



**ADVANCED SUBSIDIARY GCE
PHYSICAL EDUCATION**

2562

The Application of Physiological and Psychological Knowledge to Improve Performance

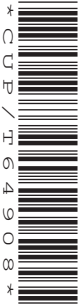
Candidates answer on the question paper

OCR Supplied Materials:
None

Other Materials Required:
None

**Friday 16 January 2009
Afternoon**

Duration: 1 hour 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- This document consists of **12** pages. Any blank pages are indicated.

Section A

Application of Anatomical and Physiological Knowledge to Improve Performance

1 (a) Fig. 1 shows a swimmer preparing to dive.

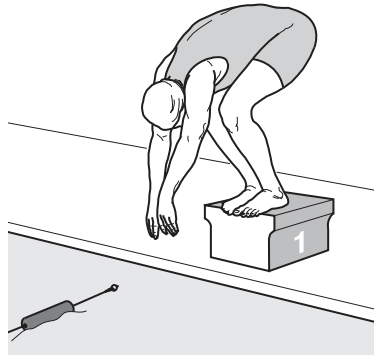


Fig. 1

(i) Using your anatomical and physiological knowledge, identify the type of joint, articulating bones, agonist and antagonist muscles of the **hip joint** during the preparation phase of the dive.

Joint Type:

Articulating Bones:

Agonist Muscle:

Antagonist Muscle: [4]

(ii) What movement will occur at the **hip joint** as the swimmer pushes off the block? Name an exercise which could be used to strengthen the agonist muscle responsible for this movement.

Movement:

Strength Exercise: [2]

(iii) How would a warm up benefit the strength of muscle contractions during the dive?

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

(b) Give **two** structural characteristics of a slow twitch (type 1) muscle fibre.

Structure 1:

Structure 2: [2]

(c) Define one of Newton's three laws of motion. Use an example from Physical Education or Sport to illustrate your answer.

Definition:

.....

.....

Example:

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..... [2]

(d) Using an example from Physical Education or Sport describe how angular motion is produced.

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..... [2]

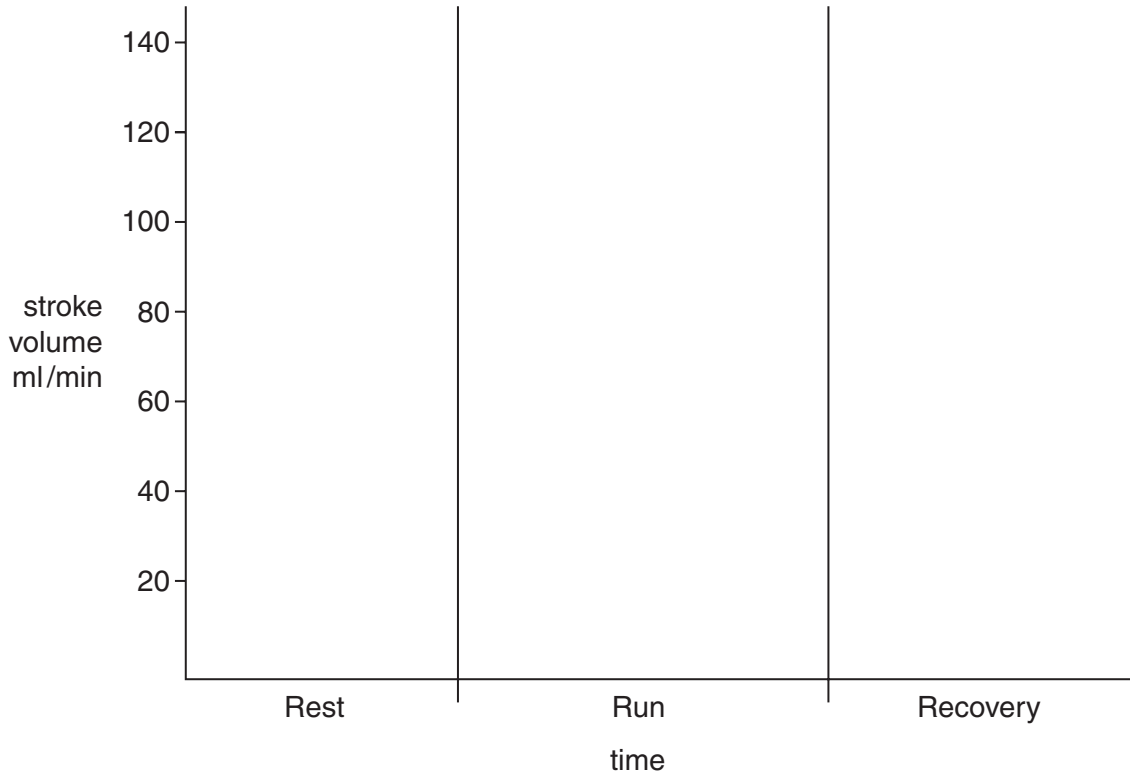
[Total: 15]

