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SPORTS, EXERCISE AND HEALTH SCIENCE
STANDARD LEVEL
PAPER 2

Candidate session number

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Wednesday 6 November 2013 (morning)

1 hour 15 minutes

Examination code

8	8	1	3	–	6	6	0	2

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]*.

16 pages

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SECTION A

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

1. A study examined the relationship between the speed of serve and its effect on the performance of males and females at a World Volleyball Tournament. The speed of serve was classified as low, medium or high speed and then grouped according to one of four outcomes. "Service fault" is when the server makes a mistake on service, and "ace" is when the server scores a point without their opponents touching the ball.

The results of the study are shown in the table below.

	Outcome							
	Service fault / %		**Opponent finds it easy to control the ball / %**		**Opponent finds it difficult to control the ball / %**		**Ace / %**	
Speed of serve	Male	Female	Male	Female	Male	Female	Male	Female
Low	7.1	10.1	73.0	61.9	17.5	16.5	2.4	11.5
Medium	10.3	19.3	63.5	50.0	18.3	23.7	7.9	7.0
High	24.6	25.4	50.8	41.0	15.9	23.8	8.7	9.8

[Source: adapted from B Buscà *et al.*, (2012), *Journal of Sport Sciences*, **30** (3), pages 269–276]

(a) State the speed of serve that results in the greatest difference for scoring aces between males and females. *[1]*

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(b) Define the term *speed*. *[1]*

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(Question 1 continued)

(c) Distinguish between the effect that the speed of serve has on service fault and ace for females. *[2]*

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(d) Comment on the hypothesis that the higher the speed of serve, the more difficult it is for males to control the ball. *[3]*

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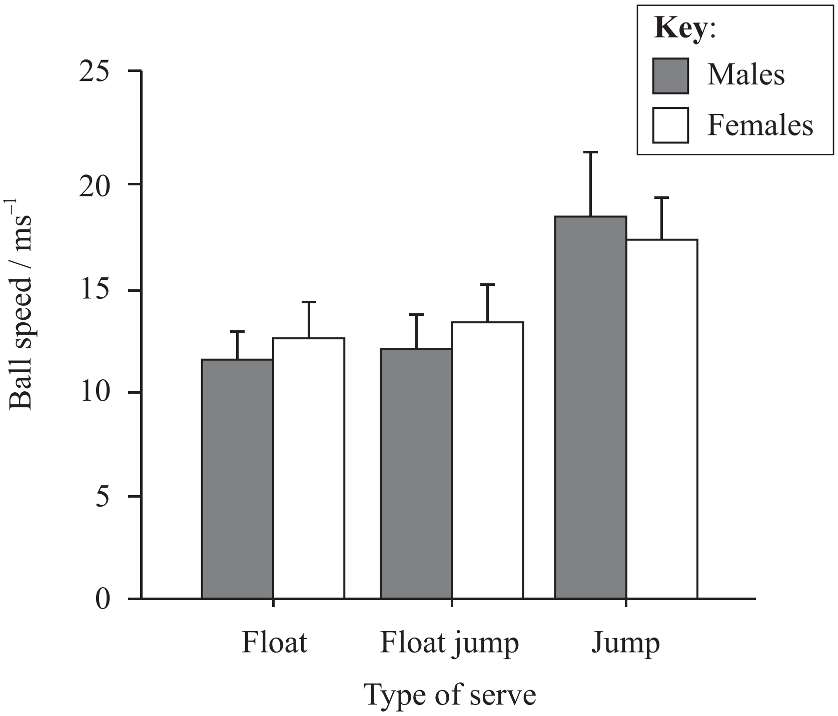
Turn over

(Question 1 continued)

In the same study, the relationship between ball speed and skill was examined. The graph below shows the average (±SD) ball speed from three different types of serve: (1) float, (2) float jump and (3) jump for both males and females.



[Source: adapted from B Buscà *et al.*, (2012), *Journal of Sport Sciences*, **30** (3), pages 269–276]

(e) Compare the speed of the **three** different types of serve for both males and females. *[3]*

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(Question 1 continued)

(f) State the relationship between skill, ability and technique. *[1]*

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(g) Apply the classification of motor skills using at least **two** continua to a serve in volleyball. *[2]*

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2. (a) List **two** major sites of triglyceride storage in the body. *[2]*

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(b) Distinguish between an essential and a non-essential amino acid. *[2]*

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(c) Explain the role of insulin in the formation of glycogen. *[3]*

