

General Certificate of Education  
June 2004  
Advanced Subsidiary Examination



**SPORT AND PHYSICAL EDUCATION**  
**Unit 1**

**PED1**

Friday 28 May 2004 Morning Session

**In addition to this paper you will require:**  
a 12-page answer book.

Time allowed: 1 hour 30 minutes

**Instructions**

- Use blue or black ink or ball-point pen. Pencil should only be used for drawing.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. The *Paper Reference* is PED1.
- Answer **four** from **five** questions.
- Do all rough work in the answer book. Cross through any work you do not want marked.

**Information**

- The maximum mark for this paper is 75.
- Mark allocations are shown in brackets.

**Advice**

- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.
- You will be awarded up to 3 marks for the quality of your written communication.

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## Physiological and Psychological Factors which Improve Performance

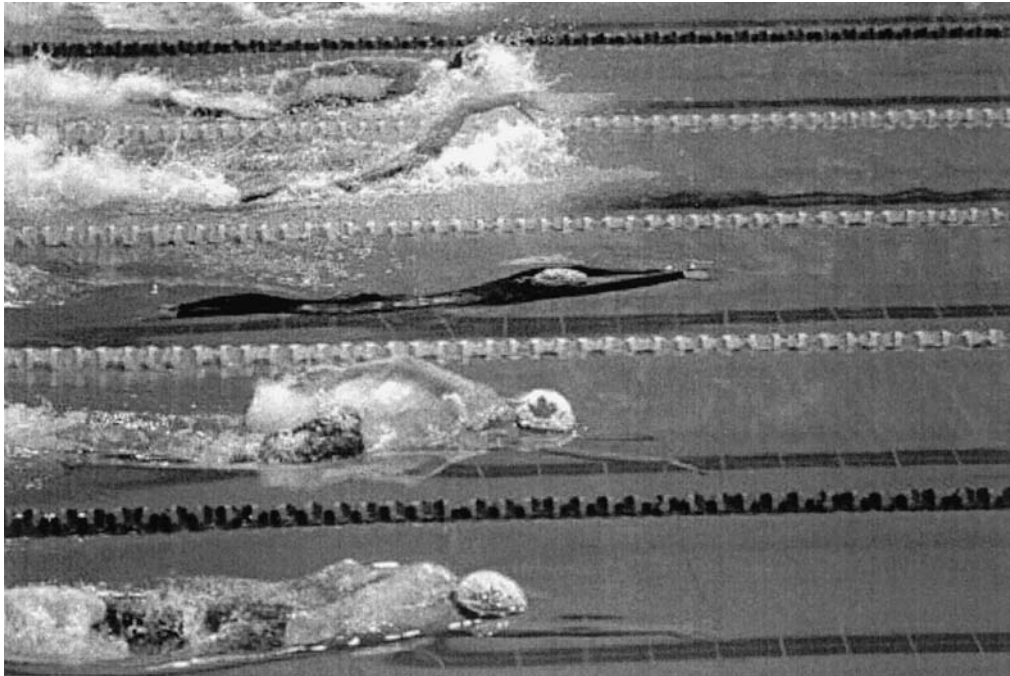
Answer **four** from **five** questions.

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1

Total for this question: 18 marks

Figure 1 shows sprint swimmers competing in a 200 metre race.



Source: [www.empics.co.uk](http://www.empics.co.uk)

Figure 1

- (a) Identify **two** key components of fitness that are required by a sprint swimmer. Give an example of how **one** of these components is used within a race. (3 marks)
  - (b) Step tests are sub-maximal tests. What are the principles of a sub-maximal step test? (3 marks)
  - (c) Discuss whether a step test is a *valid and reliable* fitness test for a swimmer. (3 marks)
- Swimmers will experience different types of feedback both during and after a performance.
- (d) *Knowledge of results and knowledge of performance* are two types of feedback. Explain these types of feedback. (2 marks)
  - (e) What are the **three** main benefits of feedback to a swimmer? (3 marks)
  - (f) What are the characteristics of 'effective feedback' for a swimmer? (4 marks)

2

Total for this question: 18 marks

Figure 2 shows how a gymnast pushes up from a headstand to a handstand.