2 (a) During a maximal 400m run the heart must adapt to meet the requirements of the exercise being performed.

(i) Sketch a graph showing the changes that you would expect to the stroke volume:

- At rest
- During a maximal 400m run
- 10 minute recovery period

[3]



(ii) An increase in stroke volume is one of the reasons why cardiac output is increased during exercise. Describe other factors that cause an increase in cardiac output during exercise.

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..... [3]

(b) During exercise, more oxygenated blood is required by the working muscles than at rest. Describe the vascular system mechanisms which allow the redistribution of blood to occur.

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..... [4]

(c) During exercise, the mechanics of breathing allow for greater volumes of air to be expired. Name the respiratory muscles used to force more air out of the lungs during exercise.

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..... [2]

(d) Describe oxygen diffusion from the alveoli to the pulmonary capillaries during exercise.

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..... [3]

[Total: 15]

Section B

Acquiring and Performing Movement Skills

3 The development of movement skills in sport can be explained by Fig. 2 below.

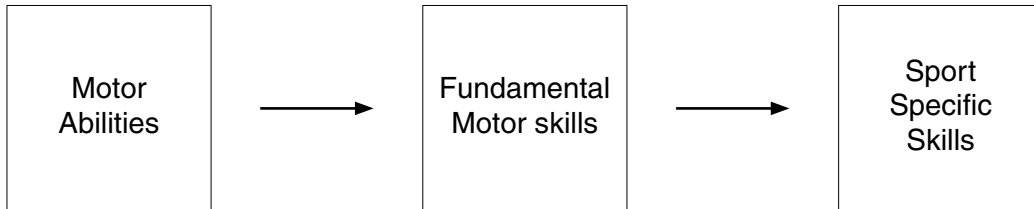


Fig. 2

(a) Use a practical example to explain each stage of Fig. 2.

Motor abilities

.....

Fundamental motor skills

.....

Sport specific skills

..... [3]

(b) Movement skills can be classified by their organisation.

Use practical examples to explain the low and high organisation of movement skills.

Low

.....

.....

High

.....

..... [4]

(c) Reaction time in sport can affect how efficiently a performer responds in a physical task.

(i) Define reaction time.

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..... [1]

(ii) Sketch a graph to illustrate the effect of choice reaction time (Hick's Law) on physical performance.

[3]

(d) Movement can be controlled by either closed loop or open loop motor control.

Describe closed loop motor control.

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..... [4]

[Total: 15]

Turn over

4 The autonomous phase can be said to be the final phase in the learning of movement skills.

(a) Use a practical example to describe the characteristics of the autonomous phase of learning.

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..... [3]

(b) The long term memory plays a significant role in the learning of movement skills.

Describe the long term memory.

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..... [2]

(c) Cognitive theories of learning related to the work of the Gestaltists can explain how we learn movement skills.

Describe the roles of insight learning, intervening variables, past experience and whole learning within the cognitive theories.

Insight learning
.....
Intervening variables
.....
Past experience
.....
Whole learning [4]

(d) Learning can be enhanced by motivation and an increase in arousal.

(i) What is meant by the term motivation?

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..... [1]

(ii) Describe and apply intrinsic motivation to a practical example.

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..... [2]

(iii) Use a practical example to explain the Inverted U theory of arousal.

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..... [3]

[Total: 15]

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