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Examiners' report

PHYSICAL EDUCATION

H155

For first teaching in 2016

H155/01 Summer 2024 series

Version 1

Contents

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. A selection of candidate answers is also provided. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

Paper 1 series overview

There were some very good scripts offered in response to the Summer 2024 H155/01. The focus on AO1, AO2 and AO3 in centres appears to have been embedded. Most centres have a good understanding of what is required at AS Level. Candidates appear to understand what is required of them throughout all four sections. Candidates clearly addressed the command words well in the majority of cases and followed the rubric of the paper accurately.

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• were able to analyse movement at the hip • explained how the conduction system affected systole • referred to recovery effect on gas exchange in 1 (d) • were able to describe the intensity, reps and sets and work relief for training high jumper • could describe the use of a goniometer • applied Newtons' Law 2 and 3 to the penalty kick • wrote succinct answers to longer answer questions • interpreted the graph in 4 accurately and evaluated continuous and HIIT.	• were unable to analyse movement at the hip • referred to exercise effect on gas exchange in 1 (d) • were unable to describe the use of a goniometer • did not give accurate descriptions of periodisation terms and identify the phase • gave vague descriptions of Weight, Reaction, Friction and Air Resistance in 3 (b) • used wrong equations for 3 (c) (i) and 3 (c) (ii) • didn't give enough points relative to the marks available • described Continuous and HIIT with no evaluation.

Section A overview

This section clearly provided a wide range of responses from candidates with a specific number of questions able to differentiate well. Candidates generally struggled with movement analysis at the hip. Question 1 (d) was a good differentiator as candidates needed to discuss 'recovery', strength training for a high jumper 2 (b) (iii) also found candidates missing top marks because of lack of accuracy with FITT. Knowledge of the goniometer was generally weak. There was evidence of candidates not reading the questions carefully enough and not offering the requisite number of points for the marks available.

Question 1 (a)

1

(a) The images show an athlete throwing a discus with their right hand.

Complete the table to analyse the movement at the right shoulder and right hip during the discus throw.

Joint	Movement	Agonist muscle	Antagonist muscle	Type of contraction
Shoulder				Concentric
Hip	Medial rotation			

[6]

This question challenged many candidates, as the movement analysis required was difficult. Candidates often struggled to identify the correct movement at the shoulder but were mostly able to identify the correct muscles. Very few candidates knew the agonist and antagonist for medial rotation at the hip. Many only accessing the concentric contraction in the hip.

Exemplar 1

Joint	Movement	Agonist muscle	Antagonist muscle	Type of contraction
Shoulder	Horozontal extension.	Pectoralis major	rear deltoid	Concentric
Hip	Medial rotation	Illipsoas	gleutious maximus.	eccentric.

1a - slow oxidative
2a - fast glycolytic
2b - fast oxidate glycolytic.

2b

This response received 2 marks for correctly identifying the pectoralis major as the shoulder agonist muscle and the gluteus maximus as the hip antagonist muscle. Rear deltoid was too vague to be given a mark for the shoulder antagonist muscle. Candidates can be credited for points 2 and 3 on the mark scheme without the correct movement for point 1 on the marks scheme..

Question 1 (b)

(b) Give **two** structural and **two** functional characteristics of fast oxidative glycolytic muscle fibres.

Structural characteristics:

1 .....

2 .....

Functional characteristics:

1 .....

2 .....

[4]

Candidates sometimes mixed up structural and functional characteristics, but in the main this question was answered reasonably well.

Question 1 (c)

(c) Explain how the conduction system of the heart controls the systolic phase of the cardiac cycle.

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..... **[5]**

This question required candidates to give the result of the conduction on the movement of blood and contraction of the muscles. No marks were given for the conduction system point on its own. As a result, many candidates were not accurate enough to access full marks. Many missed the second half of the mark.

Question 1 (d)

(d) Analyse the effect of recovery on gas exchange at the muscles after exercise.

In your answer refer to the changes in the pressure gradients and the changes in the dissociation of oxyhaemoglobin.

.....

.....

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.....

..... **[5]**

Candidates failing to read the question carefully

This was a challenging question for those who read the question correctly. Very few candidates were accessing full marks. Some were able to access through convoluted explanations which just happened on a point in the mark scheme. Many candidates only referred to exercise.

Exemplar 2

After exercise there is a
during oxyhaemoglobin
after exerase oxygen is more readily dissociated
due to increased temperature and increased CO_2
levels. This is the bohr shift where the dissociation
curve shifts to the right. ~~As the muscles oxygen~~

After exercise the pressure gradient is less steep.
less Oxygen diffuses from the blood into
muscles due to diffusion moving from a high
pressure in the blood to low pressure in the muscles.
CO_2 diffuses from the muscles into the blood.
Diffusion is the movement of substances from
higher pressure / concentration, to low pressure / concentration

This response received 1 mark for identifying the pressure gradient becomes less steep than in exercise. The rest of the response was too vague to be given any further marks. To achieve full marks candidates should address changes in pressure gradients and changes in the dissociation of oxyhaemoglobin.

Question 2 (a)

2

(a) Individuals may choose to use ergogenic aids to enhance their performance.

Explain the use of pharmacological aids to benefit the performance of a weightlifter.

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..... **[5]**

Many candidates were unable to give sufficient detail in the effect of the ergogenic aid to fully access the mark.

Assessment for learning

The question asks for plurals of ergogenic aids, which obviously requires more than one. Some candidates just focused on one aid, losing valuable marks.

Question 2 (b) (iii)

(iii) Describe a training session to improve the most appropriate type of strength for a high jumper.

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..... **[5]**

A good differentiator. The vast majority identified the type of strength and the type of training. The best candidates then accurately applied FITT to the explosive nature of the training.