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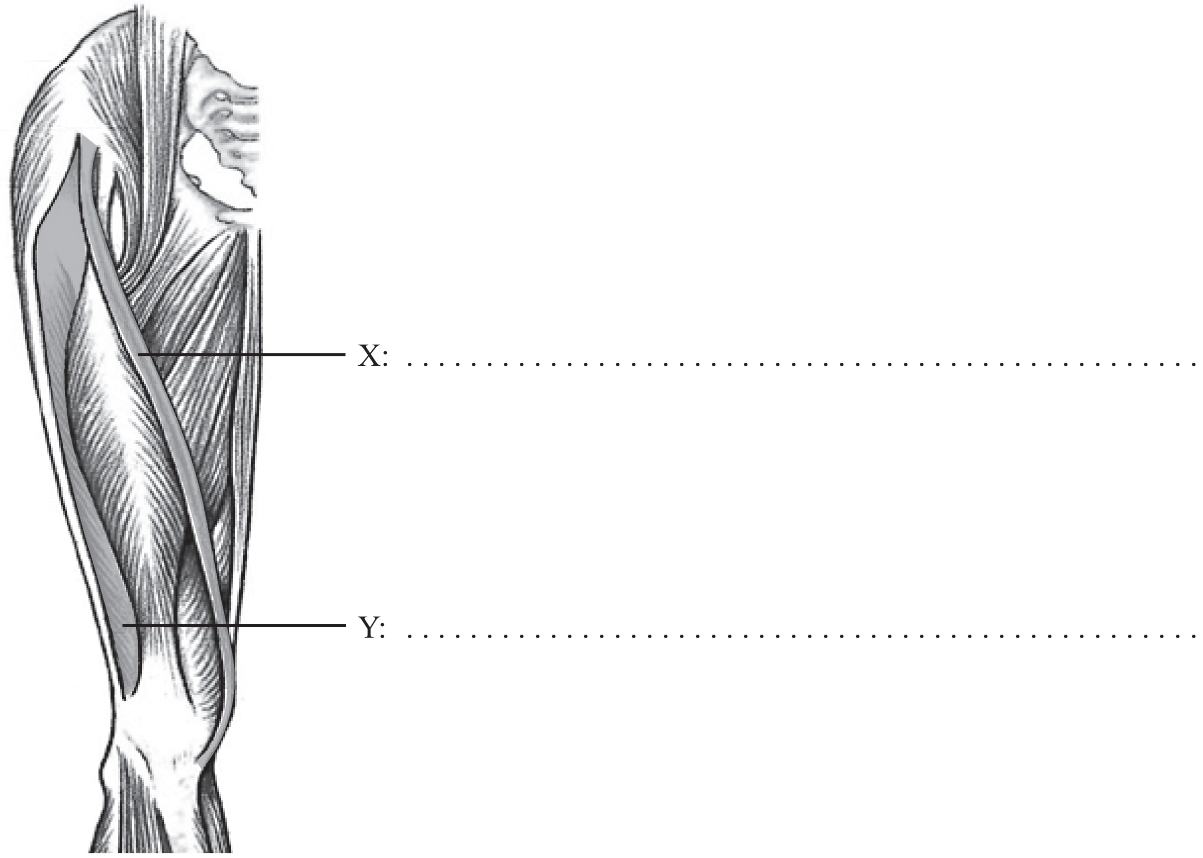
3. The diagram below shows the anterior view of the thigh.



[Source: M Cash, (1999), *Pocket Atlas of the Moving Body*, page 45]

(a) Label the skeletal muscles X and Y. *[2]*

(b) Outline **one** type of involuntary muscle. *[1]*

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(Question 3 continued)

(c) Evaluate **one** fitness test that would be appropriate for measuring leg power. *[3]*

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4. (a) Outline **one** function of the nasal cavity when conducting air towards the lungs. *[1]*

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(b) Discuss how data can vary for maximal oxygen consumption between males and females. *[3]*

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SECTION B

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

5. (a) Outline the importance of reliability and validity with regard to fitness testing for a sport of your choice. *[4]*

(b) Discuss the principle of overload in training programme design. *[5]*

(c) Discuss the different factors that affect an athlete's rate of learning. *[6]*

(d) Describe Welford's model of information processing in the application of a **named** sports skill. *[5]*

6. (a) Distinguish between **two** types of muscle contraction. *[4]*

(b) Explain the concept of reciprocal inhibition during the extension of the elbow when performing a basketball shot. *[4]*

(c) Explain the sliding filament theory of skeletal muscle contraction. *[6]*

(d) Describe the contributions of the **three** energy systems during a steady-state endurance event. *[6]*

7. (a) Outline the general characteristics common to muscle tissue. *[4]*

(b) Describe the sequence of excitation of the cardiac muscle that results in a heartbeat. *[6]*

(c) Explain cardiovascular drift. *[6]*

(d) Compare the distribution of blood at rest and the redistribution of blood during a long distance run. *[4]*