

Sports, exercise and health science
Standard level
Paper 2

Tuesday 8 November 2016 (morning)

Candidate session number

1 hour 15 minutes

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Instructions to candidates

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer one question.
- Write your answers in the boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[50 marks]**.



Section A

Answer **all** questions. Write your answers in the boxes provided.

- 1. A study recorded students' perceptions of their physical, cognitive and social involvement when being taught abdominal exercises, under three different teaching styles:

- Lesson 1 – Command style
- Lesson 2 – Practice style
- Lesson 3 – Problem-solving style.

The mean and standard deviation (SD) of the scores are shown in the table below, with higher mean scores indicating more involvement.

Teaching Style	Involvement					
	Physical		Cognitive		Social	
	Mean	SD	Mean	SD	Mean	SD
Command	5.45	0.86	3.96	1.16	4.51	0.89
Practice	5.34	0.93	4.75	0.98	4.24	1.00
Problem-solving	5.61	0.84	5.38	0.76	4.45	0.99

[Source: adapted from Sanchez *et al.*, (2012), *Students' perceptions of the command, practice, and inclusion styles of teaching. Physical Education and Sport pedagogy, vol 17, no.3, pages 317-330*]

- (a) State which teaching style has the highest level of social involvement. [1]

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- (b) Using the data, outline how standard deviation is useful for comparing students' perceptions of teaching styles. [1]

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(Question 1 continued)

- (c) Discuss the hypothesis that teaching style can affect students' perceptions of their physical and cognitive involvement in abdominal exercises.

[3]

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- (d) Outline how perceived exercise intensity can be measured using the Borg scale.

[2]

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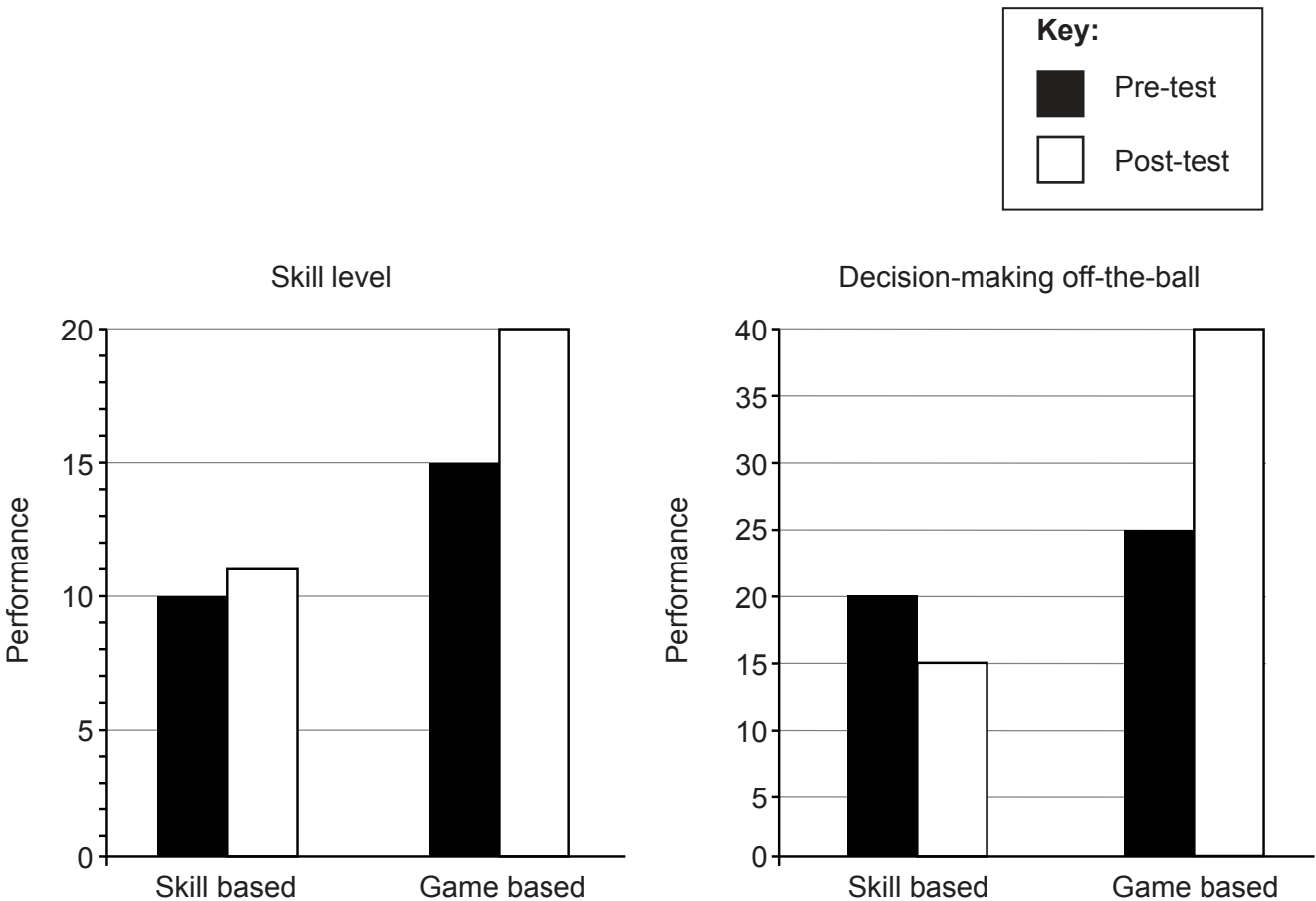
16EP03