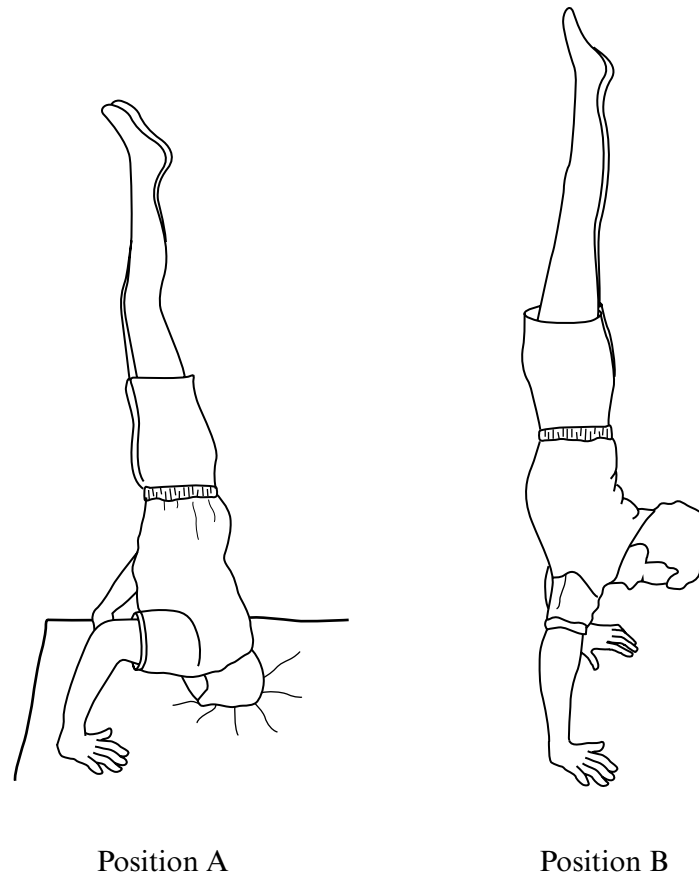


Figure 2

- (a) (i) Name the main agonist and antagonist muscles at the elbow joint in the movement from **Position A** to **Position B**. (2 marks)
- (ii) Name the articulating bones in this movement. (2 marks)
- (iii) Name the type of muscle contraction taking place at Position A **and** through the movement phase to Position B. (2 marks)
- (iv) Identify the joint action at the elbow. Through what *plane* and about which *axis* does the arm action take place? (3 marks)

For the effective learning of gymnastic skills, gymnasts need to remember important instructions, cues and movement patterns.

- (b) What are the characteristics of short term memory? (5 marks)
- (c) How can a coach ensure that important information is **stored** in the performer's long term memory? (4 marks)

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3

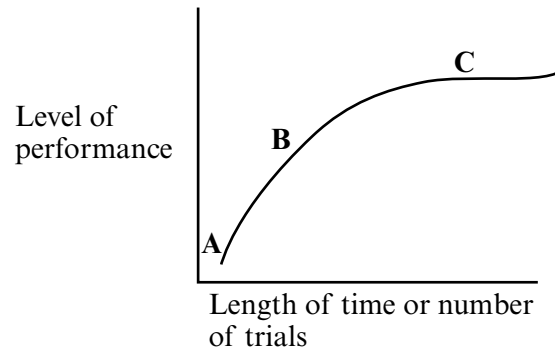
Total for this question: 18 marks

Through training for and participation in game type activities, players experience changes to their cardiovascular systems.

Some games players may experience *bradycardia* and a condition known as ‘*athlete’s heart*’.

- (a) (i) Explain the terms *bradycardia* and ‘*athlete’s heart*’. (2 marks)
- (ii) What physiological factors are responsible for these conditions? (3 marks)
- (b) The heart rate increases *prior to* and *during* exercise and reduces *after* exercise. Explain how these changes in heart rate occur. (4 marks)

A beginner attends a football training camp. Whilst at the camp the coach monitored her success in performing a particular skill and produced the graph shown in **Figure 3**.



