

ADVANCED GCE
PHYSICAL EDUCATION

2566

Exercise and Sport Physiology and the Integration of Knowledge of Principles
and Concepts Across Different Areas of Physical Education

THURSDAY 5 JUNE 2008

Afternoon
Time: 1 hour 30 minutes

Additional materials (enclosed): Answer Booklet (8 page)

Additional materials (required):
None



INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the spaces provided on the Answer Booklet.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There are two sections in this paper.
- Answer the compulsory question in Section A and **one** question from Section B.
- Read each question carefully and make sure that you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- You are advised to spend no longer than 30 minutes on Section A.
- There is a total of 45 marks available in Section B
 - 26 marks will be available for knowledge content. 19 marks are available for your ability to critically analyse and link your knowledge across different areas of PE, making connections between them and practical performance. The quality of written communication will also be taken into account.
 - Your answer should be in continuous prose and you are advised to link the two parts of the question you have chosen.
 - You are advised to spend no longer than one hour on Section B.

This document consists of **7** printed pages and **1** blank page.

Section A

Answer the question in this section.

You are advised to spend no longer than 30 minutes on this section.

Exercise and Sport Physiology

1 Aerobic capacity or VO_2 max is an important fitness component.

(a) Table 1 shows values for VO_2 max for sportsmen and sportswomen in different sports.

Sport	Male (ml/kg/min)	Female (ml/kg/min)
Rowing	72	65
Cross country skiing	95	75
Swimming	70	60

Table 1

(i) Define VO_2 max and identify a common method used to evaluate it. [2]

(ii) Explain **three** physiological reasons why males tend to have higher values for VO_2 max than females. [3]

(b) A weight training programme can develop maximum strength.

(i) Outline the main features of a weight training programme designed to develop **maximum strength**. [4]

(ii) Identify **two** physiological adaptations that take place during the training programme and explain how each helps to improve maximum strength. [4]

(iii) A performer may decide to take steroids to further improve their maximum strength.

Describe **two** long term health risks associated with taking steroids. [2]

[Total: 15 marks]

Section B

Answer **one** question only, **either** Question 2 (Scientific Focus)
or Question 3 (Socio-cultural Focus).

Question 2 (Scientific Focus)

You must answer from both Part One **and** Part Two.

Part One: answer either (a) or (b)

Either

- (a) (Application of Anatomical and Physiological Knowledge to Improve Performance)

Fig. 1 shows (a) the anatomy of the spine and (b) a sporting action associated with the spine.

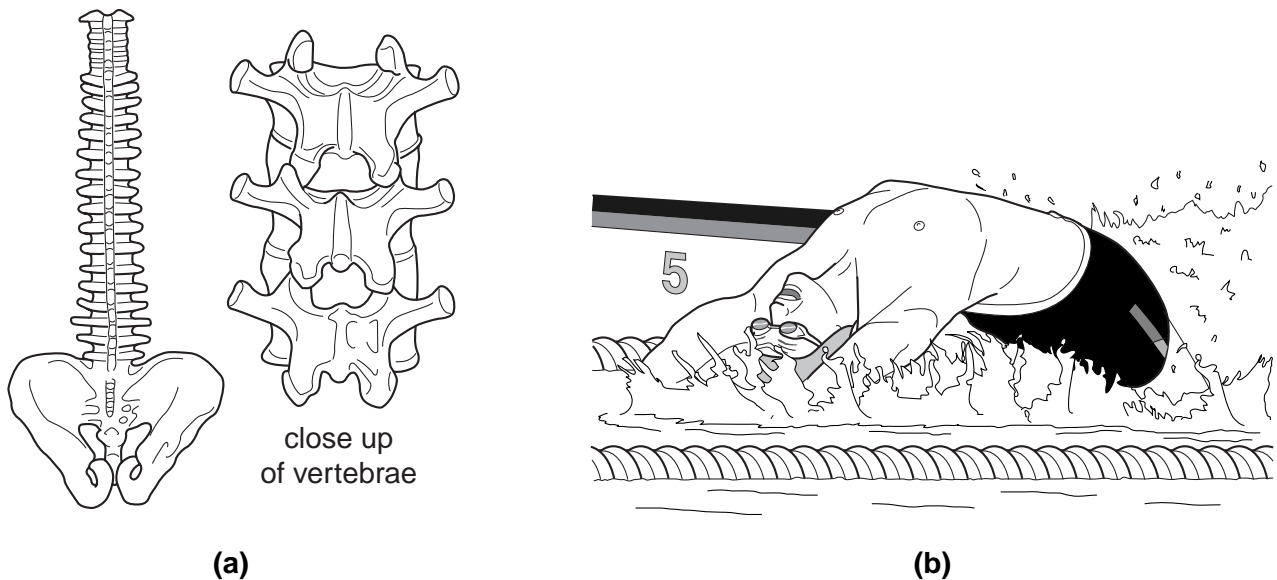


Fig. 1

Identify the different types of joint in the spine and describe where they are located.

