



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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I declare this is my own work.

# GCSE PHYSICAL EDUCATION

Paper 1 The human body and movement in physical activity and sport

Wednesday 13 May 2020

Afternoon

Time allowed: 1 hour 15 minutes

## Materials

For this paper you may use:

- a calculator.

## Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

## Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 78.
- Questions should be answered in continuous prose. You will be assessed on your ability to:
  - use good English
  - organise information clearly
  - use specialist vocabulary where appropriate.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
<b>TOTAL</b>	



J U N 2 0 2 0 8 5 8 2 1 0 1

IB/M/Jun20/E7

**8582/1**

Answer **all** questions.

Do not write  
outside the  
box

Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



0 1

Which **one** of these bones is found at the elbow joint?

[1 mark]

A Femur



B Fibula



C Scapula



D Ulna



1

0 2

Which **one** of these statements describes 'adduction' at a ball and socket joint?

[1 mark]

A The movement of a limb away from the midline of the body



B The movement of a limb in a complete circle at a joint



C The movement of a limb towards the midline of the body



D The movement of a limb which increases the angle of a joint



1



0 3

Which **one** of these is the role of a ligament?

[1 mark]

A To attach bone to bone

B To attach muscle to bone

C To act as a shock absorber between bones

D To release synovial fluid

---

1

0 4

Which **one** of these lung volumes is 'the maximum amount of air that can be taken into the lungs above that taken in during a normal breath'?

[1 mark]

A Expiratory reserve volume

B Inspiratory reserve volume

C Residual volume

D Tidal volume

---

1

0 5

For which **one** of these events would a performer be **most** likely to use high altitude training?

[1 mark]

A 200m

B Pole vault

C 5000m

D Shot put

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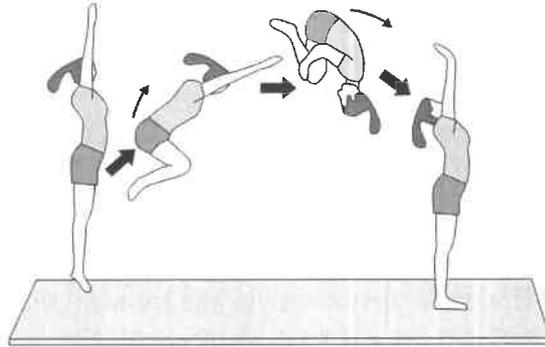
1

Turn over ►



0 6

Helen is a gymnast.

**Figure 1** shows Helen performing a front somersault.**Figure 1**

0 6 . 1

Identify the plane and axis of movement used when Helen performs a front somersault.

**[2 marks]**

Plane

Sagittal

Axis

Transverse

0 6 . 2

Define flexibility. Evaluate the importance of flexibility for Helen as she performs in gymnastics.

**[4 marks]**

Definition

(1) The range of movements possible at a joint

Evaluation

Important: flexibility is important for gymnasts to execute movements to their full potential. (1)

Be able to demonstrate their full range of movement whilst performing skills such as leaps, splits and jumps (1)

Evaluate: Power could be deemed more important in gymnastics for height whilst performing somersaults in a fair routine to ensure a safe and balanced landing.

Accept any other suitable response.

- balance
- muscular endurance
- coordination
- strength
- core strength



0 6 . 3

Helen uses different types of strength when she performs in gymnastics.

Define static strength. Explain how Helen can use static strength in her gymnastic performance.

[3 marks]

Definition Ability to hold a body part (limb) in a static position. muscle length stays the same / maximum force that can be applied to an immovable object

Explanation

- (1) static strength can be used in a gymnastics performance to hold a position such as a crucifix on the rings
- (1) static strength will enable Helen to maintain a still position for a period of time, helping her score high marks. If static strength is not present\*

0 6 . 4

How would Helen use weight training to develop her static strength?

[2 marks]

- (1) Helen would use heavy weights & low reps
- (1) Lifting over 70% of one rep max test

11

\* marks will be deducted for not holding a still position and will ultimately affect an aesthetically pleasing performance.

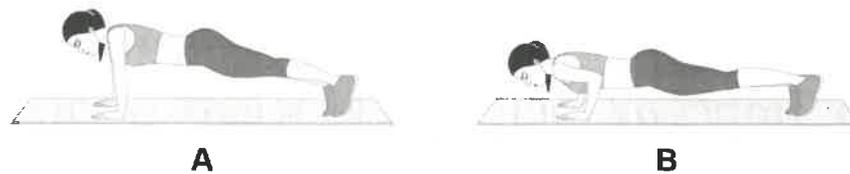
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07

Figure 2 shows an individual performing a push-up.

Figure 2



07.1

Using Figure 2, identify what type of muscle contraction is taking place in the arms during the downward phase (A to B) of the push-up.

