



Examiners' Report

June 2024

GCSE Physical Education 1PE0 01

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June 2024

Publications Code 1PE0_01_2406_ER

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Introduction

As was the case in the 2023 series, the paper was split into three sections:

- Section A Applied Anatomy and Physiology and Movement Analysis, assessing content from Topics 1 and 2 of the specification
- Section B Physical Training, assessing Topic 3 from the specification
- Section C assessing Topic 3 via an extended writing question

The total mark for the paper is 80 marks.

Candidates were still assessed on the same skills and areas of knowledge.

The level of difficulty of the paper was in line with previous series'. Candidates and centres continued to show good preparation, with the full range of marks being achieved across all questions.

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

Section C, the final section of the paper, comprises one extended response question.

To access all available marks on 1PE0 01, candidates needed to recall knowledge, and demonstrate understanding of this knowledge, through its application to a range of question scenarios. They needed 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 'explain' questions, rather than only providing a more generalised approach to their responses.

Question 2 (a)(b)

Candidates were asked to classify two different joints in the human skeleton, the ankle and the shoulder. Having classified each joint, the range of movement of the joint classification was also required. Candidates were instructed to choose a different range of movement for each joint classification.

The joint classification of the shoulder was well known. When stating the range of movement at a joint it is essential to give a range, not just an example. Answers giving a partial range, for example plantar-flexion did not gain the mark. The range of movement could have been for the specific joint in the question or the joint classification, hence flexion to extension was also accepted for the ankle.

2 The ankle and shoulder are examples of joints in the human body.

Complete **Table 1** by:

- (a) Stating the classification of each joint.
- (b) Stating **one different** range of movement for each joint.

Joint	(a) Joint classification	(b) Range of movement
Ankle	hinge (1)	flexion and extension (1)
Shoulder	ball and socket (1)	adduction and abduction (1)

Table 1

This response gains all available marks, identifying correctly the joint classification and providing a range of movement possible for this classification of joint.

Total: 4 marks

2 The ankle and shoulder are examples of joints in the human body.

Complete **Table 1** by:

(a) Stating the classification of each joint.

(b) Stating **one different** range of movement for each joint.

*pivot, condyloid, hinge,
ball & socket*

Joint	(a) Joint classification	(b) Range of movement
Ankle	hinge (1)	plantar-flexion (1)
Shoulder	ball and socket (1)	adduction (1)

Table 1



This response states the classification of each joint correctly and therefore receives 2 marks for (a).

The remainder of the response is incorrect and receives zero marks because an incomplete range is given.

Total: 2 marks



Unless it is rotation or circumduction, the range of movement will be in pairs: flexion to extension or adduction to abduction.

You must give the complete range possible at that type of joint.

Question 2 (c)(i)

This question asked candidates to state the function of ligaments.

Bone to bone muscle to bone

Ligaments and tendons have an important role within the body.

(c) (i) State the role of **ligaments**.

Ligaments connect bone to bone



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Examiner Comments

This response gains the available mark, correctly stating that ligaments join bone to bone.

Other acceptable responses included their role in stabilising the joint or reducing the risk of injury.

Total: 1 mark

Ligaments and tendons have an important role within the body.

(c) (i) State the role of **ligaments**.

(1)

They connect bone to muscle, meaning they have full range of movement.



ResultsPlus
Examiner Comments

This response states the function incorrectly.

Total: 0 marks

Question 2 (c)(ii)

This part of the question asked candidates to use an example to explain the importance of tendons to games players.

Candidates needed to know the role of tendons, how the role applied to sport and give an example of why this was important to games players. This question was accessible to those who knew the role of tendons.

(ii) Explain, using an example, why **tendons** are important to games players.

(3)

Tendons are important to games players because they connect bone to muscle ^{and muscles} ~~bone~~ allowing the bones to work together for movement. For example, when football players run, their ~~team~~ tendons join their leg bones and muscles together to run. When muscles contract they move the bones.



This response gains three marks for identifying correctly the role of tendons:

- joining muscle to bone
- why this is important in terms of allowing them to move
- providing an example of its importance to the question context

Total: 3 marks

(ii) Explain, using an example, why **tendons** are important to games players.

(3)

tendons allow movement at the joints via contraction and relaxation, games players would need tendons so that they can facilitate movement in sport, because it allows them to flex and extend at joints, allowing contraction and relaxation therefore letting them to be able to move.



ResultsPlus
Examiner Comments

This part of the response gains one of the available marks. The candidate:

- states the importance of tendons in allowing movement

There is no reference to how this is possible, ie by connecting the muscle to the bone so that when the muscle contracts it can pull on the bone, neither is there a specific example of the use of movement by a games player, eg running, shooting

Total: 1 mark

Question 3 (a)(b)

This question focusses on muscles and their role.

Candidates were supplied with an image of the human muscular system with two labelled muscles, A and B.

Using the image candidates needed to identify the muscles labelled A and B and state the role of each muscle.

The gastrocnemius was well-known in comparison to the latissimus dorsi.

The role of each muscle was less well-known, incorrect responses providing a range of movement rather than the specific role of the muscle.

Complete **Table 2** by:

- (a) Stating the name of the labelled muscles.
- (b) Stating the role of the labelled muscles.

Labelled muscle	(a) Name of the muscle	(b) Role of the muscle
A	latissimus dorsi Latissimus dorsi (1)	adduction at the shoulder (1)
B	gastrocnemius (1)	plantar-flexion at the ankle (1)

Table 2



ResultsPlus
Examiner Comments

This response gains all available marks, identifying correctly the muscles from the image and the role of each muscle.

