

Examiners' Report
June 2015

GCSE Physical Education 5PE01 01

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk.

Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.



Giving you insight to inform next steps

ResultsPlus is Pearson's free online service giving instant and detailed analysis of your students' exam results.

- See students' scores for every exam question.
- Understand how your students' performance compares with class and national averages.
- Identify potential topics, skills and types of question where students may need to develop their learning further.

For more information on ResultsPlus, or to log in, visit www.edexcel.com/resultsplus. Your exams officer will be able to set up your ResultsPlus account in minutes via Edexcel Online.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk.

June 2015

Publications Code UG042349

All the material in this publication is copyright
© Pearson Education Ltd 2015

Introduction

To be successful on 5PE01 candidates need to recall and apply their knowledge to a range of question scenarios. They will need to demonstrate understanding and higher order skills of analysis and evaluation. There continues to be a need for students to develop their ideas, following a point through in greater depth for *describe and explain* questions rather than just providing a more generalised approach to their responses.

Questions are structured to elicit different levels of response from candidates: this is indicated through the number of marks available and the command words used in the question. For example, some recall questions will ask students to name or identify, whilst other questions will ask for descriptions, explanations or discussions. This format of questioning allows for greater differentiation between candidates, and examiners are better able to assess the depth of candidate knowledge and understanding.

QUESTION 1

The majority of the multiple choice questions (MCQs) were designed to be accessible to candidates: this series proved no different. However, some questions were more challenging than others, for example Q1 (e) and Q1 (f).

Question Q1 (e) asked candidates to identify an upper training threshold for a 20-year-old. The options to choose from were 90%, 80%, 70% and 60%. Candidates were expected to use their knowledge of training thresholds to answer this question. The upper anaerobic training threshold is 100% of maximum heart rate (220 - age) the upper aerobic training threshold is 80% of maximum heart rate. 100% was not given as an option in the question, but 80% was, therefore by a process of elimination candidates were expected to choose this option, and the majority did.

Q1 (f) asked candidates which category of performance-enhancing drug would be used by an Olympic weightlifter to increase the amount of weight they could lift. In the absence of anabolic steroids from the list of options, the majority of students correctly identified peptide hormones. A popular incorrect response was narcotic analgesics, although these are linked to pain relief, rather than increased strength. The role of diuretics was better known in Q1(g).

Question 2 (a)

This question asked candidates to explain why an increase in serotonin was considered a health benefit.

The majority of candidates achieved at least one mark for this question, in most cases for identifying that serotonin was responsible for providing a 'feel good factor'. Those that achieved the second available mark tended to do so through linking serotonin to mental health, eg reducing stress, combatting depression.

The mark scheme also allowed candidates to access marks by linking to social or physical health. For example, because of the 'feel good factor' exercise was repeated, increasing the opportunity to engage with friends and thereby increase social health. Some candidates did gain credit in this way, although relatively few.

2 Participation in physical activity can bring about many health benefits.

Serotonin levels increase when we take part in physical activity.

(a) Briefly explain why an increase in serotonin is a health benefit.

(2)

Serotonin helps improve mental health - Serotonin makes us feel good, happy.



The candidate identifies clearly that serotonin provides a mental health benefit because it makes people feel good.

Total = 2 marks

2 Participation in physical activity can bring about many health benefits.

Serotonin levels increase when we take part in physical activity.

(a) Briefly explain why an increase in serotonin is a health benefit.

(2)

Serotonin is called the "feel good" factor as it makes us relieve stress. This can help prevent stress-related illnesses and control our blood pressure.



In this example, the candidate again identifies that serotonin provides the 'feel good factor'. This is a health benefit because it can help to relieve stress - it gains 2 marks for the response.

Total = 2 marks

Question 2 (b) (i)

This was a very accessible question with the vast majority of candidates achieving one mark for identifying correctly that making new friends is a 'social' benefit of exercise.

Question 2 (b) (ii)

Candidates were asked to explain how joining a rugby club could increase self-esteem.

Candidates' responses reflected positive views towards disability sports with little in the way of stereotyping and a number showing an awareness of the impact of sport on all types of performers. The majority of candidates achieved at least 1 mark for this question, whilst a significant proportion of candidates achieved 2 marks. Relatively few candidates were able to access the third mark, often due to repeating the terminology in the question, self-esteem, rather than explaining how it was increased.

Reference was also made to serotonin, but whilst it might make someone feel good this would not necessarily mean an increase in self-esteem. As an 'explain' question, candidates were expected to take one idea and expand on it. For example, they might have said that by playing rugby 'Joe' would be increasing his fitness, which would give a sense of achievement - meaning he would feel better about himself.

Therefore, those candidates that looked at more than one perspective (physical and social) without explanation were unable to achieve more than 1 mark, eg it would allow him to increase his fitness and make new friends. Increased fitness and making friends were the most popular correct responses.

a disability. By Joe participating in a in a rugby club will lead him have to work as a team, making him feel like he is a part of something and he make new friends. This will make Joe feel much better about himself. -



In this example, the candidate achieves maximum marks.

The response makes reference to the need to work in teams, which makes Joe feel that he is part of something (inclusive), there is further reference to making new friends, which is a repeated point, but the response concludes by stating the consequences of this, ie this makes him feel much better about himself.

Total = 3 marks

(ii) Explain how starting to play rugby at a club could increase Joe's self-esteem.

(3)

This could increase his self-esteem by helping make new friends. But also help him get better at rugby. It could help him relieve stress.



In this example the candidate achieves only 1 mark.

They give two reasons why self esteem might increase. Either of these would be worthy of credit but in order fully to address the question the candidate needs to explain one of these points in more detail. For example, Joe felt a sense of achievement as he increased his skill in the sport, resulting in him feeling better about himself.

Total = 1 mark

Question 2 (c) (i)

Q2 (c) gave candidates three statements describing three different influences on Joe and his friends in relation to playing rugby.

Candidates were asked to identify the key influence based on the description in each statement. The majority of candidates were able to identify accurately the relevant key influence, with most of the candidates correctly identifying all three. Of the three key influences Q2 (c)(ii), image/media was marginally less well-known.

Question 3 (a)

This question required candidates to identify one agency involved in providing opportunity to increase participation in physical activity.

A large majority of candidates was able to do this, citing Sport England, Youth Sport Trust, national governing bodies (NGBs), or a named NGB - all were popular responses.

Where named examples of NGBs were given, these tended to be the Football Association (FA) or the Rugby Football Union (RFU). Of the incorrect responses, often the names of initiatives were given, rather than the agencies responsible, for example, Sainsbury's Active Kids, or older initiatives such as PESSCL.

- 3 (a) There are many different initiatives in sport that are designed to increase participation in physical activity.

Identify **one** agency that helps to provide opportunities to increase participation in physical activity.

(1)

YOUTH Sport England



Sport England was a popular correct response.
Total = 1 mark

- 3 (a) There are many different initiatives in sport that are designed to increase participation in physical activity.

Identify **one** agency that helps to provide opportunities to increase participation in physical activity.

(1)

Football association (FA)



Credit is given for naming specific national governing bodies.

Total = 1 mark

Question 3 (b)

One of the stated requirements in the specification is to describe the common purposes of initiatives, one of which is to increase participation to improve health, with a focus on priority groups.

