



**insight**

***INSIGHT***

***Trial Exam Paper***

**2011**

# **PHYSICAL EDUCATION**

## **Written examination**

**STUDENT NAME:**

### **QUESTION AND ANSWER BOOK**

**Reading time: 15 minutes**

**Writing time: 2 hours**

#### **Structure of book**

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	15	15	15
B	14	14	105
		Total	120

- Students are permitted to bring the following items into the examination: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring sheets of paper or white out liquid/tape into the examination.
- Calculators are not permitted in this examination.

#### **Materials provided**

- The question and answer book of 23 pages.
- An answer sheet for multiple-choice questions.

#### **Instructions**

- Write your **name** in the box provided.
- You must answer the questions in English.

#### **At the end of the examination**

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

**Students are NOT permitted to bring mobile phones or any other electronic devices into the examination.**

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**SECTION A – Multiple choice questions****Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided.

Choose the response that is **correct** or that **best answers** the question.

One mark will be awarded for a correct answer and no marks will be awarded for an incorrect answer.

Marks are **not** deducted for an incorrect answer.

No marks will be awarded if more than one answer is completed for any question.

**Question 1**

Which statement about the use of direct observation as a means of assessing physical activity is **not** true?

- A. Direct observation is a time-consuming way of assessing physical activity.
- B. Direct observation is a subjective measure of physical activity.
- C. Direct observation is less accurate than accelerometers when it comes to assessing physical activity patterns.
- D. SOPLAY is a system for measuring physical activity through direct observation.

**Question 2**

A setting-based approach to physical activity promotion is seen as critical to achieving success in the population's participation rates.

Which of the following could **not** be regarded as a setting-based approach to physical activity promotion?

- A. Walking School Bus program
- B. Physical Education classes in Secondary School
- C. the "Go for your Life" website
- D. the 10,000 Steps Challenge advocated at medical clinics by GPs for obese patients

**Question 3**

Our body uses 3 energy systems to produce ATP—aerobic, lactic acid, and ATP-CP. These 3 energy systems are able to generate ATP at different speeds as well as different yields. Which of the following statements is true in regards to the rate and yield of ATP production?

- A. The ATP-PC system has the fastest rate of ATP production, as well as the largest yield relative to the other energy systems.
- B. Fat metabolised by the aerobic energy system has the slowest rate of ATP production, but can produce the largest yield relative to the anaerobic energy systems.
- C. Anaerobic glycolysis produces more ATP from a glucose molecule than aerobic glycolysis.
- D. Anaerobic glycolysis has a faster rate of ATP production than the ATP-PC system.

The image below relates to Questions 4 and 5.



#### Question 4

A cricket bowler preparing to run in and deliver the ball would have a focus which is

- A. broad internal.
- B. broad external.
- C. narrow internal.
- D. narrow external.

#### Question 5

A high-arm delivery relies on good flexibility in the shoulder joint. Which of the following is **not** a factor that will affect flexibility in the cricketer's shoulder joint in the future?

- A. age
- B. maintaining a stretching program
- C. weight program designed to increase shoulder musculature
- D. aerobic capacity

#### Question 6

Craig Mottram is one of Australia's premier long-distance runners. Which of the following combinations of adaptations could Craig expect to see after an extended aerobic training program?

- A. increase in (a-VO<sub>2</sub>) difference during maximal exercise, increased capillarisation of muscle, increase in mitochondrial density, decrease in blood volume
- B. increase in (a-VO<sub>2</sub>) difference during maximal exercise, increased capillarisation of muscle, increase in mitochondrial density, increase in blood volume
- C. decrease in (a-VO<sub>2</sub>) difference during maximal exercise, increased capillarisation of muscle, increase in mitochondrial density, decrease in blood volume
- D. decrease in (a-VO<sub>2</sub>) difference during maximal exercise, increased capillarisation of muscle, increase in mitochondrial density, increase in blood volume

**Question 7**

A 100-metre runner completes a race in less than 10 seconds. What is the most likely cause of fatigue for this runner?