[1 mark]

Eccentric

07.2

Using Figure 2, identify the main agonist in the arm during the downward phase (A to B) of the push-up.

[1 mark]

Triceps

07.3

Using Figure 2, identify the lever system working at the elbow during the upward phase (B to A) of the push-up.

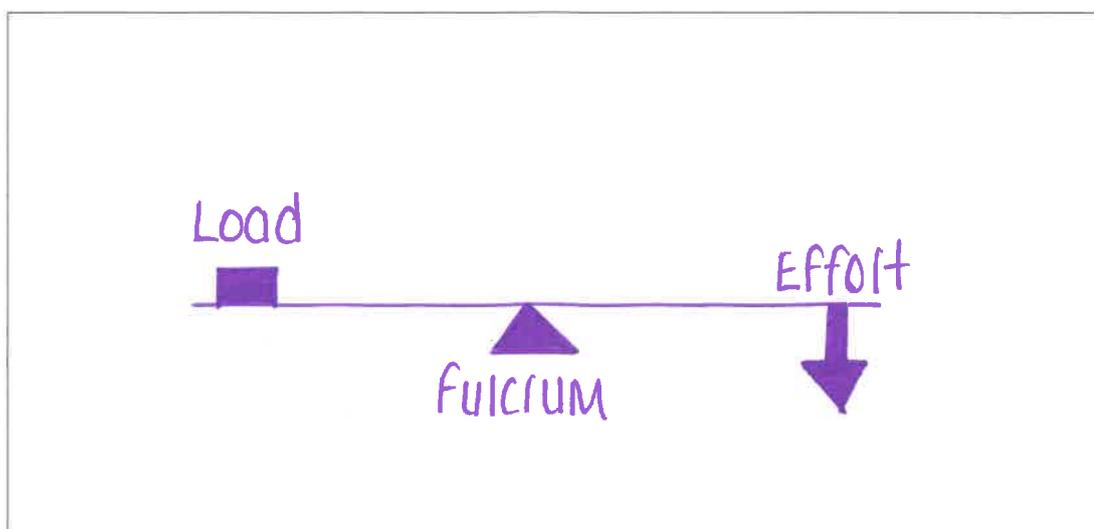
[1 mark]

1st class level system

07.4

Draw a fully labelled diagram in the box below to show the type of lever identified in your answer to Question 07.3.

[2 marks]



0 8

Ibrahim participates in a range of athletics events which use different energy systems and muscle groups.

0 8 . 1

Define anaerobic exercise. Use an example from athletics in your answer.

[2 marks]

Definition glucose  $\rightarrow$  energy + lactic acid

Example 100m sprint or accept any sprint event  
jumping or throwing events are also suitable

0 8 . 2

Define aerobic exercise. Use an example from athletics in your answer.

[2 marks]

Definition Glucose + oxygen  $\rightarrow$  energy + carbon dioxide + water

Example 1500m or accept any long distance event

0 8 . 3

Identify the **two** waste products released from the body when Ibrahim is working aerobically.

[2 marks]

- 1 carbon dioxide
- 2 water

Question 8 continues on the next page

Turn over ►



0 8 . 4

Explain how Ibrahim's skeletal and muscular system work together to bring about movement.

[3 marks]

- (1) muscles are attached to bones via tendons
- (1) muscles work in antagonistic pairs because they can only pull.
- (1) the agonist or prime mover contracts (shortens) whilst the antagonist relaxes (lengthens)
- (1) movement only occurs at a joint, where two bones meet.

9



0 9

Matthew is a Year 7 student who is a very good all-round sportsman. He has recently undertaken a series of fitness tests to measure his fitness levels.

The multi stage fitness test was used to measure Matthew's cardiovascular endurance.

0 9 . 1

Describe the multi stage fitness test.

[4 marks]

- (1) - A 20m section is marked out with cones being placed at either end of the section
- (1) - The beep test recording is then started and the performer participates in the test
- (1) - If the performer arrives at the end of the section before the beep they must wait for the beep before setting off again.
- (1) - If the performer fails to reach the end of the section before the beep, they should be allowed 2 or 3 further attempts
- (1) - Equipment: cones, multi-stage fitness test recording and music player
- (1) - Measurements: stages

Question 9 continues on the next page

Turn over ►



09.2

Discuss whether fitness testing is an appropriate way of assessing Matthew's sporting ability.

