a high intensity, thus improving his performance as he is not in pain or tired.

ResultsPlus
Examiner Comments

This response receives full marks.

The first paragraph concerns the rally and includes:

- AO1 - oxygen for energy
- AO2 - Increased breathing rate during the rally
- AO3 - the impact, so the muscles can keep working harder for longer to get to the shot in time to play a good return

This paragraph is well-written and develops the knowledge point, links it to the activity, and then provides the impact.

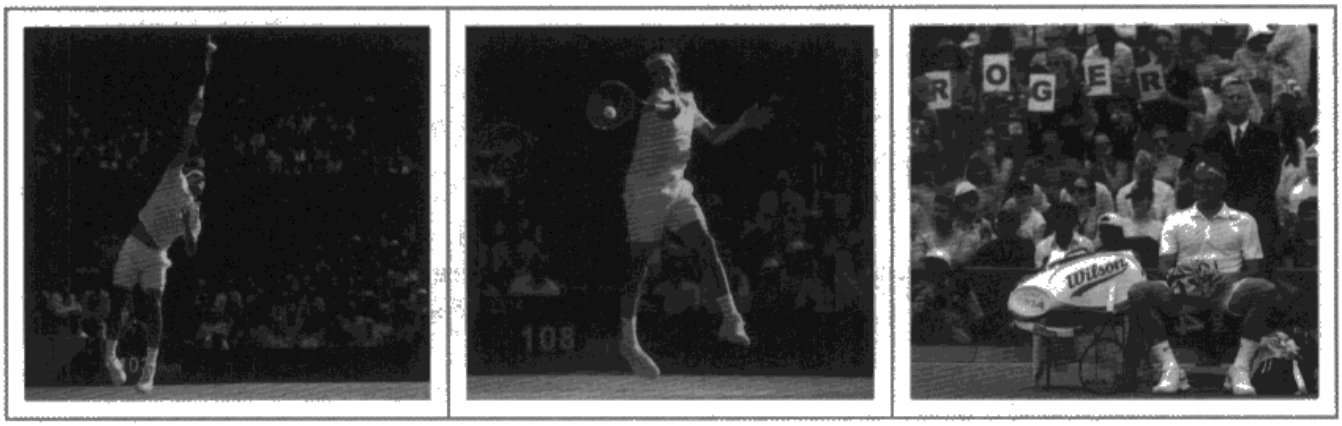
The same is also true in the second paragraph. This time, it is the importance during the rest period between games.

Level 3

9 marks

13 Tennis players will work at different intensities during a match.

Figure 7 shows three different phases of a tennis match.



During a serve | During a long intense rally | Resting between games

(Source: © Clive Brunskill/Getty Images)
(Source: © Julian Finney/Getty Images)
(Source: © Andrew Yates/Getty Images)

Figure 7

Examine the importance of the respiratory system during the different phases shown in **Figure 7**.

(9)

respiratory system is anaerobic and aerobic respiration. During a serve anaerobic respiration happens as its fast movement. During a long intense rally aerobic respiration happens as oxygen is needed for the working muscles so theres not a build up of lactic acid. Resting between games is aerobic respiration as he needs to take oxygen on so his muscles can be ready

ResultsPlus
Examiner Comments

Each phase of the game is mentioned and there is creditable content included.

There is recognition that the serve is anaerobic because it is a fast movement (AO2). However this is not linked to the respiratory system.

There is knowledge that oxygen is needed to ensure lactate does not build up (AO1) and that during rest, it is important to take on oxygen (AO1).

Level 1

3 Marks

In all three phases of a tennis match, the respiratory system is important as it supplies the body with oxygen and removes waste products such as Carbon dioxide, however, it is more important to some phases than others.

Although providing oxygen to working muscles is essential throughout a tennis match, it is not as important during a serve as it is throughout the

rest of the match. This is because a serve involves a short, fast burst of power, meaning the energy for this can be produced through anaerobic respiration. As anaerobic respiration takes place without the presence of oxygen, ~~it is~~ the respiratory system is not as important to the performer during this phase as it is throughout the rest of the match. A performer is still able to perform an effective, successful serve, even if their muscles haven't been supplied with enough oxygen which is taken in and exchanged into the blood by the respiratory system.

However, during a long intense rally, the respiratory system is essential to the performer. This is because anaerobic respiration cannot be sustained over a long period of time, so unlike with the serve, aerobic respiration is necessary. This means the respiratory system must provide the body with enough oxygen for aerobic respiration in the muscles so they have enough energy to contract and will not fatigue during the rally. It is essential that the muscles don't fatigue ~~so~~ they can maintain a high level of performance throughout the rally and aid the performer in winning the point. This means the respiratory system is essential to how well the player performs during a long intense rally, and an increased breathing rate allows it to supply ~~to~~ the body with enough oxygen.

Furthermore, the respiratory system is also important during the performer's rest period. This is because any lactic acid build-up from anaerobic respiration must be removed. This means the performer needs to repay their oxygen debt; often the performer's breathing depth will increase to provide the body with enough oxygen to do this. ~~Further~~ The player's lactic acid must be removed to prevent DOMS (Delayed onset muscle soreness) and any

other muscle pain to ensure the performer can still play to a high standard during the next set which allows them to be more successful at winning both the set and the entire match.