This question asked candidates to describe how such an initiative to increase participation could help improve the health of priority groups. Generally, candidates experienced difficulty with this question, possibly due to a lack of understanding of physical health, giving examples relating to fitness. As a result, it became difficult for candidates to describe how health might be improved. Other incorrect responses linked initiatives to keeping young people off the streets by giving them something constructive to do.

Correct responses of examples of priority groups were given by some candidates, eg children, or other age related groups. Common correct responses in relation to health linked with weight loss if overweight. Occasionally, this was extended further, to include a reduced chance of obesity/diabetes.

diseases. If the participation of people over 50's is increased
they for instance if they play tennis they will have less
risk chance of osteoporosis as it is a weight bearing game. Participating
means less likely to become obese.



The O50s has been identified as a priority group and two potential health benefits of this have been identified: less risk of osteoporosis and less risk of obesity.

Credit is given for correct identification of a priority group and for one example of poor health. Either example would have been credited, however they need to be linked, to gain maximum marks. For example, rather than reference obesity, the response could have stated that playing tennis will increase bone density, reducing the risk of osteoporosis in later life.

Total = 2 marks

(b) Some initiatives focus on priority groups.

Describe how an initiative to increase participation could improve the physical health of priority groups.

(3)

people will be motivated to do
physical activity this could make
them loose weight and look good it
could also reduce injuries or illness
by making stronger bones and lowering
cholesterol to prevent heart attacks.



No reference is made to priority groups, but on the last two lines of the response the candidate states that lowering cholesterol (through physical activity) can help prevent heart attacks.

2 marks are given, the first for the drop in cholesterol levels and the second for the consequence of this, ie reduced chance of a heart attack.

Had the candidate identified O50/O65s as the priority group, maximum marks would have been achieved.

Total = 2 marks

(b) Some initiatives focus on priority groups.

Describe how an initiative to increase participation could improve the physical health of priority groups.

(3)

By bringing the resources to the priority group they get more involved, regularly taking part in the activity which could have an effect on them joining clubs which improves their health as they are improving cardio vascular fitness reducing risks of high cholesterol and coronary heart disease in the future.



Although this response does not name a specific priority group, the candidate does identify that by focussing on a priority group and giving increased access to resources, such groups are more likely to participate.

The response then continues to describe how this will impact positively on their health, ie a reduced risk of high cholesterol and therefore a reduced risk of coronary heart disease. This response gains the maximum marks available.

Total = 3 marks

Question 3 (c)

Increasing participation and retaining people in sport were written into the question, therefore discounting them as possible answers. The question asked for a description of another common purpose. Despite this, many candidates still referenced increasing participation or retaining people in sport through a variety of roles.

The missing common purpose of initiatives was to create opportunities for talented performers to achieve success. This common purpose was not well known by candidates, with the majority not receiving credit for this question. Of those familiar with this common purpose approximately half were able to extend their response to gain both available marks.

Incorrect responses were linked to diet, education, and healthy eating. Some candidates referred to the start, stay, succeed initiative: provided the 'succeed' aspect of the initiative were appropriately explained, credit was given.

(c) Some initiatives are developed to increase participation by providing opportunities to become or remain involved in physical activity.

Describe another common purpose of initiatives.

(2)

Another common purpose of initiatives is providing opportunities for talented or gifted performers to become elite. This means providing them with better facilities, better coaching, and more competitions.



This response gains both available marks.

The common purpose of providing opportunity for talented performers to become elite is given and a description of how this might be achieved through providing them with *better facilities, better coaching*.

Total = 2 marks

- (c) Some initiatives are developed to increase participation by providing opportunities to become or remain involved in physical activity.

Describe another common purpose of initiatives.

(2)

Another purpose is to get people who are already playing into elite stages. They will want to do this so that the participants can play national or regional or even take part in international events for their country.



Reference is made to reaching the elite stage so that participants can play at international level for their country.

Total = 2 marks

Question 4 (a) (i)

Candidates made good use of the image for this part of the question.

Most candidates achieved one mark for indicating correctly that power was used to leave the beam. Few candidates, however, extended their explanation indicating that the height gave the required time to perform the move, instead, often giving a definition of power.

Where candidates did not score any marks, this was often due to a blank response, not applying their knowledge by simply giving a definition, or, in a few cases, by not linking to the image, ie not referencing the jump or move.

- 4 Figure 3 shows a gymnast during her routine on the balance beam.



Figure 3

- (a) Briefly explain how the gymnast has used power **and** coordination to achieve the position shown in **Figure 3**.

- (i) Power

(2)

She has used power to be able to jump off the pommel point and high into the air. This means that she will have a better quality performance / sequence as she will be able to spend more time in the air and off the ground.



The candidate links power with leaving the beam and increased quality of performance due to the amount of time this allows in the air.

Total = 2 marks

(a) Briefly explain how the gymnast has used power **and** coordination to achieve the position shown in **Figure 3**.

(i) Power

She has used ~~the~~ power to ^{leap into} ~~generate~~ the air ⁽²⁾ ~~time~~
so that she ~~can~~ has enough time to get into position



This response also gains both available marks. Credit is given for power being used to leap into the air and the extension so that the performer has enough time to get into position.

Total = 2 marks

Question 4 (a) (ii)

Candidates appeared less able to explain the role of coordination compared with power, although a similar percentage of candidates achieved both marks.

Many candidates responded by providing a definition of coordination, not applying their knowledge to the question, or misreading the question, discussing coordination in landing rather than in relation to the image.

Where both marks were achieved, this was often due to reference to the aesthetic nature of the move, or the control with which it needed executing.

(ii) Coordination

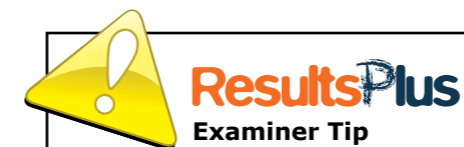
Co-ordination is the ability to use two or ⁽²⁾
more body parts at the same time, she has
lifted her leg one way and her arms the
opposite to achieve the aesthetically pleasing position.



The response starts with a definition of coordination, which in itself does not gain credit. However, because it states that it is the ability to move two or more body parts at the same time and then goes to link this to the image, there is sufficient information to gain the first marking point.

The second point is achieved for referencing an aesthetically pleasing position, ie the movement must have been completed well.

Total = 2 marks



Unless a question asks specifically for a definition, credit is unlikely to be given only for a definition of a term. However, definitions can be very useful to remind you what needs to be discussed when applying your knowledge.

In this example the definition mentions two or more body parts, so the applied example talks about legs and arms.

Co-ordination is the ability to use 2 or more body parts at once with control. The gymnast would need co-ordination to be able to move her legs and arms at the same time, into that position so it looks tidy and concise.



This response also gains both available marks.

Credit is given for movement of the *legs and arms at the same time* and doing so with *control*, so the move is *tidy* and *concise*.

Whilst the definition was not credited, its inclusion helped because *tidy* and *concise* could be linked to *control*.

Total = 2 marks

Question 4 (b)

This question was designed to be demanding, testing a higher order skill. It required candidates to think about the definition of the component of skill-related fitness and to consider when it might be applicable to a gymnast. The use of the image in the question was designed to aid this thought process, ie the gymnast is shown high above the beam.