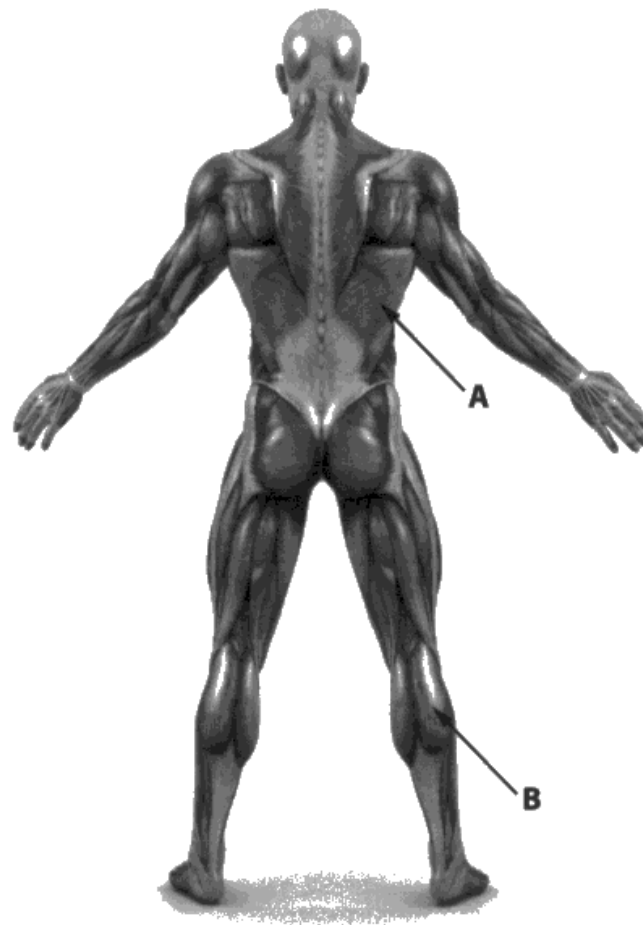
Total: 4 marks



ResultsPlus
Examiner Tip

If asked to state the role of a muscle make sure you also include the joint it moves.

3 **Figure 2** shows the muscular system.



(Source: 123RF)

Figure 2

Complete **Table 2** by:

- (a) Stating the name of the labelled muscles.
- (b) Stating the role of the labelled muscles.

Labelled muscle	(a) Name of the muscle	(b) Role of the muscle
A	Latissimus Dorsi (1)	work antagonistically with the external obliques and to protect vital organs. (1)
B	Gastrocnemius (1)	work antagonistically with the quadriceps, hamstrings and the fibialis anterior (1)

Table 2



This response gains two of the available marks, identifying the latissimus dorsi and the gastrocnemius correctly.

Whilst these muscles will work antagonistically with other muscles, they have a specific movement role that should have been stated.

Total: 2 marks



Try to remember the terminology in the specification: this will help your understanding of what a question is asking you to do.

In this question, you needed to know the role or job of the identified muscle, what it does.

Question 3 (c)

This part of the question asked candidates about the importance of the characteristics of cardiac muscle to a performer.

Those candidates that thought about the characteristics of cardiac muscle within their response often accessed all three marks. Those that did not tended to have a much narrower focus. They limited their response to the importance of cardiac muscle in relation to oxygen delivery and thus were only able to gain partial credit for their answers.

Muscles are classified as either voluntary, involuntary or cardiac.

(c) **Explain**, using an example, why the characteristics of **cardiac** muscle are important to a sports performer.

(3)

K: Cardiac muscles are ~~important~~^{not} under conscious control. This means they don't need ^A to be thought about^{by athlete}. As a result, they can contract to pump more oxygenated blood^E to working muscles, so athletes can respire aerobically, without need for athletes attention.



ResultsPlus
Examiner Comments

This response gains three marks for identifying a characteristic of cardiac muscle, linking this to the performer and then justifying why this is important.

Total: 3 marks

Muscles are classified as either voluntary, involuntary or cardiac.

(c) Explain, using an example, why the characteristics of **cardiac** muscle are important to a sports performer.

(3)

The heart is a cardiac muscle and its ability to pump oxygenated blood around the body would aid a long distance runner, who has a higher oxygen demand during a race obtain necessary oxygen for them to complete the race.



ResultsPlus
Examiner Comments

This response gains a mark for stating the importance of cardiac muscle to the performer.

Characteristics of cardiac muscle are not given, eg it is an involuntary muscle. Without the characteristic, the link to the performer can not be expanded on.

Total: 1 mark

Question 4

The focus of this question was movement analysis. Candidates were given an image of a performer during a training session and asked to analyse the action of the antagonistic muscle pairs at the hip and knee that resulted in the gymnast achieving the shape shown. Responses were only credited if they used the correct terminology, eg no credit was given for muscles bending, flexing or extending.

In question part (i) candidates gained a mark for:

- identifying the antagonistic pair hip flexors and gluteus maximus/gluteals giving the correct agonist, the gluteus maximus/gluteals
- the resultant joint action at the hip, extension

Occasionally, candidates gave conflicting statements in their response, eg that the gluteus maximus/gluteals were the agonist muscle because it was relaxing. Where there were conflicting statements, a mark could not be awarded.

In question part (ii), candidates gained a mark for:

- identifying the antagonistic pair quadriceps and hamstrings giving the correct agonist, the quadriceps
- the resultant joint action at the knee, extension

Occasionally, candidates gave only one correct muscle from the antagonistic pair: both were required for the mark.

4 **Figure 3** shows a performer during a training session. Her left hip and left knee are circled.

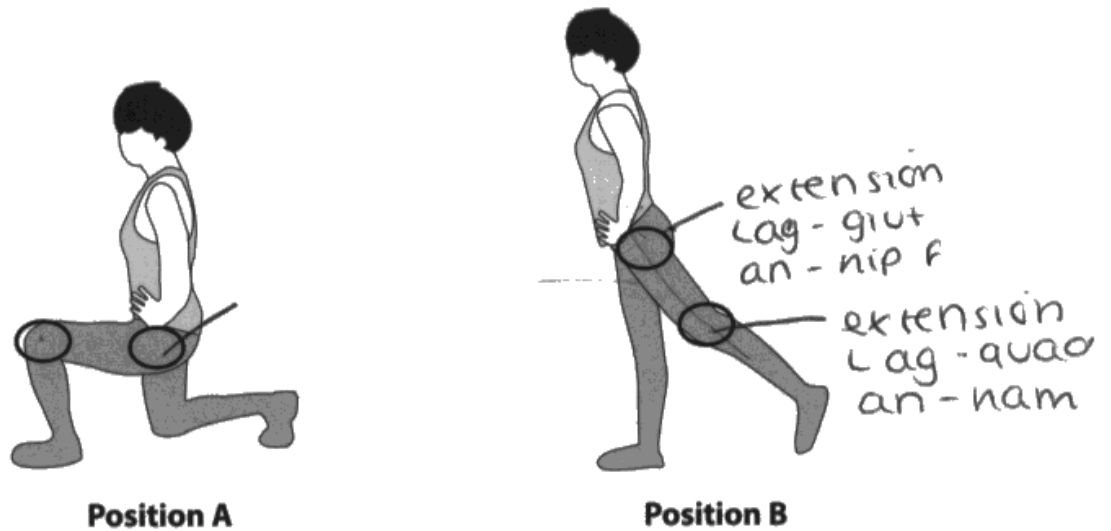


Figure 3

Analyse the actions of the antagonistic muscle pairs at the **circled** joints of the left **hip** and left **knee** that cause the movement from **Position A** to **Position B** in **Figure 3**.