In conclusion, although the respiratory system is always important to a tennis player, it is most essential when they are maintaing a long intense rally and when they are resting as both of these situations require a high level of oxygen in the body.

ResultsPlus
Examiner Comments

The opening paragraph is an introduction, but does contain AO1 content.

The second paragraph begins the evaluation of the importance of the respiratory system during the serve and justifies why it is less important at this point. There is AO1, AO2 and AO3 content here.

The remainder of the response continues in this way, each paragraph a separate phase of the tennis match. Each point is developed within the paragraph, so that AO1, AO2 and AO3 are evident.

For completeness, the candidate provides a conclusion in the final paragraph but this is not required.

Level 3

9 marks

Question 14

The second extended response question was given the context of the shot put and candidates were asked to evaluate the training methods causing three given long-term training effects, and the impact of these effects on shot put performance.

As with Q13, two aspects of the question had some relevance to shot put performance, one did not: this should have been reflected in the candidate evaluation. Those achieving level three tended to recognise that a reduced resting heart rate was not of direct value to the shot putter and could justify why.

As with Q13, a good way to approach this type of question, adopted by many candidates, would be to:

- take each long-term training effect in turn and identify the type of training method that would bring about that effect (AO1)
- link this to how the effect would be relevant to performance in the shot put (AO2)
- make a judgement about whether this would be a sensible training method due to the impact it would have on performance (AO3)

For example, muscle hypertrophy is a long-term effect of weight training, this would mean the shot putter gained muscle mass and therefore the amount of force he could exert on the shot. This would be a good choice of training method because this would allow him to use more strength/power to launch the shot put further in competition.

As with Q13, candidate responses varied with the full range of marks being seen. At one extreme some candidates did not link the adaptations to relevant training methods, whilst others suggested appropriate methods for each adaptation and then linked the adaptations to shot put performance. Muscle hypertrophy was often the more readily applied adaptation.

Some candidates linked increased bone density incorrectly with increased muscular power and strength to throw further, rather than the expected route of decreasing risk of injury so training could continue.

Most candidates were able to identify the drop in resting heart rate being due to continuous/aerobic training with an improvement in CV fitness. However, relatively few went on to evaluate that this was the least important of the training methods because the shot put is an anaerobic/explosive activity.

14 Dan trains regularly to improve his shot put performance and his general fitness.

Figure 8 shows Dan during a shot put competition.

Table 7 shows some of the long-term training effects on his body systems.

Figure 8

Long-term training effects
Increased bone density
Decreased resting heart rate
Muscle hypertrophy

Table 7

(Source: © Jim Parkin/Shutterstock)

Evaluate the training methods causing these long-term effects and their impact on Dan's shot put performance.

(9)

Increased bone density is due to regular weight bearing exercises, so Dan must be regularly doing weight training. This is also evident by the muscular hyper trophy. However, a decreased resting heart rate is more likely due to continuous training, as that method of training trains for cardiovascular fitness.

Weight training involves lifting heavy weights in ~~some~~ exercises such as a dead lift, which causes an increased bone density This will decrease the chances of Dan ~~developing~~ suffering ~~a fracture~~ hard tissue injury, such as a fractured wrist which can be common in shot putters. This means Dan can continue to frequently exercise and compete without risk of hurting himself, thus as more freely allowing

Dan to improve his Shot put performance, leading to an increased chance of winning a competition. Dan should continue to do weight training because of this.

Frequently lifting heavy loads also leads to muscular hypertrophy, which is what Dan has experienced. This ~~is because~~ due to the repairing of the muscle when resting and eating protcins. Muscular hypertrophy also often comes with an increase in muscular strength. An increase in strength allows Dan to push the Shot put ~~in~~ further than his opponents, thus increasing his Chances at winning. Weight training allows Dan to do this, thus he should continue to implement weight training into his plan to increase the Chances of wianing.

However, a decreased resting heart rate is more likely to be due to Continuous training. In Continuous training, the same activity is done at the same intensity over a long period of time. This trains for Cardiovascular fitness, and Dan would be working in his aerobic zone. Shot put is a quick and explosive action, which means it is an anaerobic activity. Continuous training would not have a positive impact on Dan's Shot put performance, as it trains for ~~the~~ a unimportant component of fitness. On top of this, regularly doing Continuous training may lead to muscular atrophy, which lowers ~~muscle~~ muscular strength thus hindering his Shot put performance. Because of this Dan should not focus on Continuous training as much as his weight training to have ~~a~~ more positive effects on his Shot put performance.

ResultsPlus
Examiner Comments

The opening paragraph gives an introduction and links each adaptation to a potential relevant training method.

If this had been all the candidate had written this first paragraph would have been placed at level 1 for AO1 knowledge of training methods causing specific training adaptations.