Previous questions on reaction time have focussed on recall or more obvious applications and would have been of less demand, eg its use at the start of a 100m race. Those candidates who understood that reaction time related to the ability to make decisions quickly in response to a stimulus, were able to provide an appropriate example of when the gymnast may need to use reaction time in the routine.

(b) Give an example of when the gymnast shown in **Figure 3** would need a good reaction time in the routine.

(1)

They would need to know the right time to jump ~~and~~



Incorrect responses often referenced timing of movement linking to technique or coordination, rather than quick decision-making.

Total = 0 marks

(b) Give an example of when the gymnast shown in **Figure 3** would need a good reaction time in the routine.

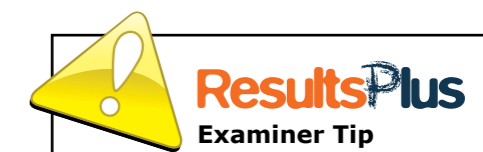
(1)

if her jump went wrong she would need to change position quickly to prevent injury



Correct responses focussed on the need to do something quickly as a result of an error.

Total = 1 mark



Make sure your example links to the performer given in the question, in this case a gymnast.

Question 4 (c)

This was designed to be an accessible question and the majority of candidates gained both available marks.

Where credit was not given, this tended to be because candidates did not apply their knowledge to the question. They gave a general risk linked to participation in physical activity, rather than one specific to gymnastics, eg removal of jewellery, tying hair back, not eating, checking equipment.

However, in the main, responses did link to the question context. Popular correct responses referenced falling from the beam and the use of crash mats to soften the blow.

(c) Participation in physical activity involves some risk of injury.

Identify a risk associated with gymnastics **and** how to reduce this risk.

(2)

Risk

hands slip on the parallel bars making you fall.

How to reduce risk

make sure there is plenty of chalk on hands for grip.

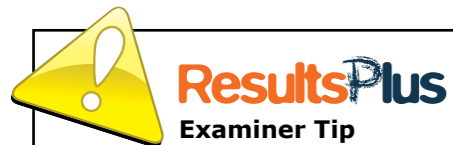


ResultsPlus
Examiners Comments

Credit is given for correct identification of a possible risk in gymnastics: hand slipping on the parallel bars resulting in a fall.

Credit is also given for linking an appropriate corrective measure to the stated risk: use of chalk on the hands to increase grip.

Total = 2 marks



ResultsPlus
Examiners Tip

If a context is given in the question make sure you use this in your answer. In this question, the risk should relate to gymnastics, rather than a general risk for any physical activity.

(c) Participation in physical activity involves some risk of injury.

Identify a risk associated with gymnastics **and** how to reduce this risk.

(2)

Risk

you can fell and damage your body

How to reduce risk

they put mats at the bottom so if you fall down it won't hurt you as much



A risk in gymnastics is identified accurately as a fall and the risk reduction measure of using mats to break the fall, is given. The candidate response accesses both available marks for this question.

Total = 2 marks

Question 5 (a)

The majority of candidates achieved one of the two available marks for this question.

Candidates were asked to explain why a quicker recovery rate would be an advantage in cross country running. Many candidates understood that a quicker recovery rate was indicative of fitness, therefore if someone was 'fitter' they would be able to perform well in cross country/meet the demands of the cross country race.

Those that went on to achieve two marks expanded their explanation, giving specific examples of how this would be of benefit, eg by recovering quickly after an intense section of the course, so that pace could be restored to a higher level sooner.

Other alternatives to being fitter focussed on improved efficiency of the cardiovascular system to transport oxygen to working muscles. This was an equally valid approach - expansion of this point tended to be in relation to running faster for longer.

Credit was not given for simply saying running for longer because this did not link specifically to cross country. The length of the race is predetermined, therefore further qualification was required, eg getting further around the course before they needed to slow down. Where candidates did not gain marks, this was often due to discussing the impact after the race, rather than during, as stated in the question.

5 Ben and Jake are cross country runners. They both take part in a series of fitness tests.

After completing the Harvard Step Test, Ben recovers to his resting heart rate quicker than Jake.

(a) Briefly explain why a quicker recovery rate would be an advantage during a cross country race. (2)

It would mean that he would be able to run for longer at a higher intensity for longer as his heart can supply more blood with oxygen to the working muscles to meet demand each beat.



This response also gained 2 marks.

The candidate explains that the quicker recovery rate would mean that the runners could work at a higher intensity for longer, due to the increased efficiency of their cardiovascular system in supplying oxygen to the working muscles.

Total = 2 marks

5 Ben and Jake are cross country runners. They both take part in a series of fitness tests.

After completing the Harvard Step Test, Ben recovers to his resting heart rate quicker than Jake.

(a) Briefly explain why a quicker recovery rate would be an advantage during a cross country race. (2)

Quicker recovery rate indicates a high level of fitness and so your muscles can respire aerobically for longer proportions of the race. This means that you can run quicker, for longer without tiring.



A very thorough response, gaining both available marks.

Initial credit is given for identification that this would mean increased fitness and then the expansion/consequence of this - meaning that the performer could work aerobically for longer in the race, the advantage being, therefore, that they could run quicker for longer.

Total = 2 marks

Question 5 (b)

This question asked candidates to identify the component of fitness being tested in the Harvard step test. The correct response was cardiovascular fitness, or an equivalent term.

Whilst a large percentage of candidates identified cardiovascular fitness correctly, popular incorrect responses were muscular endurance and speed. Muscular endurance would be used when performing the test but this is not measured by it. Data tables used to rate performance in the Harvard step test assess VO_2 max, a measure of aerobic or cardiovascular fitness.

(b) Which component of fitness is being tested by the Harvard Step Test?

(1)

Cardiovascular fitness



The candidate has identified correctly that the Harvard step test measures cardiovascular fitness.

Total = 1 mark

(b) Which component of fitness is being tested by the Harvard Step Test?

(1)

agility



Incorrect responses included agility, muscular endurance, speed or power.

Total = 0 marks

Question 5 (c)

This question asked candidates to give a reason why the Harvard step test may be a good test to measure fitness for cross country.

Whilst it is appreciated that this might not be considered to be the most effective test to measure fitness for cross country, the specification for this subject states that candidates should assess fitness levels using a number of named fitness tests, one of which is the Harvard step test. Therefore, knowing that this test is a test of cardiovascular fitness, candidates could provide a range of responses that linked the type of fitness being tested to the fitness requirements of cross country.

Often, candidates did not gain credit because they linked the test to an incorrect component of fitness.

(c) Give **one** reason why this may be a good test to assess fitness for cross country.

(1)

Harvard step test can evaluate if the athlete can use their whole body for long periods of time which is needed in cross country.



This response gains the available mark for reasoning that the test is a good test to assess fitness for cross country because the Harvard step test assesses the performer's ability to work for long periods of time, which is a requirement of this sport.

Total = 1 mark

(c) Give **one** reason why this may be a good test to assess fitness for cross country.

(1)

Because it tests cardiovascular endurance which cross country runners need.



This response gains the available mark for reasoning correctly that the Harvard step test measures cardiovascular endurance, which is needed in cross-country.

Total = 1 mark

Question 5 (d)

Generally, candidates found it more accessible to identify a problem with the Harvard step test, compared with the previous question, although the majority of candidates still did not achieve the available mark for this question.

Incorrect responses stated that the test did not measure cardiovascular fitness, therefore the test was unsuitable. Popular correct responses focussed on the stepping action of the step test, rather than the running action required in cross country, or the change in terrain.