Turn over

(Question 1 continued)

A second study measured the effects of a skill based and a game based teaching approach on students' performance in basketball.

The bar chart below shows the mean pre-test and post-test scores for students' skill level and decision-making off-the-ball abilities. A higher score indicates better performance.



[Source: IBO]

(e) State the mean pre-test game based score for skill level.

[1]

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(This question continues on the following page



16EP04

(Question 1 continued)

- (f) Analyse the effect of **one** teaching approach on skill level and decision making off-the-ball, referring to the data in your answer.

[2]

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- (g) Explain how physical maturation can contribute to different rates of learning a new skill.

[2]

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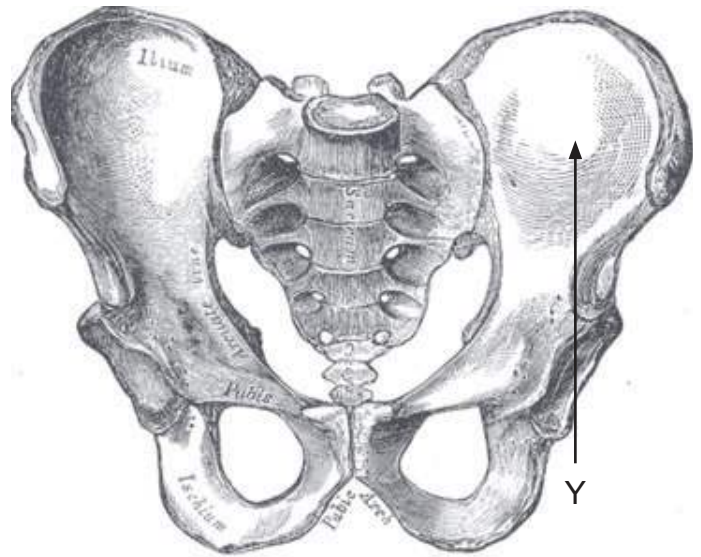
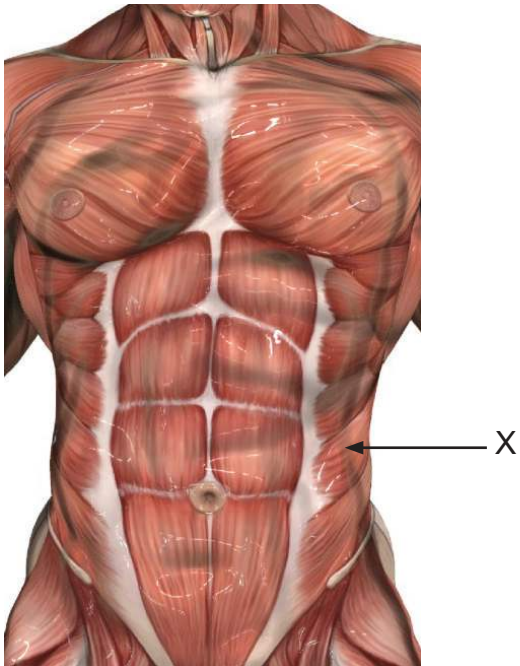
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16EP05

Turn over

2. (a) List the names of the muscle labelled X and the pelvic bone labelled Y in the diagrams below. [2]



[Source: <http://www.publicdomainpictures.net/pictures/170000/velka/muscle-man-2.jpg>]

[Source: <https://upload.wikimedia.org/wikipedia/commons/thumb/9/98/Gray241.png/375px-Gray241.png>]

X.
Y.

- (b) State the type of synovial joint that is found at the distal end of the femur. [1]

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- (c) Analyse the ankle joint movement at take-off when rebounding in basketball in relation to joint action and type of muscle contraction. [2]

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3. (a) List **one** type of blood cell. [1]

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(b) State the receptor in the aorta which responds to carbon dioxide and pH levels in the blood. [1]

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(c) Outline the role of cholinesterase in muscle contraction. [2]

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(d) Explain the role of myosin in muscle contraction after adenosine triphosphate (ATP) is broken down and releases energy. [3]

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4. (a) (i) State the chemical composition of a glucose molecule. [1]

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(ii) Explain how glucose molecules combine to form disaccharides and polysaccharides. [2]

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(b) Outline the function of glucagon in relation to the breakdown of glycogen when fasting. [1]

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(c) Describe the strengths of the ATP-CP system with regard to the re-synthesis of ATP during a 50-metre sprint. [2]

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Section B

Answer **one** question. Write your answers in the boxes provided.