- A. depletion of intramuscular glycogen stores
- B. accumulation of hydrogen ions
- C. depletion of creatine phosphate stores
- D. dehydration

**Question 8**

Ice baths (or cryotherapy) is a modern form of recovery that can reduce the effects of post-competition dehydration by reducing the body's core temperature. Which of the following is another benefit associated with the use of cryotherapy?

- A. provision of an analgesic effect through the reduction of perceived pain or discomfort
- B. increase in blood flow
- C. faster replenishment of creatine phosphate stores
- D. decrease in excess post-exercise consumption

**Question 9**

Archery is a sport that requires excellent accuracy to be successful. Some athletes may consider using illegal means to achieve greater accuracy with their shooting. Which of the following illegal ergogenic aids would be the most appropriate in achieving their aim?

- A. diuretics
- B. narcotic analgesics
- C. beta blockers
- D. erythropoietin (EPO)

**Question 10**

A socio-ecological model of influences on physical activity can be used to evaluate the things that affect how active an individual is. One factor that can affect an individual's activity patterns is having someone to be physically active with. Which category of physical activity intervention (of those shown below) would this factor come under?

- A. intrapersonal
- B. **interpersonal**
- C. physical environment
- D. policy

**Question 11**

A change in the arteriovenous oxygen difference (a-vO<sub>2</sub> difference) occurs as a result of a prolonged training regime. Which of the following statements is true in regards to the effect that training has on the arteriovenous difference during maximal exercise?

- A. The (a-vO<sub>2</sub> diff) will be higher as a result of aerobic training.
- B. The (a-vO<sub>2</sub> diff) will be lower as a result of aerobic training.
- C. The (a-vO<sub>2</sub> diff) will be higher as a result of anaerobic training.
- D. The (a-vO<sub>2</sub> diff) will be lower as a result of anaerobic training.

**Question 12**

Aerobic glycolysis is the most efficient energy system in generating ATP for muscle activity. The net gain of ATP molecules produced due to the breakdown of glycogen is:

- A. 26.
- B. 36.
- C. 38.
- D. 42.

**Question 13**

The table below demonstrates an interval training session used by an athlete during their program.

Sets	Repetitions	Intensity	Time period per set
3	6 x 10 seconds	95% HRmax	5 minutes

Each repetition was conducted with an equal recovery time between each bout of exercise up until the end of the five minutes per set.

What is the work-to-rest ratio for this short interval training session?

- A. 1:3
- B. 1:4
- C. 1:5
- D. 1:6

**Question 14**

Goal-setting is a very good way to motivate athletes, particularly when aiming for long-term achievements during both training and competition. Elite athletes should record these goals and a simple way of doing this is using the acronym SMARTER. The letters of this acronym stand for:

- A. specific, Measurable, Achievable, Realistic, Time-phased, Exciting, Recorded
- B. specific, Measurable, Achievable, Relative, Time-phased, Exciting, Recorded
- C. specific, Measurable, Accepted, Relative, Time-phased, Exciting, Recorded
- D. specific, Measurable, Accepted, Realistic, Time-phased, Exciting, Recorded

**Question 15**

The role of the World Anti-Doping Agency (WADA) is to promote, monitor and co-ordinate the fight against illegal practices in world sport. To meet these goals, WADA developed the World Anti-Doping Code. Which of the following values is **not** found in the World-Anti-Doping Code?

- A. excellence in performance
- B. friendship
- C. ethics, fair play and honesty
- D. respect for rules and laws

**END OF SECTION A  
TURN OVER**

**SECTION B – Short answer questions****Instructions for Section B**

Answer **all** the questions in the spaces provided.

**Question 1**

Students were asked to come up with a suitable test battery to evaluate the skills of an elite basketball player.

- 1a.** In the table below, write the **MOST** suitable test for the relevant fitness component and a reason why that test was selected.

<b>Fitness Component</b>	<b>Suitable test</b>	<b>Reason</b>
<b>Aerobic Capacity</b>		
<b>Muscular leg power</b>		
<b>Agility</b>		

6 marks

- 1b.** Why would it be advisable to evaluate an elite player's abilities in basketball before embarking on an intensive training program?