(d) Give **one** reason why this may not be a good test to assess fitness for cross country. (1)

It works at the same intensity all the time whereas cross country changes intensity.

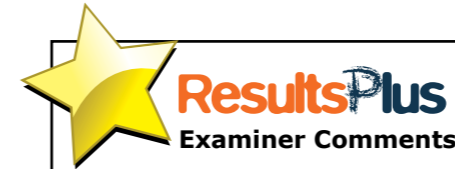


Credit is given for identifying that the intensity in the test remains the same, compared with the varying intensity in a cross country race.

Total = 1 mark

(d) Give **one** reason why this may not be a good test to assess fitness for cross country. (1)

This may not be a good test because you are doing step ups not running during this test.



Credit is given for reference to the stepping action in the test, compared with the required running action in cross-country.

Total = 1 mark

(d) Give **one** reason why this may not be a good test to assess fitness for cross country. (1)

It is not a good test for cross country because it does not show the same terrain or the different types

(Total for Question 5 = 5 marks)



Credit is given here for identifying that the terrain would be different in a cross country race as compared with the test conditions.

Total = 1 mark

Question 6 (i)


This question asked for a brief explanation of the importance of carbohydrates to a sports performer.

The majority of candidates were able to achieve at least one mark for this question, identifying correctly the role of carbohydrates in energy release. Those candidates that went on to link with performance by explaining the impact of this, were able to access the second mark. Examples included being able to continue in the activity for longer without tiring - as in the last set in a tennis match - or needing the energy to maintain the quality of their performance throughout the match.

Where candidates did not gain the second mark, this was due to lack of application to the question context, ie why energy was important to a sports performer.

6 Elite sports performers make sure they eat a balanced diet.
Briefly explain the importance of carbohydrates and protein to an elite sports performer.
(i) Carbohydrates (2)

Energy is given through carbohydrates, which allows the performer to perform at their best, with the energy given from foods like pasta.


 **ResultsPlus**
Examiner Comments

Credit is given for identifying the role of carbohydrates and the explanation of their importance to the performer, ie the energy allows the performer to perform at their best.
Total = 2 marks

6 Elite sports performers make sure they eat a balanced diet.
Briefly explain the importance of carbohydrates and protein to an elite sports performer.

(i) Carbohydrates (2)

To provide energy. This can keep a football for example running for 90 minutes.

 **ResultsPlus**
Examiner Comments

This response also gains maximum marks.
In this instance, credit is given for identifying that carbohydrates provide energy so that sports performers could keep running for 90 minutes.
Total = 2 marks

Question 6 (ii)

This question asked for a brief explanation of the importance of protein to a sports performer.

Whilst fewer candidates achieved at least one mark, those that did were more likely to gain both marks, than for the previous question. This indicated that if the role were known, candidates found it more straightforward to apply their knowledge to the question.

Where candidates did not gain both marks, this was often due to a confused response. For example, reference may have been made to protein for muscle growth but linked with improved recovery rate from injury, rather than linking this with the 'repair' function of protein.

A popular correct response was that protein allowed muscle growth, thereby increasing the strength of the performer.

(ii) Protein

(2)

Protein is needed for growth and repair of muscle tissue. It is important to an elite performer as if they are injured, they need to be able to ~~recovery~~ recover as quickly as possible.



This response achieves both available marks.

This response identifies both functions of protein - growth and repair - and goes on to explain why this is important to a performer, ie to speed up recovery.

Total = 2 marks

(ii) Protein

(2)

Protein is important because it helps grow and repair muscles. This is ~~key~~^{key} if a performer has an injury to a ~~muscle~~^{muscle} as it would repair it quicker meaning he could get back to training faster.

(Total for Question 6 = 4 marks)



This response gains both available marks.

The candidate identifies the role of protein in growth and repair and places it in the correct context. They explain that it is important to allow quicker recovery so that the performer is able to return to training sooner.

Total = 2 marks

Question 7

Q7 assessed candidates' knowledge and understanding of redistribution of blood flow.

Blood or vascular shunting was identified correctly, as was the need to allow time for food to digest before exercising. Some candidates were also able to discuss the conflict for blood to continue with digestion but also to supply sufficient oxygenated blood to the working muscles.

Candidates did not gain credit for making reference to a stitch/stomach cramps or inability to utilise the energy from the food.

Overall, this question was well-answered, with the majority of candidates achieving at least one mark, but with a good spread across the mark range.

7 Adrianna is a basketball player. Due to a lack of time she often eats her dinner just before playing basketball.

Explain why eating a large meal just before exercise might have a negative effect on performance.

BECAUSE WHEN FOOD IS DIGESTED IT REQUIRES
A BLOOD FLOW TO HELP DIGEST THE FOOD. WHEN
YOU START EXERCISE YOUR BLOOD GETS SENT TO THE
WORKING MUSCLES SO LESS BLOOD IS AVAILABLE TO
DIGEST FOOD. UNDIGESTED FOOD IN THE STOMACH CAN CAUSE
CRAMPS WHILE EXERCISING. THE MOVEMENT OF BLOOD TO
A DIFFERENT AREA OF THE BODY IS CALLED BLOOD SHUNTING.
(Total for Question 7 = 3 marks)



The candidate identifies four points from the mark scheme and thus gains maximum credit.

They identify:

- the need for increased blood flow to aid digestion
- the need for increased blood flow to the working muscles during exercise
- that this reduces blood flow available to the digestive system meaning that food remains undigested
- that the process is called blood shunting

Total = Max 3

7 Adrianna is a basketball player. Due to a lack of time she often eats her dinner just before playing basketball.

Explain why eating a large meal just before exercise might have a negative effect on performance.

ONCE YOU HAVE EATEN A LARGE MEAL MORE BLOOD NEEDS
TO BE SUPPLIED TO THE DIGESTIVE SYSTEM TO AID DIGESTION.
DURING EXERCISE THE WORKING MUSCLES NEED MORE OXYGEN AND THEREFORE
MORE BLOOD FLOW TO WORK EFFICIENTLY. MORE BLOOD FLOW CANNOT GO
TO BOTH AREAS AT THE SAME TIME SO DURING EXERCISE IT GOES TO THE
WORKING MUSCLES. THIS MEANS THAT THERE WILL BE FOODS AND OTHER
COMPOUNDS THAT HAVE NOT BEEN DIGESTED CAUSING STOMACH CRAMPS AND
DIZZINESS WHICH AFFECTS PERFORMANCE SIGNIFICANTLY. (Total for Question 7 = 3 marks)



In this example we see a clear explanation of the conflict between the areas of the body vying for additional blood flow and the consequences to the digestive system of not receiving sufficient blood flow as a result of exercise.

This response gains the three available marks.

Total = 3 marks

Question 8

This question asked candidates to match a different sporting activity to each of the three stated body types.

The majority of candidates were able to score maximum marks on this question. However, there was some confusion between the activities associated with an endomorph and ectomorph.

Credit was not given for repeating an activity for more than one body type unless further elaboration were given. For example, there were some instances where candidates identified relevant positions such as props in rugby for one body type and wingers for another, although this was rare.

8 Three extreme body types are listed below.

For each of the body types, name a sporting activity where this body type would be an advantage.

You must name a **different** sporting activity for each body type.