Exemplar 3

(iii) Describe a training session to improve the most appropriate type of strength for a high jumper. Explosive plyometrics

The performer would undergo plyometrics training as this would improve the high jumpers explosive strength. The training would include a warm up and cool down such as stretching (lunges) as this would reduce injury risk. During the training the high jumper would complete jumping and bounding exercises such as jump squats and ice skater leaps. The session would be 30 minute in length as this would allow for strength adaptations to occur such as hypertrophy of FG muscle fibre that would benefit the high jumper and increase their explosive strength

This response is a good example of a candidate completing the question fully, with clear identification of a training session to improve the most appropriate type of strength for a high jumper. They have identified the correct type of training and strength, the need for a warm up and cool down. They have included examples of exercises and the length of time which is in the correct range on the marks scheme.

Question 2 (c) (ii)

(ii) Describe the use of a goniometer to measure flexibility.

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..... **[3]**

Generally speaking, this was one of the areas where candidates had not revised the topic area. Many only accessed point 1, with vague or confused descriptions.

Question 2 (d)

(d) Periodisation is the organisation of training into specific blocks or phases.

Complete the table to show your knowledge of the periodisation of training.

Periodisation term	Description
Preparatory phase	
	Fitness is maintained; focus is on tactics and strategies.
Tapering	
	Active rest and recuperation.

[4]

Another good differentiator. Point 1 was often accessed because the mark scheme allowed variety, however tapering and the phase names challenged many.

Question 3 (a)

3

(a) Apply Newton's **three** laws of motion to the example of a footballer taking a penalty kick.

First Law: .....

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Second Law: .....

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Third Law: .....

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[6]

Generally a well answered question. Many accessed full marks. Less successful responses only accessed marks on N1. Many candidates were very specific describing the relationship between foot and ball for N3, accessing good marks. In previous series this had been poorly answered.

Question 3 (b)

(b) Describe what each of the following terms means.

Weight: .....

.....

Reaction: .....

.....

Friction: .....

.....

Air resistance: .....

.....

[4]

The mark scheme was very specific about direction of force or opposing forces. Candidates either knew this area and were given full marks or were vague or descriptions were not technical.

Question 3 (d)

(d) Discuss the benefits of the use of limb kinematics and wind tunnels to optimise performance in sport.

Limb kinematics .....

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.....

Wind tunnels .....

.....

.....

[5]

Misconception

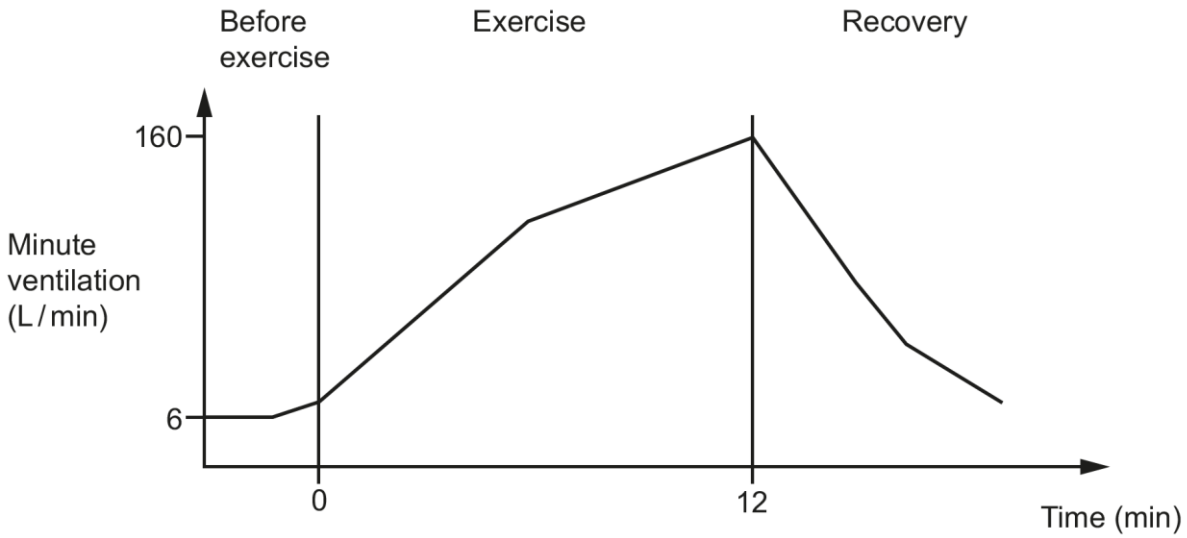
The question asked for a discussion of benefits. Some candidates tried to critically evaluate including some negatives.

Section B overview

Candidates were generally able to interpret the graph quite well most in respect of minute ventilation. Few were able to link this effectively for AO2 to the multi-stage fitness test. AO3 was available in the evaluation of the training techniques with mixed success.

Question 4*

4* The graph shows the minute ventilation of a performer with high aerobic capacity completing and recovering from a multistage fitness test.



Use your knowledge of the regulation of breathing to explain the changes in the performer's minute ventilation shown in the graph.

Evaluate both continuous training and high intensity interval training (HIIT) as methods used to improve aerobic capacity for games players. **[10]**

Candidates were clearly practised in analysing graphs and generally gave good descriptions. Some being magnetically drawn to discussing the cardiac system in questions of this kind. Furthermore, when analysing the graph and talking about regulation, they only referred to the cardiac system. Those that tried were able to access marks for the receptors, but only the more successful responses related this to the RCC. Few candidates referred to the multi-stage fitness test and those that did were often highest scorers.

Evaluation of continuous training was usually stronger than HIIT, and many only discussed time and boredom for disadvantages.

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