[5 marks]

(3 marks) Reasons for:

max

- (1) Identify strengths and weaknesses in a performance
- (1) To monitor improvements
- (1) To show a starting level of fitness
- (1) To inform training requirements
- (1) To compare against norms of group / national figures
- (1) To motivate / set goals
- (1) To provide variety in a training programme

(3 marks) Reasons against:

max

- (1) Tests are often not sport specific / too general
- (1) They do not replicate movements of an activity
- (1) They do not replicate competitive conditions required in sports
- (1) Many do not use direct measuring - therefore inaccurate
- (1) Some need motivation
- (1) Some have questionable reliability
- (1) They must be carried out with the correct procedures to increase validity.

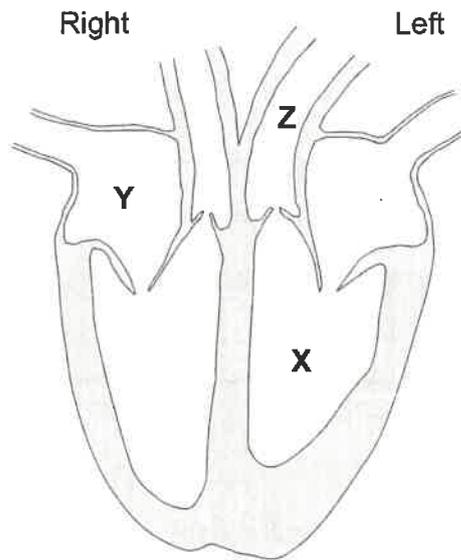
9



1 0

Figure 3 shows the structure of the heart.

Figure 3



1 0 . 1

Identify the chambers of the heart labelled X and Y in Figure 3.

[2 marks]

x Left ventricle  
 y Right atrium

1 0 . 2

What is the role of Z in Figure 3?

[1 mark]

Blood is returned to heart via the pulmonary vein, which is now oxygenated and enters the left atrium

1 0 . 3

Complete the formula for cardiac output.

[1 mark]

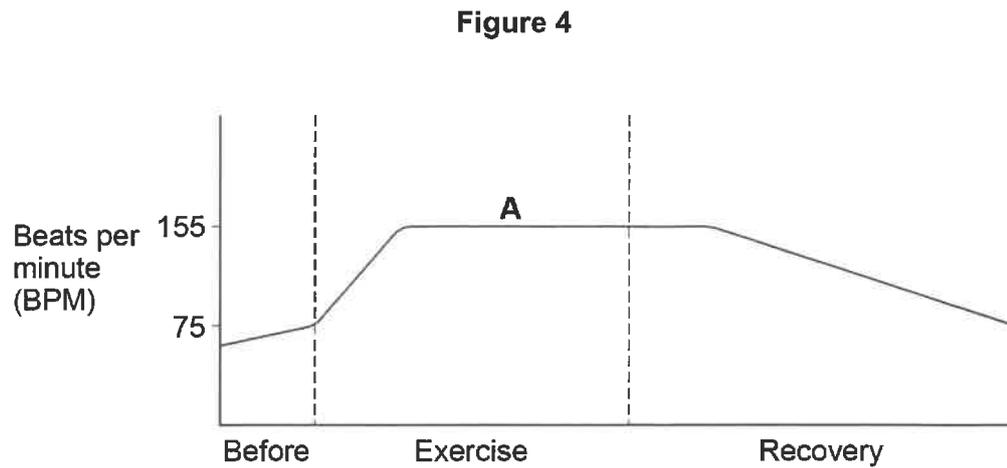
Cardiac output (Q) = heart rate x stroke volume

Question 10 continues on the next page

Turn over ►



**Figure 4** shows the heart rate of an individual before, during and in recovery from exercise.



**1 0 . 4** Explain what is happening to the heart rate before exercise in **Figure 4**.

[3 marks]

- (1) There is a slight rise in heart rate before exercising.
- (1) caused by the release of adrenaline
- (1) this is known as the anticipatory rise

**1 0 . 5** What is the intensity of exercise at point **A** in **Figure 4**?

[1 mark]

Aerobic exercise



1 0 . 6

Explain how vasodilation helps to direct blood flow when we exercise.

[2 marks]

- (1) The walls of the arteries relax/which increases the diameter of the arteries (1)  
This increases the blood flow to tissues (1)

10

Turn over for the next question

Turn over ►



1 1 . 1 Complete **Figure 5** to show the pathway of air.

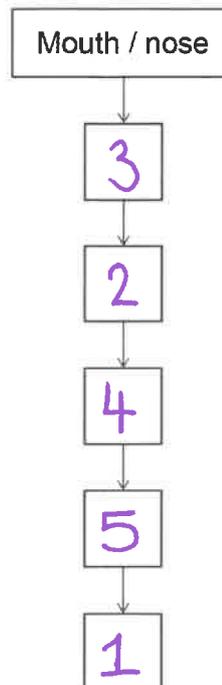
Write the numbers from the following list in the boxes shown in **Figure 5** to show the correct order of the pathway of air.