1 Mesomorph

Foot ball

2 Endomorph

Sumo Wrestling

3 Ectomorph

200m Sprint



This response gains two out of three marks.

Credit is given for linking a footballer to a mesomorph body type and a sumo wrestler to an endomorphic body type.

No credit is given for the 200m runner.

Total = 2 marks

8 Three extreme body types are listed below.

For each of the body types, name a sporting activity where this body type would be an advantage.

You must name a **different** sporting activity for each body type.

1 Mesomorph

100 meter Sprinter

2 Endomorph

Sumo wrestler

3 Ectomorph

high jumper.



This is a fairly standard set of responses for each body type. The candidate has opted for obvious, clear responses and gained maximum credit.

Total = 3 marks

Question 9 (a)

Some candidate responses appeared to ignore the question, focussing instead on the stem of it, discussing the advantages and disadvantages of completing a warm up. However, the majority of candidates achieved at least one mark for this question.

Candidates who achieved three marks generally started their response by stating that the need for increased oxygen for the muscles was due to exercise. They went on to say that the need was satisfied by the increased breathing rate, in order to draw oxygen into the body. This resulted in an increased heart rate to transport this oxygen to the muscles. Candidates who focussed on either breathing rate and/or heart rate, without first explaining their importance, were credited with one or two marks.

Most responses focussed on oxygen delivery rather than carbon dioxide removal but either was credited.

- 9 Amy is warming up in preparation for a tennis match. During her warm-up Amy's heart rate and breathing rate increase.

(a) Explain why it is important that Amy's heart rate **and** breathing rate increase.

(3)

Heart rate increases because there is a higher demand of oxygen (carried in the blood) to the working muscles, so the heart pumps harder to get it around faster. Her breathing rate increases due to forced breathing in exercise as there is a higher demand of oxygen to the working muscles. Also bi-products such as carbon dioxide increase and therefore have to be exhaled also.



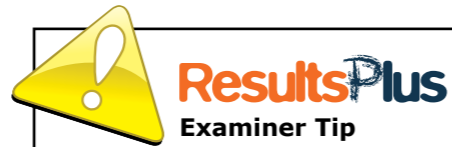
This response gains all of the available marks.

The first marking point from the mark scheme is awarded part way through the response, in the section on breathing rate.

Initially, we are told there is a higher demand of oxygen to the working muscles; therefore the heart pumps harder (increased heart rate) to get it (oxygen carried in the blood) around faster (to the muscles).

We are also told that breathing rate increases (due to the higher demand for oxygen to the working muscles) to exhale bi-products, such as carbon dioxide.

Total = 3 marks



This question makes specific reference to the importance of an increase in heart rate and breathing rate. You must make sure that you cover both, making it clear to which you are referring in your answer.

- 9 Amy is warming up in preparation for a tennis match. During her warm-up Amy's heart rate and breathing rate increase.

(a) Explain why it is important that Amy's heart rate **and** breathing rate increase.

(3)

Amy needs to get a lot of oxygen to the muscles in her body so they do not get fatigued. She needs them to ~~perform~~ for muscular endurance. The breathing rate increases to bring in more oxygen into the body. The heart rate increases to pump more oxygen around the body. As the breathing rate increases the heart rate increases and vice versa. They both increase to make sure there are more red blood cells carrying oxygen round the body to oxygenated the cells in the muscle.



This response also gains maximum marks.

The marks are achieved in a more logical way than the previous example. We are told the issue first, that we need to get a lot of oxygen into the muscles so that they do not become fatigued.

There is then an explanation of the role of an increased breathing rate to get more oxygen into the body, followed by the elevated heart rate to transport this oxygen in the blood to the muscles.

Total = 3 marks

Question 9 (b)

The question stated that an increase in heart rate would result in an increase in cardiac output.

Candidates were asked how else cardiac output could be increased. Whilst many candidates gained credit for this question, many also did not gain credit because they simply stated stroke volume, without commenting whether it needed to increase, decrease or stay the same. Other incorrect responses were linked to blood pressure, increased oxygen delivery, and increased heart size.

Some candidates described an increase in stroke volume: this was perfectly acceptable as a response, provided it was clear that it was stroke volume and that this increased.

(b) An increase in heart rate will increase cardiac output.

How else can the heart increase cardiac output?

(1)

increase blood pressure



This response was not credited because it linked to blood pressure, rather than stroke volume.

Total = 0 marks

(b) An increase in heart rate will increase cardiac output.

How else can the heart increase cardiac output?

(1)

An increase in stroke volume



This is an example of a correct response.

Total = 1 mark

Question 9 (c)

The majority of candidates were able to identify that blood pressure would increase as an immediate effect of exercise.

Question 10 (a)

The majority of candidates were able to identify the movement as extension.

Question 10 (b)

The majority of candidates did not identify the type of muscle contraction as isotonic. Popular incorrect answers included names of muscles, joint actions and other types of muscle contraction.

Question 10 (c)

There was a good spread of marks for this question. There were some very clear responses using appropriate technical language that scored maximum marks. Most candidates were able to identify the muscles operating to bring about movement of the arm to throw the javelin, and to discuss the action of antagonistic muscle pairs.

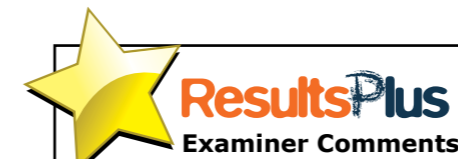
Where candidates did not gain marks, this was due to blank responses or a general description of the use of muscles to produce power to throw the javelin.

Some candidates did not use the correct technical language, confusing muscle and joint actions, referencing flexion and extension of the muscle, rather than contraction and relaxation.

(c) Describe the role of the muscles in the upper arm in moving the arm from position A to position B, as shown in Figure 4.

(3)

The bicep and tricep work as antagonistic pairs. In position A, the bicep is contracting and the tricep is relaxing, ^{relaxing} ~~also~~ the elbow will flex and 'bend', (the ~~angle~~ ^{angle} on the inside getting smaller). On the other hand, in position B, the tricep is contracting and the bicep is relaxing allowing that rapid extension of the elbow.



The biceps and triceps are identified as the muscles causing the movement of the arm. They are identified as an antagonistic pair and then this term is explained by going through the muscle action and resultant movement of the arm from position A to position B.

Total = 3 marks

(c) Describe the role of the muscles in the upper arm in moving the arm from position A to position B, as shown in Figure 4.

(3)

the bicep will tighten and
the bicep will become loose
So the tricep will move the
arm out so he can throw
the javelin



This response gains 1 mark for correct identification of the biceps and triceps. No further credit is given due to incorrect technical language used to describe the muscle action.
Total = 1 mark

(c) Describe the role of the muscles in the upper arm in moving the arm from position A to position B, as shown in Figure 4.

(3)

the biceps and triceps in the upper arm are an antagonistic pair that bring about the movement. In position A, the bicep contracts and tricep relaxes to bring about flexion. then in position B the bicep relaxes and tricep contracts to bring about extension.



This response gains maximum marks. The biceps and triceps are identified, we are told they work as an antagonistic pair and their action is linked appropriately to the images in the question.
Total = 3 marks

Question 10 (d)

The majority of candidates were able to identify a joint injury that could affect the thrower's performance. Popular correct responses were dislocation and tennis and golfer's elbow. Incorrect responses tended to relate to fractures or breaks.

