

YEAR 12 Trial Exam Paper

2018

PHYSICAL EDUCATION

Written examination

STUDENT NAME:

Reading time: 15 minutes

Writing time: 2 hours

QUESTION AND ANSWER BOOK

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 pens, pencils, highlighters, erasers, sharpeners and rulers into the examination.
- Students are NOT permitted to bring blank sheets of paper and/or correction fluid/tape into the examination.
- Calculators are NOT permitted in this examination.

Materials provided

- The question and answer book of 35 pages.
- Multiple-choice answer sheet

Instructions

- Write your **name** in the box provided on this page and on the multiple-choice answer sheet.
- You must answer the questions in English.

At the end of the examination

- Place the multiple-choice answer sheet inside the front cover of this question and answer book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised 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 for multiple-choice questions.

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

A correct answer scores 1; an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

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

Question 1

By-products of the anaerobic glycolysis energy system include

- A. hydrogen ions and lactate.
- B. CO₂, H₂O and heat.
- C. hydrogen ions, CO₂ and H₂O.
- D. ADP and inorganic phosphate.

Question 2

Which of the following best reflects the correct order from the most closed to the most open skill in basketball?

- A. dribbling the ball down the court, free throw, passing the ball to a teammate
- B. free throw, dribbling the ball down the court, passing the ball to a teammate
- C. free throw, passing the ball to a teammate, dribbling the ball down the court
- D. passing the ball to a teammate, free throw, dribbling the ball down the court

Question 3

A 19-year-old novice discus athlete is about to begin a weight training program. Their aim is to improve their muscular power.

Which program best suits their needs?

		Repetition maximum	Number of repetitions	Sets	Speed	Rest
A.	Program 1	100%	2–4	1–3	slow/moderate	3–10 mins
B.	Program 2	70–85%	8–12	1–4	as fast as possible	2–3 mins
C.	Program 3	40–60%	15–25	1–3	slow/moderate	1 min
D.	Program 4	30–60%	3–6	1–3	as fast as possible	2–3 mins

Question 4

Force is measured in which unit?

- A. velocity
- B. kg·m/s
- C. newton
- D. m/s²

Question 5

The following table compares the three energy systems.

	ATP-PC	Anaerobic glycolysis	Aerobic
Fuel	creatine phosphate	glycogen	H ₂ O
Rate	instantaneous	fast	moderate
Yield	0.7–1 mol	2–3 mol	glucose: 36–38 mol fatty acids: 147 mol

Which of the above is **incorrect**?

- A. ATP rate
- B. aerobic fuel
- C. aerobic yield
- D. anaerobic glycolysis yield

Question 6

Acute cardiovascular responses to exercise include

- A. increased blood pressure, increased stroke volume and increased myoglobin.
- B. increased venous return, increased cardiac output and decreased blood volume.
- C. increased stroke volume, increased pulmonary diffusion and decreased blood volume.
- D. increased blood pressure, increased body temperature and increased heart rate.

Question 7

In 2017, the Australian Football League's Draft Combine changed one of its aerobic capacity tests from the 20 metre multi-stage fitness test (beep test) to the yo-yo intermittent recovery test in order to replicate the nature of a midfielder's running during a game of Australian rules football.

This is an example of following which testing protocol?

- A. individuality
- B. reliability
- C. specificity
- D. overload

Question 8

An Olympic 100 m swimmer and a local swim squad member raced over 100 m. The Olympic swimmer easily won the race.

Which of the following statements regarding the two swimmers is most likely to be accurate?

- A. The Olympic swimmer could swim much faster than the swim squad member due to having a higher level of oxidative enzymes.
- B. At the end of the race, the Olympic swimmer would have accumulated less lactate in their leg muscles compared with the swim squad member.
- C. At the end of the race, the Olympic swimmer would have accumulated more lactate in their leg muscles compared with the swim squad member.
- D. Due to having a higher lactate inflection point, the Olympic swimmer had a greater ability to remove lactate faster than it is produced compared with the swim squad member.

Question 9

Which of the following alterations to the game of hockey is incorrectly matched to its constraint?

	Alteration	Constraint
A.	increasing the size of the goal	task
B.	decreasing the field dimensions	environment
C.	increasing the number of opponents	task
D.	changing from an indoor to outdoor field	environment

Question 10

Which of the following characteristics best describes someone in the associative stage of learning?