(i) Left hip

(3)

The performer is performing extension at the hip meaning that the agonist is the gluteus maximus and the antagonist is the hip flexor.

(ii) Left knee

(3)

The performer is performing extension at the knee meaning that the agonist is the quadriceps and the antagonist is the hamstring.



This response gains all available marks. It is concise, and addresses the question fully.

Reference is only made to movement into Position B, marks are gained for correct:

- joint action (extension in both cases)
- antagonistic muscle pair
- agonist muscle action

Total: 6 marks



Make sure you know the correct technical language to use for movement analysis questions.

Remember:

- muscles contract and relax
- joints flex and extend

- 4 **Figure 3** shows a performer during a training session. Her left hip and left knee are circled.

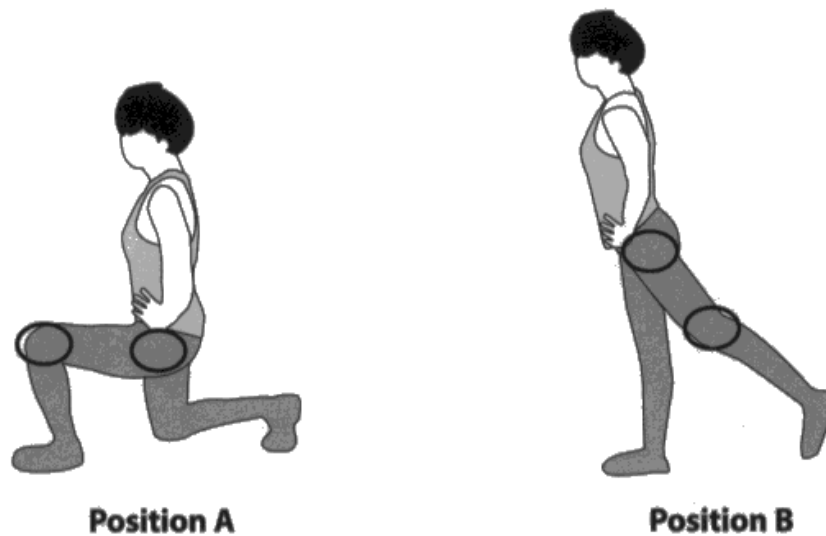


Figure 3

Analyse the actions of the antagonistic muscle pairs at the **circled** joints of the left **hip** and left **knee** that cause the movement from **Position A** to **Position B** in **Figure 3**.

(i) Left hip

(3)

hip flexor and gluteous maximus. As the hip flexor contracts the glutes will extend through the pressure being released from the hip when the performer then starts to release the pressure the hip flexor goes from extending to contracting and the gluteous maximus goes from contracting to extending.

(ii) Left knee

(3)

hamstring and quadriceps. As the performer is in position A her hamstring is contracting as the quads are extending as when she moves to position B she then extends her left knee and the quads and hamstring are extending as there is pressure on both muscles and she is pointing her leg away from her body.

(Total for Question 4 = 6 marks)



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Examiner Comments

This response gains three marks.

When no reference is made to Position A or Position B the assumption is that the response relates to movement into Position B.

Where both actions are given without reference to a position, no credit can be given for the joint action or the antagonistic muscle, due to the vague nature of the response.

(i) The response gains a mark for identifying the antagonistic muscle pair correctly.

(ii) This part of the response does identify the action for Position A and Position B. Marks are gained for:

- correct antagonistic pair
- correct joint action for Position B

Total: 3 marks



Do not abbreviate muscle names: you need to show you know the correct name.

Question 5

Candidates were provided with two lists of common techniques and skills used in different sporting activities.

The question asked candidates to state the muscle fibre type most beneficial to the activities in each list.

Most candidates linked type 2x fibres correctly with the explosive techniques and skills listed in Group 1 and type 1 fibres with the endurance-based activities listed in Group 2.

Occasionally, candidates would associate type 2x incorrectly with the endurance activities or refer to type 1 fibres as type 1a, which is incorrect.

- 5 **Table 3** lists some common techniques and skills used in different sporting activities and places them into two different groups.

(i) Group 1	(ii) Group 2
Sprint start	Running for 30 minutes
Putting a shot	Swimming for 1 hour
Serving an ace in tennis	Cycling 50 miles

Table 3

- (i) State the **muscle fibre type** most beneficial to all three activities listed in **Group 1**.

Type II X fast twitch

- (ii) State the **muscle fibre type** most beneficial to all three activities listed in **Group 2**.

Type I slow twitch



ResultsPlus
Examiner Comments

This response gains both available marks because they link type 2x fibres correctly with the power-based actions in Group 1, and type 1 with the endurance-based activities in Group 2.

Total: 2 marks

- 5 **Table 3** lists some common techniques and skills used in different sporting activities and places them into two different groups.

(i) Group 1	(ii) Group 2
Sprint start	Running for 30 minutes
Putting a shot	Swimming for 1 hour
Serving an ace in tennis	Cycling 50 miles

Table 3

- (i) State the **muscle fibre type** most beneficial to all three activities listed in **Group 1**.

Type Ia

- (ii) State the **muscle fibre type** most beneficial to all three activities listed in **Group 2**.

~~Type Ia~~ Type I/x



This answer gains zero marks because the fibre types are incorrect for the activities.

Total: 0 marks



Make sure you know the names of the 3 fibre types:

- type 1
- type 2a
- type 2x

Question 6 (a)

The focus of this question was the heart. Candidates were supplied with a diagram of the heart and asked to label the semi-lunar valve, indicated on the diagram by the letter A.

Some candidate responses were too vague for credit, identifying the structure as a valve rather than the semi-lunar valve. Others named the blood vessel incorrectly – the valve was within.

Question 6 (b)

This part of the question asked candidates to state the function of the semi-lunar valve.