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2 marks

Total 6 + 2 = 8 marks

**SECTION B – continued**



## Question 2



- 2a.** Fill in the table below in relation to the movement occurring at the shoulder joint in the follow-through of the tennis serve, pictured above.

<b>Movement (at shoulder joint)</b>	
<b>Agonist (1 muscle required)</b>	
<b>Antagonist (1 muscle required)</b>	

3 marks

- 2b.** Why does the tennis player initially draw her arm back before making the serve?

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2 marks

Total 3 + 2 = 5 marks

**SECTION B** – continued  
**TURN OVER**

**Question 3**

There are a number of different ways in which physical activity patterns can be measured. List 4 differences between accelerometers and self-recall, both of which measure physical activity.

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4 marks

**Question 4**

The socio-ecological model of influences on physical activity is important in considering how active an individual will be. Using a year 12 student who lives in your area as a subject, provide two examples in each box that relate to that particular influence on their behaviour in regards to physical activity.

<b>Individual (Intrapersonal)</b>		
<b>Interpersonal (social)</b>		
<b>Natural environment</b>		
<b>Constructed environment</b>		
<b>Policy</b>		

10 marks

**Question 5**

In recent times, multiple gold medallist Marion Jones of the USA admitted she used steroids at the Sydney Olympic Games. The World Anti-Doping Agency (WADA) would have played a crucial role in detecting these doping offences.

**5a.** What is one type of drug Marion Jones might have used to mask her use of steroids?

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1 mark

**5b.** What are two potential benefits of using illegal steroids in Olympic competition?

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2 marks

**5c.** What are two potentially harmful side effects of using steroids?

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2 marks

**5d.** Besides the possession or use of a prohibited substance or method, what are two other violations that are considered to be doping offences?

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2 marks

Total 1 + 2 + 2 + 2 = 7 marks

**SECTION B – continued**  
**TURN OVER**

**Question 6**

Below is a table of some common foodstuffs and their relative glycaemic index.

<b>High GI food (70-100)</b>	<b>Medium GI food (55-69)</b>	<b>Low GI food (&lt;55)</b>
Bananas	Brown rice	Baked beans
Honey	Carrots	Pears
Fruit bars	Pineapple	Yoghurt, low fat

- 6a.** Give an example of a foodstuff above that should be consumed 3–4 hours before an endurance activity and explain why this is suitable.

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2 marks

- 6b.** Give an example of a foodstuff above that should be consumed within 30 minutes of completing an endurance activity and explain why this is suitable.

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2 marks

Carbohydrate loading can be used as a method for superior performance for an endurance athlete.

- 6c.** Identify and explain one advantage of using carbohydrate loading for an endurance athlete.

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2 marks

- 6d.** Carbohydrate loading can also have a negative effect, especially for athletes who participate in team sports. Identify and briefly explain a disadvantage of carbohydrate-loading for an athlete involved in team sports.

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2 marks

Total 2 + 2 + 2 + 2 = 8 marks

### Question 7

Sport	2002	2003	2004	2005	2006	2007	2008	2009	%change 2002-09
<b>Walking</b>	4720.3	5900.6	6168.1	5973.6	5811.3	5390.0	6508.4	6215.5	31.7
<b>Aerobics/ fitness</b>	2236.9	2487.2	2698.2	2959.7	3074.5	3303.0	3901.9	3932.4	75.8
<b>Golf</b>	1337.1	1282.0	1250.6	1139.3	1090.9	915.0	1181.1	1103.1	-17.5
<b>Tennis</b>	1260.5	1407.0	1323.2	1253.3	1100.7	951.2	1122.5	1093.3	-13.3

*Adapted from the ERASS report for physical activity 2009, Australian Sports Commission.  
Figures are in millions.*

- 7a.** What could be said about the success of tennis programs run in the 8 years up to 2009?

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1 mark

**7b.** What would be the most effective way to make sure tennis programs reached a teenage target audience? Explain your answer.