Source: Woods, *Applying Psychology to Sport*, Hodder & Stoughton, 1998

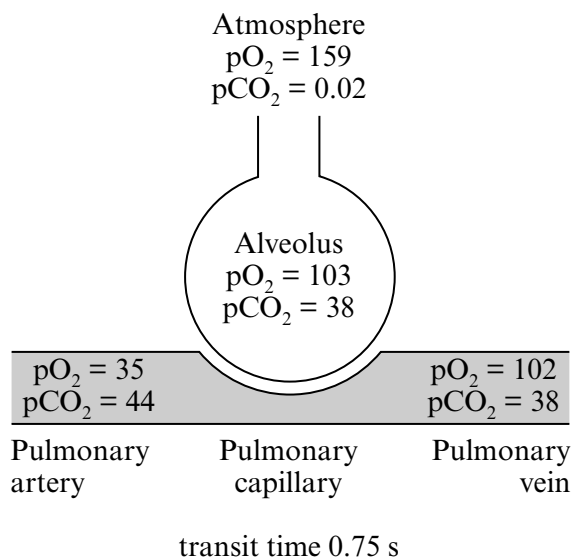
**Figure 3**

- (c) (i) Name the stages of learning at A and B. (2 marks)
- (ii) What is indicated by the shape of the graph at C? What are the causes of this condition? (4 marks)
- (iii) What strategies could a coach employ to help the performer overcome this condition? (3 marks)

4

Total for this question: 18 marks

Whilst participating in exercise it is essential for the muscles to receive adequate amounts of oxygen, otherwise fatigue occurs.



Source: Davis. Ball et al, *Physical Education and the Study of Sport*, Mosby, 1997

**Figure 4**

- (a) (i) **Figure 4** shows values for the partial pressure of oxygen at different points in the pulmonary circulation.
- Use this information to explain how the process of diffusion of oxygen and carbon dioxide takes place. (3 marks)
- (ii) What changes would you expect to see in **Figure 4** if the performer had just undergone strenuous exercise? (3 marks)
- (iii) Describe how oxygen is transported to the working muscles and the effect that strenuous exercise will have on its delivery. Explain why strenuous exercise has this effect. (4 marks)
- (b) Operant conditioning theories such as Thorndike and Skinners have been used by coaches to improve performances.
- (i) Explain what you understand by the term *reinforcement* and distinguish between *positive reinforcement* and *negative reinforcement*. (3 marks)
- (ii) Explain, using examples, how a coach would use operant conditioning. (5 marks)