Question 11 (a)

This question was designed to be challenging and proved to be one of the most demanding questions on the paper. The question asked candidates to provide an example of how poor health could affect performance in physical activity.

The anticipated response was that an example of poor health would be given, eg a cold or high blood pressure or equivalent, and then an explanation of how this would affect performance. Whilst there were some excellent responses, the majority of candidates did not give an example of poor health and were therefore unable to gain credit. Their explanation had nothing to link to and therefore did not meet the demands of the question.

Popular incorrect responses discussed fitness rather than health, demonstrating clear confusion between the meaning of the terms. Other incorrect responses made reference to injury, again demonstrating a lack of understanding of the concept of health.

Some candidates discussed poor lifestyle choices and the impact they had on performance, for example smoking or alcohol consumption, rather than the health effects as a result of these lifestyle choices.

Of those gaining credit, poor health in relation to weight was often cited, eg obesity or anorexia. In these cases, candidates often followed through giving a good explanation, to gain the available marks.

In this question, marks are given for the example, the effect it would have on performance, and a justification to explain why it had this effect. The whole of the response links to one example.

11 Our health, fitness and level of exercise can all affect our ability to lead a healthy, active lifestyle.

(a) Use an example to explain how poor physical health can affect performance in physical activity.

(3)

If someone is suffering from a disease such as lung cancer, their lungs are un-able to function properly, meaning that they do not have an efficient respiratory system, for example if oxygen cannot diffuse well between the capillaries and the alveoli. This will make it difficult for them to supply oxygen to the working muscles, as well as release carbon dioxide as waste. This will cause increased muscle fatigue during physical activity and make them feel more tired.

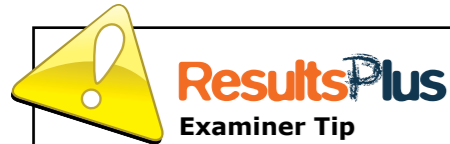


ResultsPlus

Examiner Comments

This response gains maximum marks. The example of poor health is given: lung cancer. Then, how this affects performance: causing increased muscle fatigue during the activity, making the performer more tired. Finally, why lung cancer causes this effect: poor gaseous exchange.

Total = 3 marks



ResultsPlus

Examiner Tip

Remember to consider the command word in the question, in this case 'Explain'. It means that you have to expand on one fact rather than discussing several different things.

11 Our health, fitness and level of exercise can all affect our ability to lead a healthy, active lifestyle.

(a) Use an example to explain how poor physical health can affect performance in physical activity.

(3)

if you are obese you are in poor
physical condition so that when you exercise
you sweat more and become tired
faster because your body has to work
harder because of the extra weight you
have to carry while exercising



ResultsPlus

Examiner Comments

This response also gains full marks. The candidate identifies obesity as a health issue and then gives the impact. Finally, the candidate gives the reasoning for this impact on performance as required by the question, ie the performer becomes tired faster, because the body has to work harder due to the increased weight it has to carry whilst exercising.

Total = 3 marks

Question 11 (b) (i)

There was a good distribution of marks for this question, with candidates achieving across the range.

Candidates were asked to explain why a high level of cardiovascular fitness and flexibility would be needed to perform well in hockey. Many linked the need for cardiovascular fitness with the ability to work throughout the match and flexibility with the need to reach for the ball, either to intercept a pass, stop a wayward pass or tackle.

Incorrect responses were often too vague for credit, provided definitions without application, or related to other components of fitness, eg agility rather than flexibility.

(b) Tai and Aran both play hockey. Cardiovascular fitness and flexibility are two components of health-related exercise that are needed when playing hockey.

(i) Briefly explain why Tai and Aran need high levels of cardiovascular fitness and flexibility to perform well in their sport.

1 Cardiovascular fitness

Hockey games are high intensity and long lasting, so Tai and Aran will need cardiovascular fitness to work the whole body for a long period of time. In hockey you are using your whole body, arms, legs, head... (2)

2 Flexibility

Hockey requires a lot of bending, especially at the hips. Flexibility will allow Tai and Aran to perform better passes or shots when they are bending down to hit the shin ball (2)



This response gains one mark for the explanation of the need for cardiovascular endurance and two marks for the explanation related to flexibility.

The mark for the cardiovascular fitness explanation is due to the reference to a hockey game lasting a long time, therefore the players will need to work the whole body for a long period of time. No reference is made to the quality of the performance, for the expansion mark. Two marks are awarded for the explanation of the need for flexibility, credit for recognition that hockey will involve a lot of bending, (equivalent to getting low), to perform better passes, ie execute a better technique.

Total = 3 marks

(b) Tai and Aran both play hockey. Cardiovascular fitness and flexibility are two components of health-related exercise that are needed when playing hockey.

(i) Briefly explain why Tai and Aran need high levels of cardiovascular fitness and flexibility to perform well in their sport.

1 Cardiovascular fitness

Cardiovascular fitness is needed so that they can both perform at their highest possible standard from start to finish without tiring. (2)

2 Flexibility

Flexibility is needed so they can stretch as far as possible to make a clean tackle. (2)



This response gained maximum marks. The importance of cardiovascular fitness is explained in relation to the quality of performance and the ability to maintain this throughout without tiring. The need for flexibility is explained, to ensure the players are able to stretch as far as possible, to make a clean tackle.

Total = 4 marks

Question 11 (b) (ii)

The majority of candidates were able to identify an additional component of health-related exercise that would be required when playing hockey.

Incorrect responses tended to repeat examples already used in the previous part of the question, ie cardiovascular fitness or flexibility or be an example of a skill-component of fitness, eg agility.

Question 11 (c)

The majority of candidates gained one mark for this question, although a significant number achieved two marks. Candidates were given a small scenario and asked to state two reasons why a coach would apply the principle of individual differences to a training programme.

Candidates often gave correct responses such as different levels of fitness or different levels of play/ability or skill. Common incorrect responses tended to focus on why the individuals were placed in different teams, rather than why their training programmes would be different. Other incorrect answers focussed simply on gender, rather than thinking about why different genders might need a different training programme, or generic links were given to balanced competition and reduced chance of injury.

Some candidates tried to link to different playing position but this alone was insufficient for credit because it was too vague - there needed to be more information, ie a reason why this would mean players needed a different training programme.

Tai plays for the girls' 1st team and Aran plays in the boys' 2nd team. Tai also plays for a team outside of school.

(c) State **two** reasons why Tai and Aran's school coach applies the **principle of individual differences** to their Personal Exercise Programmes (PEPs).

(2)

- 1 Because Tai is at a higher level of the sport so there will be different individual needs for Aran who is not as good as Tai.
- 2 Another reason is to spot weaknesses to then use specificity to try and improve ~~the~~ the weaknesses. They will both have different weaknesses.



ResultsPlus Examiner Comments

This response gains two marks. The first reason given is that the players would be at different levels, that one player would be better than the other. The second reason identifies that individual differences should be applied because people all have their own weaknesses on which they need to focus.

Total = 2 marks



ResultsPlus Examiner Tip

The question asks for two reasons so make sure you give two different reasons.

Tai plays for the girls' 1st team and Aran plays in the boys' 2nd team. Tai also plays for a team outside of school.

(c) State **two** reasons why Tai and Aran's school coach applies the **principle of individual differences** to their Personal Exercise Programmes (PEPs).