The first position in **Figure 5** has been completed for you. Use each number only once.

[5 marks]

1. Alveoli
2. Bronchi
3. Trachea
4. Lungs
5. Bronchioles

**Figure 5**



1 1 . 2 During exercise the lungs expand more to allow a greater volume of air to be breathed in.

Name the **two** muscles that help the diaphragm and intercostal muscles in this process.

[2 marks]

- 1 sternocleidomastoid
- 2 Pectorals



1 2 . 1 Define speed. (i) distance  $\div$  time also acceptable [1 mark]

The maximum rate at which an individual is able  
(i) to perform a movement or cover a distance in a period of time, putting body parts into action as quickly as possible

1 2 . 2 Explain how a 1500m runner could use speed to their advantage in a 1500m race. [3 marks]

(i) To get a fast start at the beginning of the race

(i) To overtake a competitor to get into a better position

(i) To sprint at the end of the race to ensure a higher finishing position / faster time

1 2 . 3 Give an example of a sporting action for each of the following components of fitness. [3 marks]

Agility

Flexibility

Reaction time

Agility dribbling with the ball in basketball

(i) to outwit the opposition and move around the opposition effectively.

Flexibility stretching for a drop shot in badminton, reaching for the shuttlecock and leaning towards the front of the court.

Reaction time reacting to an external source (gun) at the start of a 100m sprint to get out of the starting blocks as quickly as possible.

Accept other suitable responses

Question 12 continues on the next page

Turn over ►



1 2 4 Evaluate the importance of plyometric training and interval training to a games player.

KNOWLEDGE OF EACH TRAINING METHOD.

[6 marks]

A01  
=  
1 mark

Plyometric training: a type of training that usually takes the form of bounding, hopping or jumping. using your body weight and gravity to stress muscles involved

Interval: involves alternate periods of high intensity work with periods of rest or lower intensity work

A02  
=  
2 marks

APPLICATION TO A GAMES PLAYER

Plyometric training: needed in basketball to perform a lay up, taking off and getting height to reach for the net / get closer to avoid an interception and a higher success rate of scoring a basketball

Interval training: needed for basketball as replicated when sprinting towards a rolling ball to get there quicker than the opposing player. This can also be seen when sprinting back and having an active rest waiting to man mark your opposing player when coming in to their attacking area.

A03  
=  
3 marks

ANALYSIS Avoids boredom using two types of training methods  
Both types of training can be adapted / tailored to the demands of the activity so therefore both appropriate  
Most team sports are played for a long duration and therefore cardiovascular endurance may be more beneficial.

There has to be a balance between interval & plyometric otherwise other components of fitness will be lost.



1 3

Nell is a 16-year-old who represents her county at both football and netball. She is undertaking an intensive training programme so that she can perform to her maximum potential.

Analyse the different methods that Nell could use to prevent injury and recover from vigorous exercise to optimise her performance.

### KNOWLEDGE

[9 marks]

A01  
= 2 marks

Cool down: 5-10 minutes of walking / jogging to help decrease body temperature and remove waste products such as lactic acid from the working muscles. This should be followed by 5-10 minutes of static stretching to help muscles relax.

Rehydration: is the process of replacing the fluids that are lost during exercise, mainly through sweating.

Ice baths: immersion in cold water

Massage: involves rubbing and kneading of muscles and joints with the hands, can help reduce the pain that may be caused by too much physical activity

### APPLICATION

A02  
= 2 marks

Cool down: aids in clearing of waste products - lactic acid reduces the potential for DOMS

reduces the chances of dizziness or fainting caused by pooling of blood

allows breathing rate & heart rate to slowly return to their resting rates

Rehydration: Extra carbohydrates means more energy and replacing those lost during exercise

Ice baths: constrict blood vessels and flush waste products.

Reduce swelling and muscles start to warm up, once out of the bath, which means an increased blood flow through the muscles which improves the healing process

Turn over ►



Massage: prevent or relieve delayed onset muscle soreness by encouraging blood flow throughout the body, preventing muscle fatigue

A03  
=  
5 marks

### ANALYSE

Cool down would be deemed most accessible as you can perform straight away after activity

Cool down is inexpensive

Cool down isn't time consuming

Ice baths are not readily accessible

Ice baths would require some assistance to prepare the ice bath / help in and out

Extra space

All muscles are used whilst playing netball/football therefore can all be submerged into water thus causing extremities to experience the process / vasoconstrict / vasodilate

Ice baths are not particularly pleasant due to extreme cold and similar results could be experienced by cooling down / stretching

Massage: time consuming / travelling more than likely / expensive / reliant on another person / accessibility

END OF QUESTIONS