Identify **three** muscles from the spine and lower limb that contract concentrically to push the swimmer from the wall.

Explain why a warm up enables these muscles to contract with greater speed and force.

Elite swimmers have large lung volumes and capacities.

Define tidal volume and using your knowledge of the mechanics of breathing explain why tidal volume increases during exercise.

Or

(b) (Acquiring and Performing Movement Skills)

Fig. 2 below is an example of an information processing model.

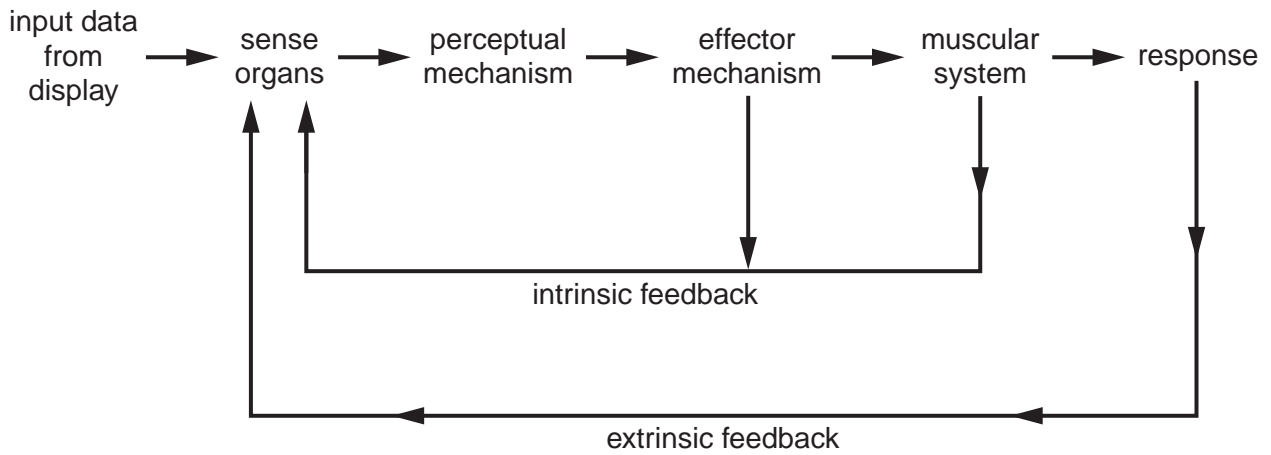


Fig. 2

Explain the role of each component of the information processing model when performing a movement skill.

What is meant by a motor programme and how are motor programmes formed?

Part Two: answer either (c) or (d) or (e)**Either****(c) (Exercise and Sport Physiology)**

Swimmers often rely heavily on the use of the lactic acid system for ATP resynthesis.

Describe the lactic acid energy system and discuss the advantages and disadvantages of using this system.

Interval training is a versatile type of training in which periods of work are interspersed with periods of recovery.

Outline an interval training session that is designed to stress the lactic acid system. Explain how you would apply the training principles of overload, specificity and reversibility to ensure your sessions remain effective throughout a training programme.

Or**(d) (Biomechanical Analysis of Human Movement)**

Using Newton's Laws of Motion describe how an object or body becomes a projectile in sport.

Identify and explain the factors at take off that determine the trajectory of a projectile in sport.

Spin can affect the flight path of projectiles in sport.

Explain how factors other than spin can affect the flight path of a projectile in sport.

Or**(e) (Psychology of Sport Performance)**

Effective leadership is recognised as being important in sport.

What makes an effective leader?

Explain the different circumstances in which an autocratic leadership style and a democratic leadership style would be used.

Concentration and attentional control, including cue utilisation, are essential for top-level performance in sport.

Explain what is meant by cue utilisation and how it effects performance in sport.

[Total: 45 marks]

Question 3 (Socio-cultural Focus)

You must answer from both Part One **and** Part Two.

Part One**(a) (Contemporary Studies in Physical Education)**

Physical Education, recreation and sport are different aspects of physical activity in schools.

Describe how each of these aspects can be experienced by young people in schools.

Discuss Physical Education in schools with reference to; benefits of Physical Education, current initiatives and strategies in school sport and possible constraints on Physical Education departments.

Part Two: Answer either (b) or (c)**Either****(b) (Historical Studies in Physical Education)**

Discuss physical activity in State Elementary Schools during the first half of the twentieth century with particular reference to the objectives, content and teaching method of lessons in 1902, 1933 and the 1950s.

Or**(c) (Comparative Studies in Physical Education)**

Describe the factors that have helped to improve school sport and Physical Education **either** in French Schools **or** Australian Schools.

Compare sport in specialist Sports Colleges in the UK with sport in High Schools in the USA with reference to aims, funding and organisation.

[Total: 45 marks]

Copyright Acknowledgements:

Q.1 table

From J Wilmore & D Costill, *Physiology of Sport and Exercise*, p.233, Human Kinetics Europe Ltd, 1994

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