(2)

- 1 The school coach will apply the principles of individual needs because, the players will have different strengths and weaknesses. So they will need to improve in different areas.
- 2 As well as that the performers may also have different levels of fitness, so some cannot go as far as others in training.



This response gives two reasons why the individuals' training plans should be different: the first relates to their strengths and weaknesses and the second to the level of fitness of the players.

Total = 2 marks

Question 12

Candidates found this question less accessible than Q13, and yet responses were often longer. There were two common approaches to the question - either approach was acceptable.

The first approach was to discuss the merits of circuit training without reference to other training methods. In these instances, the candidate would identify a characteristic of circuit training and explain how this would benefit a games player. An example was that circuits could be organised to improve an area of skill, for example one station could be spent dribbling the ball between cones to improve their ability to dribble the ball in the game.

Having identified a positive feature of circuit training, a potential issue was then discussed, eg because of the breaks in between stations there is a rest period to allow recovery. This means that the player is not working continuously and therefore is not likely to improve their cardiovascular fitness, which they will need to sustain play throughout a match.

In the second approach, the focus tended to be on all methods of training, rather than placing the required emphasis on circuit training. A valid method of justifying why circuit training would or would not be the best method of training could be to describe the strengths of each method. There would then need to be a bringing together of this information, ie the justification/comparison of the relative merits of other methods of training compared with circuit training.

This comparison was often missing. Responses tended to describe each method of training, rather than to discuss whether circuit training would be the most effective. Such responses were credited at Level 1 because despite demonstrating much knowledge about each method of training, the response had not addressed the specific question being asked.

*12 You need to be skilful and fit to play a game well.

Discuss whether **circuit training** would be the most effective method of training to improve performance in games.

(6)

Circuit training involves short bursts of high intense exercise in multiple stations that make up one circuit. Different games have different requirements but generally games require high cardiovascular fitness, muscular endurance and strength, speed, agility and agility, ~~to pass~~ and coordination. To perform well performers must have high levels of all these fitness aspects.

Circuit training is designed to make the individual perform at a very high intensity over ~~a long period of time~~ short periods of time in each exercise. The high intensity mimics the high intensity that a match is performed at.

This type of ~~training~~ training involves exercising the whole body. But weight training could be used to make the training more specific to the activity. Although both can yield increase muscular strength & the individual may feel they should focus on one muscle group. Perhaps they want to increase the strength of their quadriceps for power when shooting in football. A structured and targeted exercise in weight training may be more beneficial than a full body work out in circuit training. To increase power / muscular strength of the quadriceps.

Games require mastery of certain skills. Although circuit training can be adapted to work on skills of the activity they would only be performed over short time periods when some skills like lifting the person in a lineout in rugby need more practice as the performers need to practice phases of play involved immediately after. This type of practice requires large numbers which could be difficult in circuit training in enclosed spaces.

For games high levels of fitness are ~~not~~ required so developing this is an ideal method of training. However, there is more to the game than just fitness levels. Developing co-ordination, balance, strength and endurance etc is important but it is worthless unless practiced. (Total for Question 12 = 6 marks)

In game related scenarios. Improving fitness aspects helps the performer improve these skills, but if they don't directly practice them in drills and game related exercise, it will not

improve the performance.
For example co-ordination for a wicket keeper in football is vital. This may be improved by focusing on performing actions using that leg only, i.e. standing broad jump 1 legged to 2 footed landing to develop the use and co-ordination of that leg. But worth less marks



ResultsPlus Examiner Comments

This is an example of a Level 3 response.

The candidate begins by describing circuit training and then the demands of games activities. This type of knowledge is required to achieve a Level 1 response, eg circuit training involves:

- short bursts of high intensity exercise
- stations

The candidate goes on to link this knowledge, applying it to the question context thus moving into Level 2 and ultimately Level 3, due to the quality of the response. Eg circuits are designed to make the performer work at high intensity, which mimics the intensity of games play, thus they provide a positive impact of circuit training.

There is then a consideration of the potential negatives of circuit training, ie the footballer who wants to increase power to improve the quality of their shots could use circuit training to improve their general muscular strength. However, they may be better with more targeted muscular strength exercises for the specific muscles, in a weight training session.

A comparison is made between the two training methods and a justification given why circuit training may not be the best option.

A second example to discuss why circuit training may not be the most effective method is given in relation to skill development. The response considers why circuit training may not be the best option to improve line out performance.

This response clearly addresses the discursive requirements of this question, making reference to why circuit training is effective and why it is not, and applying their knowledge to the question context, ie games play.

Total = 5 marks



ResultsPlus Examiner Tip

Look at the command words used in a question.

This question asks for a discussion, therefore you would need to include reasons why circuit training would be an effective method of training to improve performance in games, and reasons why it would not.

*12 You need to be skilful and fit to play a game well.

Discuss whether **circuit training** would be the most effective method of training to improve performance in games.

training
method (6)

Some people may say that circuit training would be the most effective to improve performance because in games, health related fitness and skill related fitness are both required and in circuit training; because you have many stations this can be achieved. The variety in stations allows you to work aerobically or anaerobically which is specific to a games player as they are always using different energy systems. Also with circuit training it can be easily carried out with many people eg. getting the whole team to carry out the session. This could be achieved because circuit training is also adaptable to individual needs of every performer which is needed in games because players specialise in different positions. Eg. a football goalkeeper would maybe do more flexibility exercises so they can stretch to the ball whereas a midfielder would do more muscular endurance activities. Circuit training also allows for rest and recovery and in between stations which you can change depending on what you want out of the session. You can change laps of circuit, number of stations, rest periods etc.

Other people may say that other types of training would be more beneficial to games players for example cross training. Cross training can be varied because it includes all the different training methods which you can make specific to your sport. One thing that cross training allows that circuit training doesn't as much would be that you could change the pace and terrain more eg. in fartlek sessions, which suits more games players because they are always changing pace eg. running to make a tackle at 100%, then jogging back to position. Also the variation in types of training reduces the risk of getting bored and demotivated. Cross training also allows the same as circuit training benefits because it includes circuit training within it because it is all the types put together.



ResultsPlus
Examiner Comments

This is a well-organised response.

The candidate begins with an immediate link between circuit training and games play, ie in games you need health related and skill related fitness, which can be achieved through circuit training.

There is a description of some of the characteristics of circuit training:

- use of stations
- allows rest and recovery between stations

There is an attempt to discuss positives of circuit training for the games player, ie that it allows them to work aerobically and anaerobically to utilise different energy systems to mimic games play and that it is adaptable, allowing teams to train together, yet focus on stations relevant to their own needs.

Examples are given to support this point of a goalkeeper working more on flexibility and a midfielder more on muscular endurance stations.

The second paragraph explores why circuit training may not be the most effective, ie that unlike fartlek training it does not allow for a change in pace. Fartlek would be more suited to games play because it varies the intensity at which players work - sprinting for the ball and then jogging back into position.

The candidate also makes a very valid point that cross training must be more effective because it can encompass circuit training as one of the methods of training and utilise another method such as fartlek.

This is another example of a Level 3 response.

Total = 5 marks



ResultsPlus
Examiner Tip

If a question gives a specific context, in this case games play, make sure that you use this in your answer. Limit your examples to games - rugby, football, hockey, netball and so on - rather than include examples of other activities - such as athletics, boxing, gymnastics - to illustrate or expand on the points you are making.