Many candidates stated correctly the function of preventing backflow of blood. Incorrect responses tended to focus on the function of the blood vessel in relation to transporting blood, oxygen or carbon dioxide.

(b) State the function of the structure labelled A in Figure 4.

To stop the backflow of blood.



This response gains one mark for correct identification of the function of a valve.

Total: 1 mark

(b) State the function of the structure labelled A in Figure 4.

to push ^{oxygenated} blood into the rest of the body



No mark is awarded.

The response states a function of the heart, rather than the specific function of the valve.

Total: 0 marks

Question 7 (a)

Candidates were given two functions of the cardiovascular system and asked to state one other function that is important to a performer.

Many candidates identified correctly oxygen transport or temperature regulation. Those not achieving the mark tended to repeat one of the options given in the question or gave a vague response, eg to pump blood.

7 Two functions of the cardiovascular system are transport of nutrients and clotting of open wounds.

(a) State **one other function of the cardiovascular system that is important to a sports performer during physical activity.**

Transport of ~~blood~~ oxygen



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Examiner Comments

This response states correctly one other function of the CV system, which is to transport oxygen.

Total: 1 mark

7 Two functions of the cardiovascular system are transport of nutrients and clotting of open wounds.

(a) State **one other function of the cardiovascular system that is important to a sports performer during physical activity.**

Transport of red blood cells



This response receives zero marks.

Whilst red blood cells are transported within the blood, this is for oxygen transport. The response does not give enough information about the function of the CV system to gain the mark.

Total: 0 marks



When you are given examples in a question make sure you choose a different example for your answer.

Question 7 (b)

This part of the question asked candidates to explain why clotting of open wounds is an important function if a person is injured during physical activity.

One mark was awarded for stopping blood loss, the other mark was for application to the question context, eg so the performer could carry on in their physical activity. It was important that this part of the response referred to maintaining the current session, rather than any long-term health-gain or impact on fitness levels.

(b) Explain why the clotting of open wounds is an important function if a person is injured during physical activity.

So that they don't lose too much blood⁽²⁾
and so they can continue playing to their
best ability, without having to come off. Platelets
are important for this.



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Examiner Comments

This response gains two marks.

One mark for the reason and one mark for the linked expansion to justify why the stated reason was important:

- so they don't lose too much blood
- so they can continue to play

Total: 2 marks

(b) Explain why the clotting of open wounds is an important function if a person is injured during physical activity.

(2)

Clotting allows a wound to be sealed which in result will stop the excess bleeding of blood, and reduce excess amount of blood lost by the person. It will also prevent pathogens from entering the open wound which could make the person ill.

(Total for Question 7 = 3 marks)



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Examiner Comments

This response gains one mark.

Two valid reasons why it is important are provided, but neither reason is expanded on to justify the importance to the performer.

One mark for either reason:

- so they do not lose too much blood

OR

- preventing pathogens entering the wound

No mark was awarded for stopping illness because this would take time and the question context was 'during physical activity'.

Total: 1 mark



Remember, you need to make as many points in your answer as the number of marks that are available.

If the command word in the question is 'explain' then these points need to be linked.

Question 8 (a)

The focus of the question was lever systems. In part (a) candidates were given an image of a lever system and asked to identify the labelled components of the system. The standard symbols for each part of the lever system were used to assist candidates.

Many candidates identified the load, effort and fulcrum correctly. Some candidates knew the terminology but placed them in an incorrect order.

Question 8 (b)

This part of the question asked candidates to state the name of the lever system acting at the ankle each time a trampolinist pushed off the trampoline. Most candidates identified this correctly as a second-class lever.

Question 8 (c)

The context for the question continued with the trampolinist introduced in part (b). Candidates were told there was a mechanical advantage due to the lever system at the ankle. They were asked to explain the mechanical advantage as the trampolinist pushes off the trampoline.

Many candidates identified mechanical advantage correctly, as the ability to lift a heavy load with relatively little effort. Some of these candidates went on to explain why this was an advantage to the performer, ie they could bounce higher and have more time in the air to complete the skill.

Some candidates referred incorrectly to the springs as providing the mechanical advantage, rather than focussing on the lever systems.

Some candidates went beyond the scope of the question explaining why there was a mechanical advantage, referencing the length of load and effort arms.

The lever system used to push off the trampoline provides a mechanical advantage.

(c) Explain the **mechanical advantage** for the performer as she pushes off the trampoline.

(2)

mechanical advantage means the effort arm is longer than the load arm so you can lift heavier weights with less effort. Therefore she can jump higher, using less effort enabling her to perform better.



This response gains marks for:

- lifting a heavier load with less effort
- therefore she can jump higher

The response demonstrates knowledge of mechanical advantage and expands on this to link to the performer.

Total: 2 marks

The lever system used to push off the trampoline provides a mechanical advantage.

(c) Explain the **mechanical advantage** for the performer as she pushes off the trampoline.

(2)

The distance between the fulcrum (the ball of her feet) and the effort is larger than the distance between the fulcrum and the load allowing her to lift a heavy load with minimal effort (her body weight)



Whilst the first statement in the response is true, this description of the lever system was not required and therefore no mark is awarded for this part of the response.

One mark is awarded for this allowing her to lift a heavy load with minimal effort.

No linked expansion is provided, ie the importance of this to the trampolinist.

Total: 1 mark

Question 8 (d)

The final part of the question asked candidates to identify the plane and axis when performing a piked front somersault.

Most candidates used the correct terminology for the plane and axis. Occasionally, these would be stated in the incorrect order.

Some candidates used alternative terminology for the plane and axis. Where these terms are widely accepted, they were credited. However, this assessment is based on the specification for this subject thus responses should mirror those in this specification, to ensure marks are awarded.

The trampolinist performs a piked front somersault as part of her routine.

(d) Identify the plane and axis when performing a piked front somersault.

(i) Plane

sagittal

(ii) Axis

Frontal



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This response gains marks for correct identification of:

- sagittal plane
- frontal axis

Total: 2 marks

The trampolinist performs a piked front somersault as part of her routine.

(d) Identify the plane and axis when performing a piked front somersault.

(i) Plane

frontal

(ii) Axis

sagittal



ResultsPlus
Examiner Comments

This response gains zero marks because the movement has been linked incorrectly to the frontal plane and sagittal axis.

Total: 0 marks

Question 10

The context for this question was an endurance athlete. Candidates were given two long-term training effects resulting from the endurance athlete's training and asked to explain why each of the training effects were an advantage for the endurance athlete.