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2 marks

The six-week 10,000 steps challenge and other initiatives have helped to increase the numbers of people walking over the past few years.

**7c.** Apart from specific programs, what are two other strategies the government has employed to increase the numbers of people walking?

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2 marks

Aerobics/fitness training has seen a massive increase in the eight years up to 2009.

**7d.** What are two factors that may account for this growth in popularity?

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2 marks

Total 1 + 2 + 2 + 2 = 7 marks

**Question 8**

Triathletes who compete in events for longer than two hours can have near resting lactic acid levels upon completion of the event.

**8a.** How is it possible for these athletes to have such low lactic acid levels after competing for such a long time?

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2 marks

**8b.** Identify and briefly explain two probable causes of fatigue for triathletes at the completion of these events.

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4 marks

These triathletes noticed that their breathing rates remained elevated for some time after their race.

**8c.** What is the name given to this phenomenon and give two reasons why their breathing rates may have remained elevated?

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3 marks

Total 2 + 4 + 3 = 9 marks

**SECTION B – continued  
TURN OVER**

**Question 9**

**9a.** Identify the energy system which would be the predominant supplier of energy for the following events.

**Discus:** \_\_\_\_\_

**400m sprint:** \_\_\_\_\_

2 marks

**9b.** Explain the type of recovery you would require for each of the above events.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4 marks

**9c.** What is the most likely cause of fatigue for a 400 metre runner?

\_\_\_\_\_

\_\_\_\_\_

1 mark



*Below is a typical 4-week training program for a 400 metre runner during the season.*

<b>Day</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>
<b>Monday</b>	6 x 300m (90% intensity)	6 x 300m (95% intensity)	Weight training: legs, upper body	8 x 300m (95% intensity)
<b>Tuesday</b>	Weight training: legs, upper body  Swim 30 min	8 x 150m (100% intensity)  Swim 30 min	8 x 150m in sand (100% intensity)  Swim 30 min	Weight training: legs, upper body  Swim 30 min
<b>Wednesday</b>	10 x 250m (95% intensity)  Mental rehearsal 60 min	Weight training: legs, upper body  Mental rehearsal 60 min	10 x 150m in sand (90% intensity)  Mental rehearsal 60 min	10 x 250m (95% intensity)  Mental rehearsal 60 min
<b>Thursday</b>	Weight training: legs, upper body	8 x 400m (90% intensity)	Weight training: legs, upper body	10 x 400m (95% intensity)
<b>Friday</b>	8 x 200m (100% intensity)  Swim 30 min	Weight training: legs, upper body	8 x 200m (100% intensity)  Swim 30 min	Weight training: legs, upper body
<b>Saturday</b>	Competition	Competition	Competition	Competition
<b>Sunday</b>	Massage 60 min	Massage 60 min	Massage 60 min	Massage 60 min

**9d.** What is the most common form of training shown in this program?

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1 mark

**9e.** Identify and provide an example for each of two training principles found in the above program

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4 marks

**9f.** What related information is not provided in the table for this training program?

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1 mark

**9g.** How will this impact on the 400 metre runner's training regime?

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2 marks

Total 2 + 4 + 1 + 1 + 4 + 1 + 2 = 15 marks

**Question 10**

The use of hyperbaric chambers by injured athletes has increased in recent times.

**10a.** Why might athletes recovering from injury opt to use a hyperbaric chamber?

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2 marks

**10b.** What is the major benefit of using hyperbaric chambers for athletes?

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1 mark

Total 2 + 1 = 3 marks

**Question 11**

**11a.** Explain the difference between anaerobic power and anaerobic capacity.

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2 marks

**11b.** State whether anaerobic power or anaerobic capacity is more important for the following events.

**100m sprint:** \_\_\_\_\_

**400m sprint:** \_\_\_\_\_

**Long jump:** \_\_\_\_\_

3 marks

Total 2 + 3 = 5 marks

**SECTION B – continued  
TURN OVER**

**Question 12**

An AFL player recorded a work-to-rest ratio of 1:1.5 during a match. He also recorded the following movement patterns.

