General Certificate of Education
June 2005
Advanced Subsidiary Examination

ASSESSMENT and QUALIFICATIONS ALLIANCE

SPORT AND PHYSICAL EDUCATION PED1
Unit 1

Thursday 26 May 2005 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.

Physiological and Psychological Factors which Improve Performance

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

1 **Total for this question: *18 marks***

Effective analysis of movement and reaction to an opponent's shot can lead to an improvement in performance.

The tennis player in **Figure 1** is executing a forehand stroke.

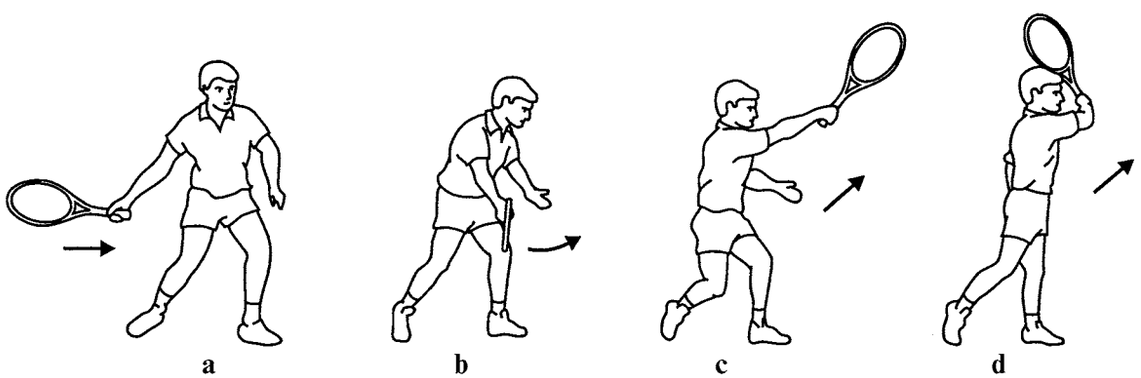


Figure 1

(a) (i) **In your answer book**, copy and complete **Table 1**, identifying the *type of joint,* the *joint action* and the *main agonist* of the shoulder from **a–c and** of the elbow from **c–d** used in the execution of the forehand stroke. *(6 marks)*

	Type of Joint	Joint Action	Main Agonist
Shoulder			
Elbow			

Table 1

(ii) Name, sketch and label the lever system operating at the **elbow** during the action from **c–d**. *(3 marks)*

During rallies, tennis players have to react and respond quickly as a result of the action of their opponent.

(b) (i) In terms of reacting quickly, explain the principles of Hick's Law. *(2 marks)*

Figure 2 shows part of the processing that occurs as a result of an opponent's shot:

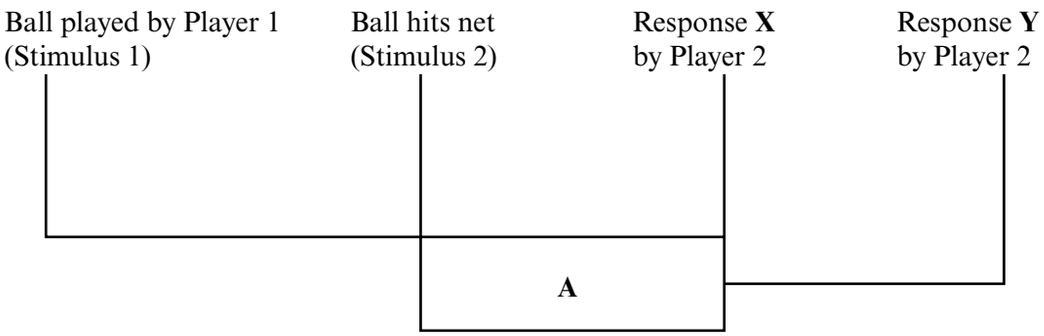


Figure 2

(ii) Using **Figure 2**, identify the period represented by **area A** and give an example of response **X** and response **Y**. *(3 marks)*

(iii) Using the *Single Channel Hypothesis*, explain why **area A** is created and why this may be a disadvantage for player 2. *(4 marks)*

TURN OVER FOR THE NEXT QUESTION

2 **Total for this question: *18 marks***

For effective performance, sports performers require the ability to receive, interpret and pass on information.