The training effects were:

- a drop in resting heart rate
- an increase in strength of the diaphragm

Most candidates linked correctly a drop in resting heart rate with a stronger heart, or increased stroke volume, leading to increased oxygen delivery to the muscles for the endurance athlete during exercise.

The advantage of an increased strength of diaphragm was also well known, linking this to increased lung capacity and therefore greater air intake.

A few candidates linked the drop in resting heart rate incorrectly with the respiratory system and an increased strength of the diaphragm with increased oxygen transport.

10 Carlton is an endurance athlete. Carlton's training leads to a drop in his resting heart rate and an increase in the strength of his diaphragm.

Explain why these long-term training effects are an advantage for an endurance athlete.

(i) Drop in resting heart rate

Means he has a greater ^{stroke volume} ~~cardiac output~~ as his cardiac muscles are stronger. Means more blood is pumped around the body so during exercise more O_2 can be delivered to his working muscles and CO_2 can be removed at a faster rate. (2)

(ii) Increase in strength of diaphragm

Means can contract harder meaning it gets pulled down further and allows more room for the lungs to expand meaning he ~~can~~ can intake more O_2 which can be delivered to his working muscles. (2)



This response receives all available marks.

A reason why each of the adaptations is a benefit is stated and then expanded on to link to the performer.

(i) This part of the response gains marks for:

- meaning they have a greater stroke volume/stronger heart
- meaning more blood is pumped so more oxygen can be delivered to the working muscles

(ii) This part of the response gains marks for:

- meaning the diaphragm can contract harder/it gets pulled down further/allows more room for the lungs to expand
- meaning he can inhale more oxygen

Total: 4 marks

10 Carlton is an endurance athlete. Carlton's training leads to a drop in his resting heart rate and an increase in the strength of his diaphragm.

Explain why these long-term training effects are an advantage for an endurance athlete.

(i) Drop in resting heart rate

(2)

drop in resting heart rate means that the ^{heart beats per minute} ~~heart isn't beating very~~ are decreasing which means not much blood or oxygen is needed to be pumped around.

(ii) Increase in strength of diaphragm

(2)

an increase in strength of diaphragm means that it can transport oxygen more effectively, which means more oxygen would be delivered during a longer run which decreases fatigue which allows the endurance athlete to perform at a better pace over a longer time.



This response receives zero marks.

(i) A reason why a drop in resting heart rate would be an advantage is not stated.

(ii) A reason why this adaptation is an advantage is not given. No marks are awarded for oxygen transport if referring to the respiratory system.

Total: 0 marks



Long-term training effects are the way the body adapts to training.

Question 11 (a)

This question concerned a badminton player returning to training after a period of ill health. Candidates were provided with an image showing connections between performance, health, exercise and fitness. Candidates were asked to explain, using the image, why the player's badminton performance will be lower after a long break from playing.

Most candidates linked to the image correctly, explaining that due to his ill health the player will have been unable to exercise, and that without exercise his fitness would drop. Some candidates expanded on this to gain all three marks, giving a specific impact, for example performance drops because the player would no longer be able to work at such a high intensity, due to loss of fitness, or that they would therefore be quicker to fatigue.

11 George is returning to badminton training after recovering from a long illness.

Figure 8 shows a relationship between performance, health, exercise and fitness.

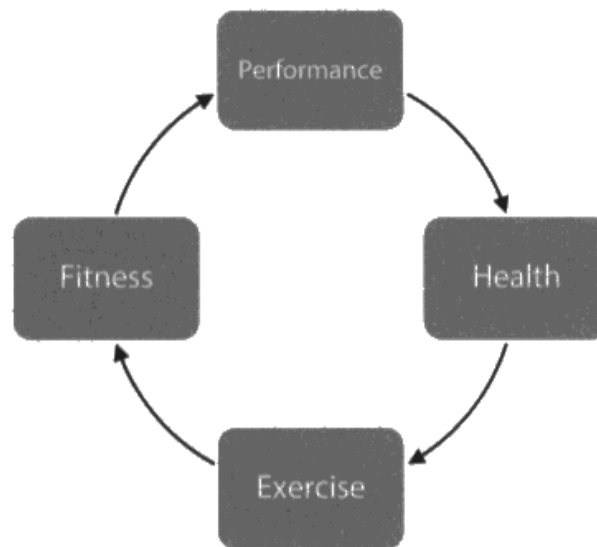


Figure 8

(a) Justify, using Figure 8, why George's badminton performance will be lower after his long break from playing.

(3)

He will have experienced reversibility because he hasn't been training, so his performance will be worse as his muscles will be weaker and ~~his~~ so will his fitness and health will be worse. His physical and emotional health will be worse, due to not being able to play.



This response receives all available marks. The points made are linked and justified as to why badminton performance would be lower.

The response gains marks for:

- experiencing reversibility
- because he has not been training
- so his fitness will be worse

Total: 3 marks

(a) Justify, using **Figure 8**, why George's badminton performance will be lower after his long break from playing.

(3)

Due to his ^{illness} ~~health~~, his ~~health~~ has decreased resulting in a lack of exercise. doing less exercise results in a drop in fitness. A drop in fitness results in a worse performance.



This response gains two marks:

- lack of exercise
- leading to a drop in fitness

To gain the third mark there needs to be further justification as to why performance would drop. For example, due to the lack of fitness he would fatigue sooner, or he would be unable to work at the high intensity to which he used to work.

Total: 2 marks



To gain all three marks you need to make three points not already stated in the question.

Question 11 (b)

Candidates were asked why the performer would retest his fitness before he starts training again after a long period of illness. Because the context was returning to training, reasoning could have been to see how much fitness they lost over the period of illness, so they could adapt their training to the lower fitness levels.

Several candidates ignored the context, providing general reasons for fitness testing.

Correct responses did focus on the loss of fitness and the need to set new goals or to adjust previous training.

It is important that responses to 'explain' questions show development rather than two disparate points being made. For example, George tests to provide baseline data or to check his programme is working. Baseline data could be linked to motivation, track progress, or to set goals, but would not be used as a check on the relevance of the programme. This would happen with subsequent testing.

(b) Explain **one** reason why George retests his fitness **before** he starts training again after his illness.

(2)

TO identify ~~where~~^{where} he is weaker than previous times and to show what his fitness levels are now like compared to before his break, to allow him to know what areas to focus on improving when he starts training again.