5. (a) Outline the structural components of skeletal muscle. [5]
- (b) Analyse the systolic blood pressure response of an endurance runner. [4]
- (c) Describe the production of ATP by the lactic acid system. [5]
- (d) Explain the importance of reliability and validity in fitness testing, for a sport of your choice. [6]
6. (a) Explain the process of gaseous exchange between the lungs and pulmonary capillaries at rest **and** during exercise. [5]
- (b) Compare and contrast the characteristics of the lactic acid and aerobic system. [5]
- (c) Describe the characteristics associated with the three phases (stages) of learning, with reference to the progression from novice to skilled performance. [6]
- (d) Outline why sports science students must be careful when interpreting the correlation between two variables. [4]



7. (a) Explain the mechanics of pulmonary ventilation in the human lungs at rest. [6]
- (b) The following diagrams show high jumpers using the Fosbury flop and scissors techniques.

Diagram 1: Fosbury flop

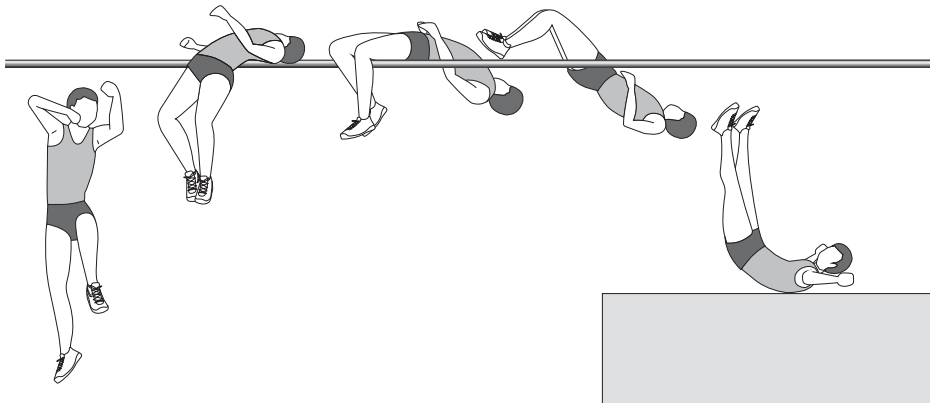
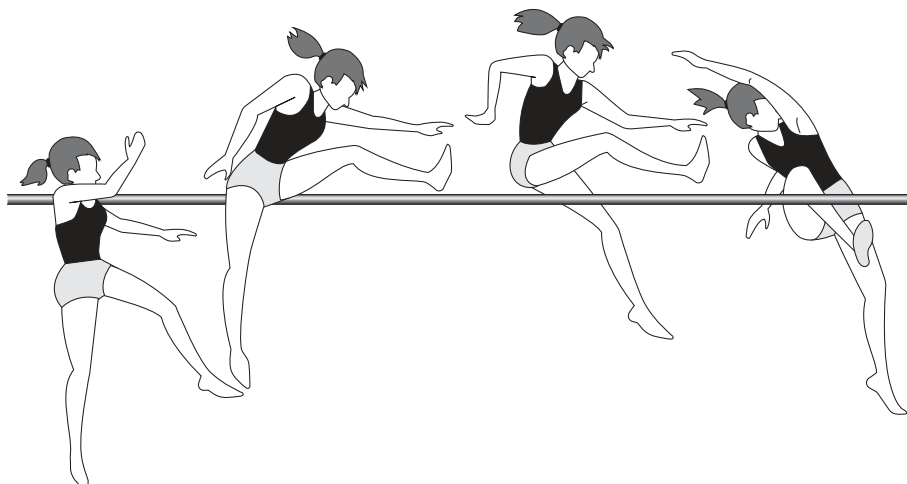


Diagram 2: scissors technique



[Source: © International Baccalaureate Organization 2016]

- Distinguish between the position of the centre of mass of a high jumper using the Fosbury flop and the scissor technique. [4]
- (c) Explain how the application of Newton's third law of motion enables an athlete to run uphill. [4]
- (d) Outline **three** types of transfer that a sports coach needs to take into account when planning a practice, with reference to sporting examples. [6]



16EP10

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16EP11

Turn over

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16EP13

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16EP14

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16EP15

Turn over

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16EP16