Figure 3 shows the relationships between the memory stores in a simple information-processing model.

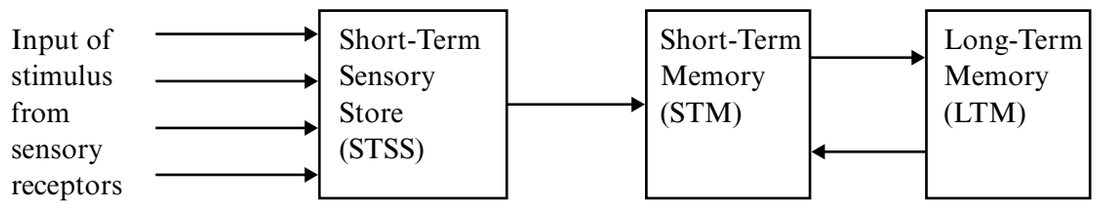


Figure 3

(a) Using **Figure 3**, describe the main functions of the:

(i) Short-Term Sensory Store; *(2 marks)*

(ii) Short-Term Memory; *(2 marks)*

(iii) Long-Term Memory. *(2 marks)*

(b) Suggest how a coach might help the retention of newly learned skills by a sports performer. *(3 marks)*

QUESTION 2 CONTINUES ON THE NEXT PAGE

Figure 4 shows the stroke volume, pulse rate and cardiac output of a performer completing a 30-minute run at sub-maximal pace on a treadmill.

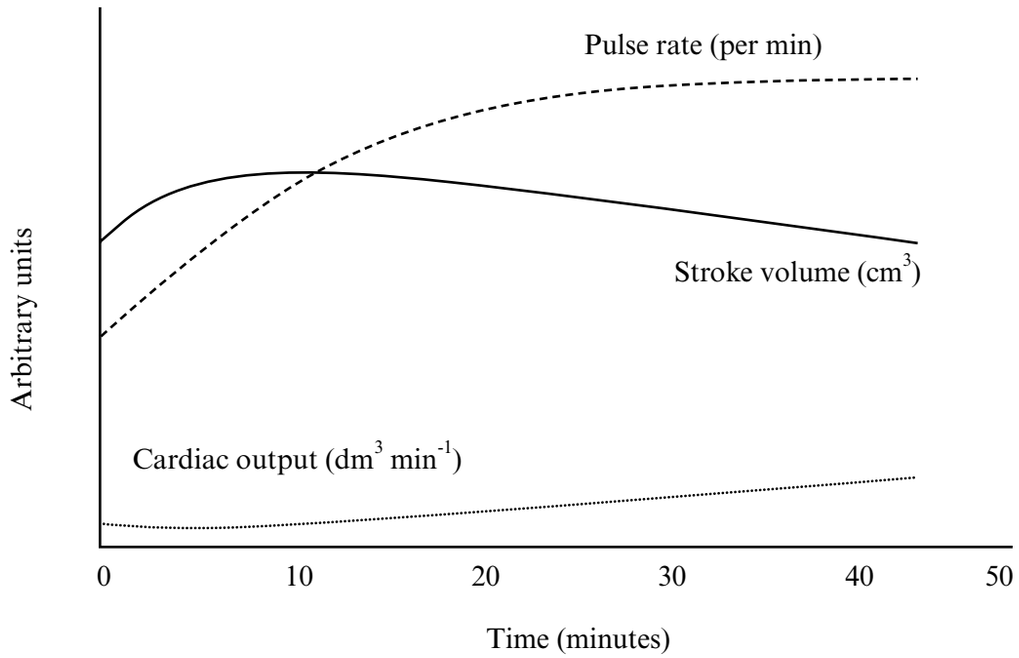


Figure 4

(c) (i) Briefly explain the terms *cardiac output* and *stroke volume* and the relationship between them. *(3 marks)*

(ii) Using **Figure 4**, explain why the performer's cardiac output increases during a run of constant pace and workload. *(4 marks)*

(iii) Explain how it is possible for a trained and an untrained individual to have the same cardiac output for a given workload. *(2 marks)*

TURN OVER FOR THE NEXT QUESTION

3 **Total for this question: *18 marks***

Performance can be improved by conducting fitness tests and by taking part in appropriate training and practice sessions.