	DIRECTION			
	Forwards	Backwards	Sideways	Total
<b>Total for match</b>	85	5	23	113

*Table 1: Directional changes analysis*

Field position	Back	Midfield	Forward
<b>% of time</b>	<b>20</b>	<b>70</b>	<b>10</b>

*Table 2: Positional play*

**12a.** What is the predominant energy system at work in a game of AFL football, according to the work-to-rest ratio?

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1 mark

**12b.** The player struggles with the intensity of play in the initial two minutes of the first quarter. Why is this?

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2 marks

**12c.** What are the potential advantages of knowing the movement patterns of a particular player (Tables 1 and 2)?

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2 marks

**12d.** Complete the following table by indicating the most appropriate test to judge different aspects of the player's fitness.

<b>Fitness component</b>	<b>Energy system predominantly used</b>
Aerobic capacity	
Player sprinting for the ball from a stationary position	
Tackling an opponent who has the ball	

3 marks

**12e.** What are two reasons why it is important to use an appropriate test battery when assessing an AFL footballer's fitness in regards to training principles and protocols?

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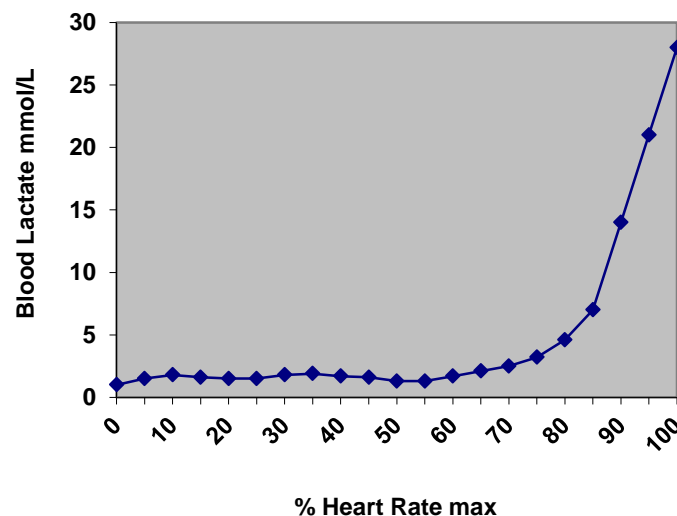
2 marks

Total 1 + 2 + 2 + 3 + 2 = 10 marks

### Question 13

An endurance athlete who is on a training run starts to sprint up a hill. After a few seconds he reaches his lactate inflection point.

**13a.** On the graph below, mark the approximate lactate inflection point (LIP) for this particular athlete.



1 mark

**SECTION B – Question 13 – continued**  
**TURN OVER**

**13b.** What sort of training should the athlete do to extend the time it takes for him to reach the LIP at the same intensity? Why is this the case?

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2 marks

**13c.** What are three acute responses to running up the hill the athlete will experience, according to the following headings?

**Respiratory:** \_\_\_\_\_

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**Cardiovascular:** \_\_\_\_\_

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**Muscular:** \_\_\_\_\_

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3 marks

**13d.** State the chronic adaptations this athlete would see for the following after a significant period of training:

**Resting heart rate:** \_\_\_\_\_

**Mitochondria:** \_\_\_\_\_

**Stroke volume:** \_\_\_\_\_

3 marks

Total 1 + 2 + 3 + 3 = 9 marks

**Question 14**

The coach of a local soccer team was notorious for “revving up” his players before games. At his club, he noticed his speeches would get the players a bit “fired up” and they would commit a lot of fouls early in games.

- 14a.** Give a possible reason why it took the players in his team so long to settle down when starting their games.

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2 marks

- 14b.** Other than toning down his speeches, what could the coach do to get his players to settle quicker into the games they played?

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2 marks

- 14c.** Briefly explain why all the players would not be equally affected by the coach’s ranting before they played a game.

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1 mark

Total 2 + 2 + 1 = 5 marks

**END OF QUESTION AND ANSWER BOOK**