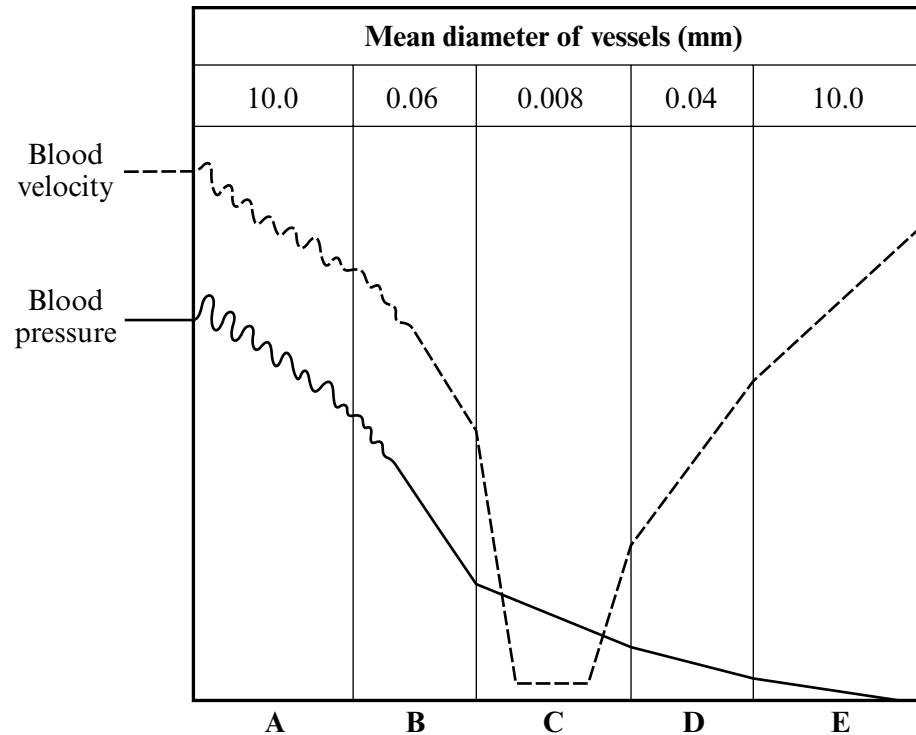
TURN OVER FOR THE NEXT QUESTION

Turn over ►

5

Total for this question: 18 marks

When playing golf, a player's blood velocity and pressure is similar to **Figure 5** below.



Source: Clegg, *Exercise Physiology Functional Anatomy*, Feltham Press 1994

**Figure 5**

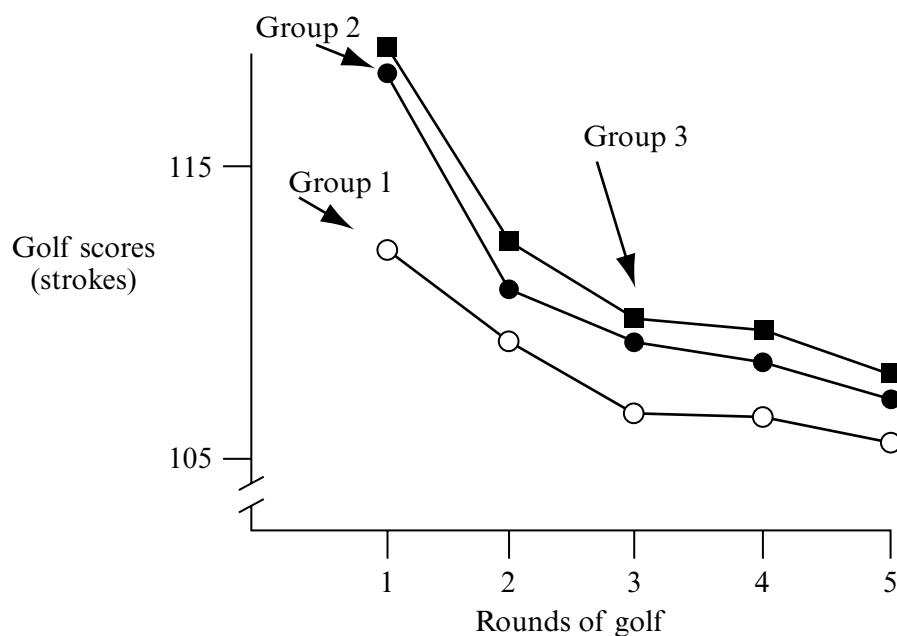
- (a) (i) Using **Figure 5** identify the blood vessels that are represented by **A**, **B**, **C**, **D** and **E**. (3 marks)
- (ii) Explain the variation in blood pressure and blood velocity occurring from **A** to **E**. (3 marks)
- (iii) Describe the mechanisms that assist the return of blood to the heart. (3 marks)

In golf, the player with the lowest score wins. **Figure 6** shows the golf scores achieved by three groups of students:

Group 1 – practised at a golf driving range

Group 2 – did not receive any practice

Group 3 – practised on a miniature golf course.



Source: Schmidt, *Motor Learning and Performance: From Principles to Practice*, Human Kinetics, 1991

**Figure 6**

- (b) **Figure 6** shows that Group 1 have experienced positive transfer of learning.
- What do you understand by the term *transfer of learning*? Explain the other forms that transfer can take. (4 marks)
  - Use **Figure 6** to explain the effects of transfer on Groups 2 and 3. (2 marks)
  - How could a coach ensure that positive transfer of learning will take place in future sessions? (3 marks)

END OF QUESTIONS

**THERE ARE NO QUESTIONS PRINTED ON THIS PAGE**