Figure 5 shows a performer conducting a vertical jump test.

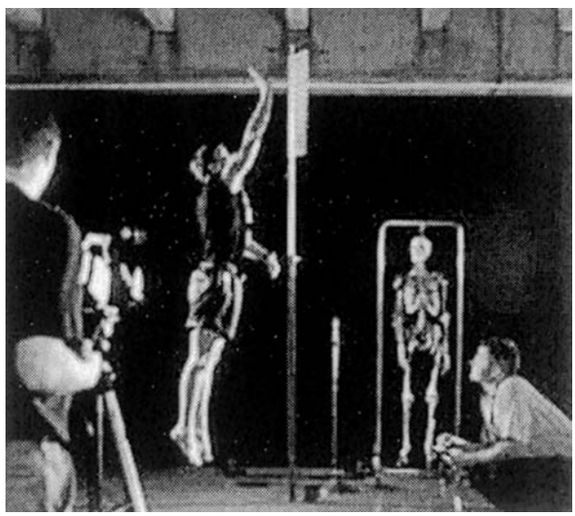


Figure 5

(a) (i) The vertical jump test is a *reliable* and *valid* test for measuring leg power. What do you understand by the terms *reliability* and *validity*? *(2 marks)*

(ii) Why is the vertical jump test more appropriate than a cycle power test for a high jumper? *(2 marks)*

(b) **In your answer book**, copy and complete **Table 2**, identifying the *joint action* and the *main agonists* used in the upward phase of the vertical jump test. *(5 marks)*

Joint	Joint Action	Main Agonist
Hip		
Knee	Extension	
Ankle		

Table 2

Figure 6 shows the performance curve of a beginner learning to shoot baskets in a massed practice session.

Figure 6 is not reproduced here due to third-party copyright constraints.

Figure 6

(c) (i) Using **Figure 6**, identify phase **A** of the curve and give reasons for its occurrence.
(5 marks)

(ii) Describe **four** ways that a coach could overcome the problems created by phase **A**.
(4 marks)

TURN OVER FOR THE NEXT QUESTION

4 **Total for this question: *18 marks***

In order to produce skilled performances, hockey players combine and adapt their abilities to the demands of the game.

(a) Explain the terms *Skill* and *Ability*. *(3 marks)*

Figure 7 shows a suggested skills profile of a hockey dribble within a game.

Continuous .....*..... Discrete
Gross ...*..... Fine
Self Paced .....*..... Externally Paced
Closed .....*..... Open
Intrinsic Feedback .....*..... Extrinsic Feedback
Simple .....*..... Complex

Figure 7

(b) Justify the selection of each aspect of the profile. *(6 marks)*

The information in **Table 3** was obtained from a performer at rest and during a game of hockey.

Organ system	**Blood flow at rest cm^3**	**Percentage of total blood flow cm^3**	**Blood flow during the game cm^3**	**Percentage of total blood flow cm^3**
Skeletal Muscle	1 200	21	12 500	72
Heart	250	4	750	4
Skin	500	8.5	1 900	11
Kidneys	1 100	19	600	3.5
Abdominal organs	1 400	24	600	3.5
Brain	750	13	750	4
Other	600	10.5	400	2
Total	5 800	100	17 500	100

Table 3

(c) (i) Explain why the blood flow to the brain remains the same at rest and during the game. *(2 marks)*

(ii) Explain why there is a need for blood flow to increase to the skeletal muscles during the game and how this is achieved. *(4 marks)*

(iii) Blood supply is maintained by the venous return mechanisms. Explain how these mechanisms ensure the return of blood to the heart. *(3 marks)*

5 **Total for this question: *18 marks***

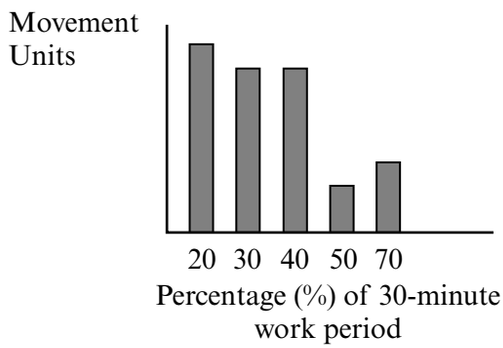
Performance is affected by practice conditions and the body's ability to meet the demands of exercise.