This response gains marks for:

- to identify where he is weaker than in previous times (ie before illness)
- to allow him to know what areas he needs to focus on

A reason is provided that is in line with the question context. There is a linked expansion of this reason.

Total: 2 marks



Try to think about the context of the question: this question is not just asking why you should fitness test, but why someone would test after a long period of illness.

(b) Explain **one** reason why George retests his fitness **before** he starts training again after his illness.

(2)

So he can compare his test results and ~~see~~ measure the progress he's lost. This links to measurability.



This response gains a mark for:

- comparing his test results and measure the progress he has lost

This provides a reason for testing after illness, but there is no expansion, eg to see if he needs to adjust his programme or to set new goals.

Total: 1 mark

Question 11 (c)(i)

Candidates were told that two fitness tests of cardiovascular fitness were the Cooper 12-minute run and the Cooper 12-minute swim. Candidates were asked to name another fitness test for cardiovascular fitness.

The remaining test from the specification is the Harvard Step Test and therefore should have been the response given. However, alternative named tests were credited, for example the multi-stage fitness test and the Forestry step test.

Table 6 shows two fitness tests George carries out.

Fitness test
Cooper 12-minute run
Cooper 12-minute swim

Table 6

- (c) (i) State **one other** fitness test George could use to test his **cardiovascular fitness**.

Harvard Step Test



This response identifies the Harvard Step test correctly, as an alternative test for cardiovascular fitness.

Total: 1 mark

Table 6 shows two fitness tests George carries out.

Fitness test
Cooper 12-minute run
Cooper 12-minute swim

Table 6

- (c) (i) State **one other** fitness test George could use to test his **cardiovascular fitness**.

30meter sprint



This response does not gain credit. Although a recognised test, it is a speed test rather than a test of CV fitness.

Total: 0 marks

Question 11 (c)(ii)

This question asked candidates to state which of the fitness tests, Cooper 12-minute run or Cooper 12-minute swim would be less appropriate to measure badminton fitness.

If candidates incorrectly selected the Cooper 12-minute run, they did not gain marks.

The required response was the Cooper 12-minute swim. Possible reasons for this related to the:

- difference in environment for badminton and swimming
- possible impact of being a poor swimmer on test results
- test would be neither specific nor valid for his activity

(ii) Explain which **one** of the fitness tests in **Table 6** is **less** appropriate to measure George's badminton fitness.

(3)

The 12 minute cooper swim is not appropriate for George because he needs cardiovascular fitness outside of water and the 12 minute cooper swim tests cardiovascular fitness in water. Although it is the correct component of fitness, it is not specific to his sport.



ResultsPlus
Examiner Comments

Marks are given for:

- correct choice of most inappropriate test (swim test)
- knowledge of the test (water-based test)
- reasoning why this makes the test least valid (not specific)

Total: 3 marks

- (ii) Explain which **one** of the fitness tests in **Table 6** is **less** appropriate to measure George's badminton fitness.

(3)

The 12-minute Cooper run is less appropriate as badminton requires muscular endurance rather than cardiovascular fitness as he is not needed to run long distances but needs to produce a strong force when hitting the shuttlecock.



ResultsPlus
Examiner Comments

The response does not gain any marks because an incorrect test selection is made.

Total: 0 marks

Question 11 (d)

The final part of the question asked candidates to describe the test protocol for the Cooper 12-minute run.

There were three marks available for this question. To gain all three marks candidates needed to provide clear descriptions that would allow replication of the important parts of the test, for example:

- measure an area to run around
- start to run and count the number of laps completed
- multiply the laps completed by the distance of each lap

(d) Describe the test protocol for the Cooper 12-minute run.

(3)

Set 4 cones on each corner of a square that is around 20m long each side. Then have performers run around the cones as fast as they can for 12 minutes. They should count how many times they completed the square then multiply the length of the whole square (in this case 80m) by how many times they completed the square to find their total distance. (Total for Question 11 = 12 marks)



This response provides sufficient detail to attempt replication of the test.

Marks are awarded for any three of the following points:

- having a 'measured' area to run around (20m square)
- run for 12 minutes
- count the number of laps
- multiply the number of laps by the size of the square

Total: 3 marks

(d) Describe the test protocol for the Cooper 12-minute run.

(3)

You go for a 12-minute run and see how far you can run in 12 minutes.



This response gains one mark for knowledge that the individual should run for 12 minutes. No further information about how to conduct the test is given in the response.

Total: 1 mark



When asked to describe a test protocol imagine you are instructing someone how to complete the test: write down all the steps they would need to follow.

Question 12 (a)(b)

The context for this question was fitness testing of some basketball players.

In part (a) candidates needed to identify the components of fitness tested by the grip dynamometer and the one-minute press-up test.

In part (b) candidates needed to link the component being tested to its use in a game of basketball.

Many candidates identified correctly the components being tested although not all went on to give examples of use within a game of basketball. It is important when asked for an example that this is stated clearly and could not be attributed to some other component of fitness. This happened most frequently with muscular endurance, where the example was often linked more to cardiovascular endurance rather than muscular. Suitable examples for muscular endurance would have been repetitive passes or running throughout the game.

12 A basketball coach carries out some fitness tests.

Complete **Table 7** by:

- (a) Stating the name of the component of fitness being tested.
- (b) Stating how the component of fitness is used in basketball.

Fitness test	(a) Component of fitness	(b) How component of fitness is used in basketball
Grip dynamometer	MUSCULAR STRENGTH (1)	When shooting from a long range so you would have enough muscular strength to score or to get near. (1)
One-minute press-up	MUSCULAR ENDURANCE (1)	repeatedly shooting because you are using the same muscles over and over again. (1)

Table 7



This response gains all available marks:

- (a) correct identification of the two components of fitness.
- (b) appropriate examples of the use of the component of fitness being tested.

The examples are clear and would require the stated component of fitness, strength for the long shot and muscular endurance for repeatedly shooting.

Total: 4 marks

12 A basketball coach carries out some fitness tests.

Complete **Table 7** by:

(a) Stating the name of the component of fitness being tested.

(b) Stating how the component of fitness is used in basketball.