From the second paragraph onwards, each long-term training effect is given its own paragraph to allow the candidate the opportunity to develop the points they are making methodically.

Weight training (as a form of weight bearing activity) (AO1) results in increased bone density. In particular, this is true of the bones of the wrist, decreasing the chances of wrist injury (AO2) such as fractures. The impact of this is also given, ie that the athlete can continue training frequently. (AO3)

The next paragraph evaluates the weight training and resultant hypertrophy. Again, there is knowledge, application of knowledge and impact (push the shot put further than his opponents).

This structure continues with the next paragraph regarding continuous training. This time, the evaluation justifies why this would not be a sensible method for training to continue.

Level 3

9 marks

14 Dan trains regularly to improve his shot put performance and his general fitness.

Figure 8 shows Dan during a shot put competition.

Table 7 shows some of the long-term training effects on his body systems.

Figure 8

(Source: © Jim Parkin/Shutterstock)

Long-term training effects	
Increased bone density	✓
Decreased resting heart rate	
Muscle hypertrophy	✓

Table 7

plyometric fartlek weight continuous

Evaluate the training methods causing these long-term effects and their impact on Dan's shot put performance. interval.

circuit

(9)

Dan has likely used plyometric & weight training as it focuses on improving power

Plyometric

Dan has likely used weight, circuit and ~~interval training~~. continuous training

weight training focuses on improving muscular strength and therefore his would lead to muscular hypertrophy. As Dan's muscles have increased in size his power has also increased and therefore

he will be able to throw further meaning his score will be higher. This means he has a higher chance of winning his competitions.
Weight training can also lead to increased bone density which means Dan is less likely to hurt himself and his will reduce chances of reversibility as he won't have to stop training in order to rest and recover.

~~Continuous~~ Continuous training involves exercising with no rest eg. running for an extended period of time. This A ~~lead~~ long term effect of his is a decreased ~~the~~ resting heart rate. This means he will be able to train for longer and therefor improve other aspects of his ~~fitness~~ fitness. Continuous training also ~~increases~~ increases muscular endurance so Dans muscles after training he shot put won't be as tired.

ResultsPlus
Examiner Comments

In the first paragraph, the candidate identifies an appropriate training method to result in hypertrophy and evaluates the impact of this method on shot put performance.

In the next section, weight training is also linked to increased bone density, and again, there is some development. The candidate links the training effect to the sport, ie that the athlete is less likely to be injured and suffer reversibility.

The final paragraph links continuous training to a reduction in resting heart rate.

Level 2

5 marks

Evaluate the training methods causing these long-term effects and their impact on Dan's shot put performance.

(9)

In order to increase his bone density, Dan is performing weight-bearing exercises. An increased bone density will be beneficial for Dan since it will make his bones stronger and therefore he will be more resistant to injury. If he is less likely to get injured then he can increase the intensity of his workouts, helping him increase his strength further and therefore allowing him to throw the shot put further.

Dan has decreased his resting heart rate by performing continuous or circuit training. Circuit training is more likely since he can also then

~~could~~ include some muscular endurance training by utilising weighted or bodyweight movements eg. push ups. A decreased resting heart rate will not be very beneficial for Dan since throwing a shot put is a very fast, explosive movement, therefore increasing his cardiovascular fitness is actually quite unnecessary for his sport. However, it will help when training since he will be able to train for longer without fatiguing as fast. This will allow him to train for longer, giving him more time to perfect his form or simply increase the ~~can~~ number of throws he can complete each session.

Dan has experienced muscle hypertrophy by performing weight training or circuit training. It is most likely weight training since this focuses on muscular strength and endurance which both lead to muscle hypertrophy. Muscle hypertrophy will benefit Dan since he will have larger muscles and therefore be able to generate more force when throwing the shot put. If he can generate more force then he will be able to throw the shot put further, therefore increasing his distance, allowing him to perform better.

ResultsPlus
Examiner Comments

Each long-term training effect is considered in turn.

Points are made and developed to give a very well-rounded response.

There is accurate knowledge and demonstration of understanding throughout. This knowledge is applied to the question context and there are well-reasoned conclusions to each paragraph concerning the value of each of the training methods.

The response therefore addresses fully the requirements for AO1, AO2 and AO3.

Level 3

9 marks

Paper Summary

Based on their performance in this examination, candidates are offered the following advice:

- Use appropriate technical language when answering anatomy or movement analysis questions, for example, muscles contract and relax rather than flex and extend (Q02)
- Use the command words and number of marks available to help you decide the depth required in your response, for example, 'state' questions do not need descriptions or explanations (Q12(b))
- Do not repeat question words if asked to state the meaning of something, for example try to avoid the use of 'to monitor' if asked why it is important to monitor a training programme (Q08)
- Make sure you read questions carefully, for example, do not explain when you need to describe, or describe when you should be explaining! (Q03(b)/Q03(c))
- If asked to provide two of something make sure you use clearly different types of examples, for example the joint action at two different joints is still an example of joint action (Q02(c))

If asked for examples make them clear, for example, a 'sprint start' rather than just 'sprinting' (Q05(b))

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

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