Two continuous tasks were used to investigate the effects of *massed practice* and *distributed practice* on learning. In Task 1, participants balanced on a balance board. In Task 2, participants climbed up and down a ladder.

Participants completed their task five times, practising for 20%, 30%, 40%, 50% and 70% of a 30-minute work period.

Figure 8 shows the scores achieved by the participants.

Task 1– Balance test
(Low scores indicate good performance)



Task 2– Ladder test
(High scores indicate good performance)

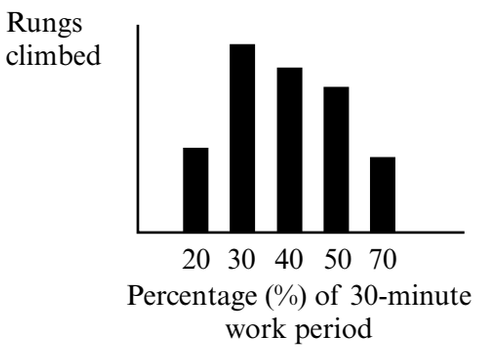


Figure 8

(a) (i) Using the graphs in **Figure 8**, describe and explain the results of the experiment. *(5 marks)*

(ii) Name **two** aspects of a task from any sporting situation and **two** characteristics of a learner that might lead you to decide whether to use *massed practice* or *distributed practice* to improve learning. *(4 marks)*

QUESTION 5 CONTINUES ON THE NEXT PAGE

Ventilation rate varies with the duration and intensity of exercise.

Figure 9 shows the ventilation rates of a performer working at a set intensity.

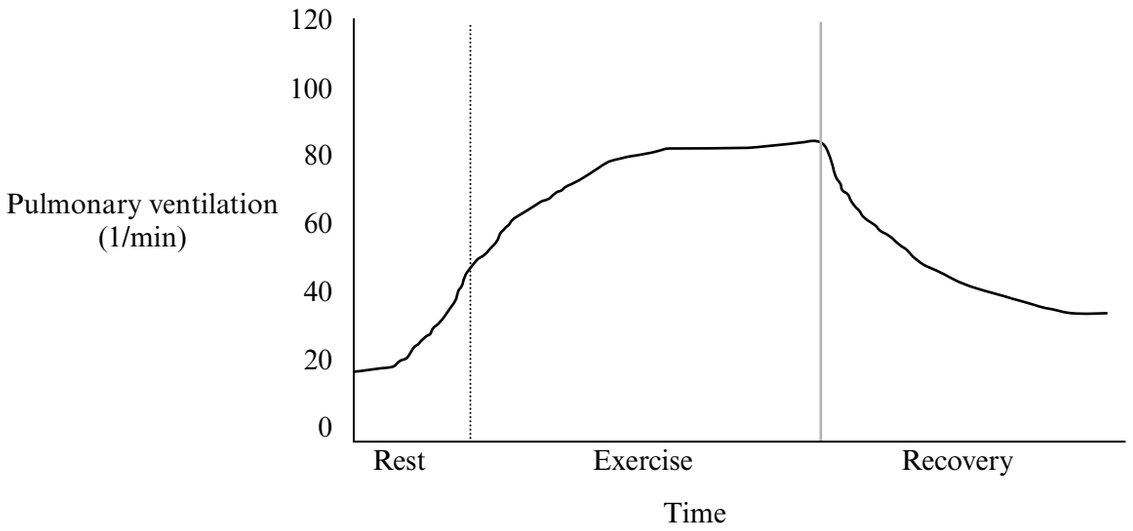


Figure 9

(b) Explain the shape of the graph in **Figure 9**, with reference to the period:

(i) at rest;

(ii) during exercise. *(4 marks)*

(c) Describe how the shape of the graph in **Figure 9** would alter for a performer:

(i) working at a lower intensity than that shown in **Figure 9**;

(ii) working at the same intensity as that shown in **Figure 9**, but after a period of several months' endurance training. Give reasons to support your answer. *(5 marks)*

END OF QUESTIONS

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