Fitness test	(a) Component of fitness	(b) How component of fitness is used in basketball
Grip dynamometer	Muscular Strength (1)	Explosive movement in the legs when jumping for a lay up. (1)
One-minute press-up	Muscular Endurance (1)	Endurance in the legs to continue through the game at a good level. (1)

Table 7



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Examiner Comments

This response gains marks in (a) for identifying correctly:

- strength
- muscular endurance

However, zero marks are awarded for the examples in (b).

- The example of explosive movement when jumping would be better-linked to power than strength.
- Although "continue through the game" indicates a long time period to differentiate between CV endurance and muscular endurance, the example needs to include what the leg muscles might be doing, eg running backwards and forwards up the court throughout the game. A clearer example would have related to arm muscles.

Total: 2 marks



When asked for examples of the use of components of fitness, make sure you choose examples that are clear and clearly involve the use of the required component of fitness.

Question 12 (c)(i)

Candidates were provided with fitness test ratings for four different basketball players and asked to identify the player with the highest rating for power.

To answer the question successfully, candidates needed to know that the vertical jump test tested power and then select the player with the highest rating for the test. Most candidates identified Player 2 accurately.

Question 12 (c)(ii)

This question asked candidates to justify, using the data in the table, why Player 3 would be selected for the basketball team.

Overall, Player 3 had the best test ratings. Candidates who appreciated this gained both marks for this question, identifying the ratings were all very good or excellent, making them the best all-rounder in terms of fitness and the only player not to have a significant area of weakness.

No marks were awarded for individual justifications linked to specific ratings, because this would not be the reason for the choice. For example, excellent flexibility: Player 1 also had excellent flexibility. In fact, each player scored the same or higher than Player 3 on at least one test, thus an holistic view of the data was required.

(ii) Justify, using the ratings in **Table 8**, why the coach would select Player 3 for the basketball team.

(2)

Player 3 in comparison to the rest of the players, has very good or excellent ratings for all measured components of fitness, whereas all of the others have a poor category or average. Player 3's very good power, speed and muscular endurance with excellent flexibility, allowing a very good all rounded basketball player with no shown flaws.

(Total for Question 12 = 7 marks)



This response receives both available marks.

The data is used to provide the reason for selection and this was expanded on to confirm why this player would be selected out of the four players:

- very good or excellent ratings for all measured components, unlike the others
- meaning Player 3 has very good power, speed, muscular endurance and excellent flexibility/no shown flaws

Total: 2 marks

(ii) Justify, using the ratings in **Table 8**, why the coach would select Player 3 for the basketball team.

(2)

The coach would select player 3 for the basketball team because he scored excellent or very good on all his there fitness testing. Player 3 is quick and can jump high for basket ball.



This response receives one mark for use of the data.

This point is not suitably expanded for the second mark.

No marks are awarded for jumping high or being quick because this applied to other players as well.

Total: 1 mark

Question 13

The topic of this question was performance-enhancing drugs, in particular, human growth hormone. Candidates were asked to explain one advantage and one disadvantage of growth hormones for a 100m sprinter competing in a major competition.

Any reference to increased length of bones was not credited because this did not fit the question context, or indeed the specification. Similarly, any disadvantage linked to increased weight did not gain marks.

Human growth hormone can be used by elite performers to increase muscle mass, which can lead to the performer running faster. As the hormone does not increase power any reference to the use of power was considered incorrect.

The disadvantage could have related to their side effects or the fact that their use is against the laws/rules of the sport.

13 Some athletes take performance-enhancing drugs (PEDs) to increase their performance.

Explain **one advantage** and **one disadvantage** of growth hormones (GH) for a **100 m sprinter** competing in a major competition.

(i) Advantage

(2)

Growth hormones can increase muscular strength in the affected area, which would make the runner faster as his legs would be stronger and able to exert more force compared to other runners, making him more likely to win.

(ii) Disadvantage

(2)

If the athlete is tested for PED's, he could be caught using growth hormones or an increased level, meaning they would be disqualified and in trouble with the sport.



This response receives all available marks.

An advantage and then application of this advantage is provided in part (i) and a disadvantage and its application to the performer is provided in part (ii).

(i) This part of the response gains marks for:

- the advantage of increasing muscle strength
- the applied expansion that this will make the runner faster

(ii) This part of the response gains marks for:

- the disadvantage being he could be caught taking the PEDs if tested
- the applied expansion that this could result in disqualification

Total: 4 marks

13 Some athletes take performance-enhancing drugs (PEDs) to increase their performance.

Explain **one advantage** and **one disadvantage** of growth hormones (GH) for a **100 m sprinter** competing in a major competition.

(i) Advantage

(2)

they may have longer legs meaning that they can take larger strides during the race which means they could finish the race at a better time

(ii) Disadvantage

(2)

the growth may put on extra body mass which could slow them down during the race meaning they may not win the race.



ResultsPlus
Examiner Comments

Part (i) of this response receives zero marks because the stated advantage is related to skeletal size. Without an appropriate advantage it is not possible to gain an applied expansion point because it is being applied incorrectly.

Part (ii) of this response gains zero marks because the stated disadvantage links to increased body mass rather than potential health risks or the implications of drugs testing.

Total: 0 marks

Question 14

The scenario for this extended writing question was a footballer. Important information to guide responses is given in the context:

- The football player requires high levels of strength, cardiovascular fitness and agility for her playing position.
- The football player trains regularly using a mix of Fartlek training, circuit training and weight training.

The question asked candidates to evaluate the importance of three different methods of training in improving football performance.

This question assesses the specification content on the use of different training methods for specific components of fitness, part of Topic 3.

Based on the specification content, candidate responses needed to focus on the three training methods given in the question and their suitability to improve the three components of fitness also given in the question.

Credit was given for a broad range of answers, with the complete mark range covered.

Generally, knowledge of the three training methods was well known, good descriptions of the methods were given, and these were often very detailed. Knowledge of the key characteristics of the training methods were credited under AO1. For example, Fartlek involves running over different terrains at different intensities and is used to improve CV fitness. It is worth noting that despite the level of detail provided, if a response is purely factual and only covers AO1, the maximum mark that can be achieved is Level 1, 3 marks.

To achieve higher levels, and therefore more marks, candidates would need to demonstrate application of their knowledge and evaluation. For example, those that linked the changing intensity of Fartlek to the changing intensities experienced in a game when a player sprints to get to the football or is jogging back into position, demonstrates clear application of knowledge. Similarly, if a candidate determined that Fartlek was not suitable due to the use of varied terrains because this meant it was not specific to football where the game was always played on the same type of pitch, they demonstrated their ability to make a judgement based on the knowledge they presented.