Question 13

Whilst candidates found this question more accessible than Q12, developed arguments tended to focus on the impact of weight training on the muscular system, eg the muscles in particular becoming stronger, allowing the athlete to generate greater force and therefore throw the 'implement' further.

Three examples of athletic throwing events were given in the question, in order to support those candidates unfamiliar with power throwing events. This meant that some candidates repeated the point being made in relation to each athlete, which was not a requirement of the question. However, the majority of candidates selected one of the three events as their focus. Although there were some slightly better answers to this question, responses tended to be shorter and more focussed than responses to Q12.

Popular correct responses in relation to the skeletal system tended to focus on bone density and the use of weight training to improve this, leading to increased strength of the bone and reducing chance of injury, so that training could continue.

Responses that did not gain credit were those where no reference was made to weight training. These responses either focussed on the athletic throwing events, describing the events in detail, or the muscular system and muscle action required to throw each implement.

Knowledge used by some candidates in response to an earlier question in the paper did not seem to be reapplied in this context. In the question on the role of protein in the diet, candidates reported that protein helped to repair micro tears in the muscle as a result of training, increasing muscle size and therefore strength. This information would have been a valid developed argument concerning the impact of weight training on performance.

Additional correct responses, but seen less frequently, focussed on the impact of increased strength of tendons and/or ligaments, the production of synovial fluid and the benefits of these. Some candidates also, correctly, reported on the potential negative impact of weight training.

*13 The athletes in Figure 5 take part in throwing events. Each athlete uses a weight training programme to improve their performance.



Shot Put



Discus



Hammer

Figure 5

With reference to the skeletal and muscular systems, explain how a weight training programme will affect performance in an athletic throwing event.

(6)

There are many benefits that weight training can have on both the muscular and the skeletal systems. ^{Such} ~~Such~~ benefits on

the muscular system ~~can~~ may be hypertrophy (muscles get bigger) or an increased muscular strength. Other benefits, such as those on the ~~sk~~ skeletal system, may be an improved posture or strengthened ligaments.

Weight training can be used to increase muscular strength by using low repetitions and high weights but the mass of the weights lifted should be relevant to the level of fitness of a performer. Activities such as bicep curls can help increase the strength of the biceps of an athlete (effect on muscular system) which is needed by all 3 performers shown. They will need it to provide a high power (since ~~to~~ power is the ability to convert strength activities at speed, an increased strength will contribute

to more power) ~~to~~ which will allow them to throw the object to a higher distance. ~~more other~~ ^{however,} activities such as shoulder presses can help strengthen the deltoids which will allow them to abduct their arms at higher power in order to hit their object to a longer distance.

With that being said, improvements in ~~muscular strength~~ ^{the strength of tendons} (hold bone to muscle) can also take place and this will reduce the chance of of overuse ~~to~~ joint injuries such as golfer's elbow. ~~Moreover,~~ this will allow the tendons to pull better on bones hence the skeletal systems will all movements in a better way by acting as levers.

Furthermore, effects on the skeletal system ~~can be~~ ^{like} increased strength of ligaments will reduce the chance of injury after a powerful throw from any

(Total for Question 13 = 6 marks)

of the 3 performers shown; Injuries such as dislocations will be prevented. Also, an improved ~~posture~~ posture can come from activities, such as knee work, where the body maintains an upright position during the carrying of a heavy weight hence it will allow all 3 performers to maintain a high amount of balance. For example, the ~~thrower~~ ^{hammer} hammer thrower will need to stay in the circle.

In conclusion, weight training will help all 3 performers improve their performance since all of them will be able to ~~throw~~ throw the objects that they are throwing. For example there will be an increase in synovial fluid production to allow lubrication of joints during movement.



This is an example of a Level 3 response, achieving maximum marks.

There is some relevant recalled knowledge, forming 'simple' statements throughout the response, eg in the first paragraph it is stated that weight training leads to muscle hypertrophy/increased strength, that it can lead to stronger ligaments, and later that this would be through training with low reps high loads/weight.

Some of this knowledge is then applied in an attempt to explain the impact on performance, ie that increased strength increases power to increase the distance thrown.

In addition, we are told that increased tendon strength reduces the chance of overuse injury. This gives a consequence of the training method but does not link back to performance, thus is considered a partially developed argument.

A fully developed point is then made in relation to increased ligament strength, therefore an athlete is less likely to dislocate the shoulder after a powerful throw because it is linked to performance.

This achieves Level 3, being a well-balanced response, looking at both the skeletal and muscular systems. Whilst there are only two fully developed discussion points there are several extended but not fully developed points, eg weight training can improve posture which will improve balance in the circle. There is also reference to leverage and strength of tendons.

Total = 6 marks

*13 The athletes in **Figure 5** take part in throwing events. Each athlete uses a weight training programme to improve their performance.



Shot Put



Discus



Hammer

Figure 5

With reference to the skeletal and muscular systems, explain how a weight training programme will affect performance in an athletic throwing event.

(6)

weight training programmes will help build up the strength of the muscles (hypertrophy) to enable the athlete to throw the object further. This is a long term effect. The stronger the muscle, the less chance there is for that athlete to pull a muscle or tear it and face an injury if they continue to strengthen the muscle. Weight training will also increase the bone density as well as the strength of tendons and ligaments. Increasing the bone density will make the bone stronger and less likely to break/fracture during their event or throughout training. By decreasing the chance of injury, their sport is a lot less dangerous so they can continue training to improve their strength. Ligaments and tendons need to

be strong so during a vigorous weight activity, they do not tear, sprain or strain which will affect the athlete's performance by putting them out of play/training as they need to rest their injury. By strengthening everything, they are more likely to throw further in their event, allowing them to potentially win the competition they are entered for.

Improving their muscular system will also help improve their posture, improve athletics, prevent injury, and help aid rehabilitation if they ever do get injured.



ResultsPlus Examiner Comments

This is another example of a Level 3 response.

There are three developed statements in this response, across both body systems.

The first states that weight training will increase muscular strength allowing the athlete to throw further.

The second states that an increase in bone density will lead to increased bone strength, therefore the athlete is less likely to suffer a break or fracture during their event or training thus they can continue to improve.

The final developed explanation is in a similar vein, but in relation to tendons and ligaments increasing strength thus becoming less likely to tear putting them 'out of action'.

The candidate demonstrates their knowledge of the impact of this training method and applies this successfully to the question scenario.



ResultsPlus Examiner Tip

Read all the information given in the question carefully. The images show muscular performers, the question states that they use weight training to improve their performance, so what benefits could it bring?

The question asks for a specific focus on the skeletal and muscular system and to explain how performance will be affected: make sure your response answers each part of the question.

Paper Summary

Based on their performance on this paper candidates are offered the following advice:

- Read all questions carefully, to ensure that the instructions are followed
- Identify key words in a question - sometimes these can be in bold to draw attention to them but this is not always the case
- Make examples as clear as possible - so that the examiner can picture the example being given - and give the required number
- Make sure you apply your answers to the correct context, as given in the question
- Pay attention to the command word used in the question and the mark allocation - *describe, explain, discuss* will need more detailed linked responses and will be allocated more marks

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>

Ofqual



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London WC2R 0RL.