To achieve well on these types of questions it was essential that relevant facts were stated, applied and then evaluated. In the context of this question, a relevant fact could be that weight training uses free weights or resistance machines (AO1), and by using high weight with low reps she could increase her strength, allowing her to kick the ball harder or prevent being pushed off the ball (AO2). As strength is a required component of fitness for her position, and as the other two methods do not effectively improve strength, it makes weight training essential because it specifically targets strength (AO3).

Overall, candidates presented well-structured responses.

Fartlek training is training at various intensity in various terrains. It trains cardiovascular fitness which is the ability to perform for long periods of time, endurance, with minimum increase of heart rate. Cardiovascular fitness is key in football as the matches are long and require large amounts of running and movement over a large area. Fartlek training involves various terrains this is not specific to football as the terrains stay constant, there is no inclines or declines. The various intensities are specific as during a match she may be at high and low intensities. Having high levels of cardiovascular fitness will improve performance.

Weight training is the lifting of weights at increasing intensities. It trains and improves strength by increasing muscular hypertrophy. Strength is required in football when tackling or passing the ball as it must cover large

distances with speed and power. Improved strength provides improved performance and Olivia an advantage over her opposition.*

Circuit training is the rotation of multiple exercises for certain periods of time with rests inbetween. It trains Agility which is the ability to change direction at speed with accuracy and is key in football. When moving around a player to prevent being tackled.

Circuit training is not specific to football as you do not have breaks between performance in football. However you can tailor the exercises so they are sport specific and adjust intensity.

~~Overall~~ * however lifting weights is not sport specific as most ^{strength} power in football comes from the legs and not arms. Also the movement of lifting weights does not occur in football.

Overall all training methods improve the component of fitness required and improve fitness and performance but aren't sport specific.



This response achieves Level 3.

The response addresses all three of the required assessment objectives.

It is well-structured, key information is provided about each of the training methods, this knowledge is applied to the question context and then the impact on the player is discussed.

This approach is repeated for each of the training methods. Eg:

- Fartlek training increases CV fitness
- CV fitness is key in football due to the amount of ground they must cover in a game
- although CV fitness is key, the method of training is not specific to football because the terrain played on remains constant

Overall, this response demonstrates accurate knowledge and understanding of the relevant specification topic and clear application to the question context. The points they raise provide evidence to support the claims about the value of each method of training.

Level 3

Total: 9 marks



Remember to apply any knowledge you have to the question context.

Give examples that relate to the question, in this case football, not another sport or a different situation.

Fartlek training is where you do a run over different terrains this helps your cardiovascular endurance and helps you create different surfaces, this is important to improving Olivia's fitness for football as it trains cardiovascular endurance and this will increase the cardiovascular endurance however I don't think this is appropriate as as a footballer you don't play on different terrains therefore fartlek is a little bit pointless and if she wants to train her cardiovascular fitness she should use continuous training.

Circuit training is where you do different things, such as pull ups or sit ups at different stations, this trains ^{muscle} endurance and heart training as you are also doing different things at each part however this isn't the most effective way to train agility it can work as long as the circuits are suited to agility therefore this is quite important to education.

Weight training is where you use weights to gain muscle and this builds strength. Therefore this would be important for Olivia as she requires high levels of strength for her position and this means that weight training is important for her training.



ResultsPlus
Examiner Comments

This response is placed in Level 2, addressing two of the required assessment objectives.

There is an appropriate structure to the response, referencing each method of training in turn. Whilst all three training methods are identified, knowledge of them is not extensive.

Several relevant points have been made: for example, the varied terrains for Fartlek and its use in improving CV fitness, and that circuit training involves the use of specific stations.

This knowledge is not applied to the question context: for example, there is no reference to how the circuit training could be adapted to develop agility or the value of high CV fitness during the game.

However, there is attempted evaluation: for example, the inappropriateness of the changing terrain within Fartlek or the value of circuit training, with appropriate stations, to improve agility.

Overall, this response demonstrates mostly accurate knowledge and understanding of the relevant specification topic. There is limited application, but there are attempts at drawing a conclusion, with some support from the knowledge presented within the response.

Level 2

Total: 5 marks

Weight training is essential for Olivia if she is trying to improve her overall strength in football.

This is good as weight training consists of targeting your type 2 muscle fibres so your legs undergo hypertrophy to occur overtime. Strength is key for Olivia in her performance as this excels her chances of gaining and retaining possession.

Adding on to this, cardiovascular fitness is also key for Olivia throughout football games. To improve this, football training is good however interval could improve this as this is constant fitness on your CV system. This a better CV system would benefit Olivia's overall performance as she can maintain fitness throughout her game resistant to fatigue, resulting in optimum performance.

Lastly, it is important for Olivia to have good agility. To improve this, circuit training would not target the correct muscles. However, plyometrics

could benefit your agility as you are targeting your type 2x muscle fibres. Due to this, your agility will improve which can be tested by completing various agility tests. Agility would improve Olivia's performance as you are more comfortable and reliable on the ball. Also, you can make sharp turns gaining the advantage on your opponents.

Overall, Olivia has got a decent training programme, however she could replace circuit training for plyometrics to ensure better agility.



ResultsPlus
Examiner Comments

This response achieves Level 1.

Statements about the value of the methods are made although not supported. For example, strength increases the chance of gaining possession of the ball but there is no indication of why or how strength is used to achieve this.

The response demonstrates isolated elements of knowledge linked to the required area of the specification. For example, Fartlek helps improve CV fitness. The impact on performance of a better level of cardiovascular fitness is also stated.

Level 1

Total: 3 marks



Do not forget to **apply** your knowledge. Say exactly how strength would be used in football.

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, eg muscles contract and relax rather than flex and extend (Q04)
- If asked for examples, make them clear, eg 'strength to get the distance required for a long pass' rather than just 'strength for passing' (Q12(b))
- Use the command words and number of marks available to help you decide the depth required in your response, eg a two-mark 'explain' question does not need the same level of development as a three or four mark 'explain' question
- Use the writing space as a guide: it should be possible fully to address the question in less space than is provided
- Make sure you use any additional information given to you in the question: it is there to help (Q11a, Q12cii)

Grade boundaries

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

<https://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html>