- A. requires many demonstrations to develop a mental picture of the task
- B. highly developed ability to detect and correct errors
- C. attention is given to understanding the skill
- D. consistent performance of the basic mechanics of the skill

Question 11

By completing a bicep curl with three sets of 15 repetitions, the athlete is trying to develop

- A. muscular power.
- B. muscular endurance.
- C. muscular strength.
- D. flexibility.

Question 12

Which of the following recognised fitness tests does not appropriately match the fitness component?

	Fitness component	Recognised fitness test
A.	agility	SEMO agility test
B.	muscular power	timed push-ups
C.	speed	35 m sprint
D.	muscular strength	hand grip dynamometer

Question 13

Which of the following is **not** a chronic respiratory adaptation?

- A.** increased tidal volume at sub-maximal intensity
- B.** increased pulmonary diffusion
- C.** decreased or no change in oxygen consumption at rest
- D.** decreased ventilation at maximal intensity

Question 14

A badminton player who was tired and lacking enthusiasm before their first-round draw in an amateur tournament would benefit most from using which arousal regulation technique?

- A.** elevated breathing rate
- B.** stress inoculation training
- C.** progressive muscle relaxation
- D.** meditation

Question 15

A fast bowler in indoor cricket would most closely exhibit which of the following movement skills?

- A.** discrete, fine and closed
- B.** serial, gross and closed
- C.** continuous, gross and open
- D.** serial, fine and open

**END OF SECTION A
TURN OVER**

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SECTION B**Instructions for Section B**

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

Question 1 (11 marks)

Australian athlete Luke Mathews finished 3rd in the 800 m to win a bronze medal at the Commonwealth Games in the Gold Coast with a season-best time of 1:45.60 minutes.

As Mathews moved from rest to exercise, a number of physiological changes would have taken place to accommodate the energy requirements of the activity. These initial responses of the cardiovascular, respiratory and muscular systems are known as acute responses to exercise.

Data: Results – Men’s 800 m final, Commonwealth Games 2018,
<<https://results.gc2018.com/en/athletics/result-men-s-800m-fnl-000100-.htm>>

- a.** List **two** acute cardiovascular responses.

2 marks

1. _____

2. _____

- b.** Explain how **one** of the cardiovascular responses listed in **part a.** would contribute to Mathews’ exercise performance.

2 marks

Ventilation is an acute response to exercise that is likely to increase after the beginning of the race.

c. Identify what ventilation measures and the factors that contribute to ventilation.

2 marks

d. Discuss the energy system interplay for Mathews during the last 200 m of the race.

3 marks

- e. Suggest the most suitable recovery that Mathews would have undertaken after the race and explain why this would be the most beneficial.

2 marks

Question 2 (9 marks)

The table below lists the weight and length restrictions for the hammer throw across several different levels of competition.

Competition	Weight	Maximum length
U13	3 kg	119.5 cm
U15	4 kg	119.5 cm
U17	5 kg	120 cm
senior/Olympic	7.26 kg	121.5 cm

Data: <<https://www.athleticsdirect.co.uk/throwing-weight-rules-1/>>

Using the data above and your understanding of inertia, the linear and angular velocity relationship, and projectile motion, write a qualitative prescription for a successful hammer throw performance.

Question 3 (7 marks)

Massimo Luongo is an Australian professional soccer player who plays as a midfielder for Championship club Queens Park Rangers and the Australian national team (Socceroos).

As part of the Socceroos squad, Luongo played in the qualifiers for the 2018 FIFA World Cup.

The following data about Luongo was taken from the each of the qualifying games played.

Games played	15
Minutes played	927
Clearances	7
Blocks	1
Interceptions	16
Passes	712
Shots	16
Goals	3
Average mins played per game	62

Data: Socceroos, <<https://www.socceroos.com.au/player/massimo-luongo#!/statistics>>

The data recorded above would assist a coach who was completing an activity analysis by providing them with information relating to key aspects of the sport. This information can then be used to determine the most important fitness components required.

- a.** Explain **one** type of information that could be obtained from the data above and that would enable the fitness components to be identified

2 marks

- b.** With reference to the data, identify and provide a definition of an important fitness component Luongo requires in his position as midfielder.

3 marks

Interval training is used to assist in the development of a number of fitness components.

- c.** Explain how interval training is conducted and list **one** benefit of using this method of training.

2 marks

Question 4 (12 marks)

During a school excursion, James and Jack both performed VO_2 max tests using the equipment at an exercise physiology laboratory.

Their details and results are as follows.

Name: James

Age: 18 years

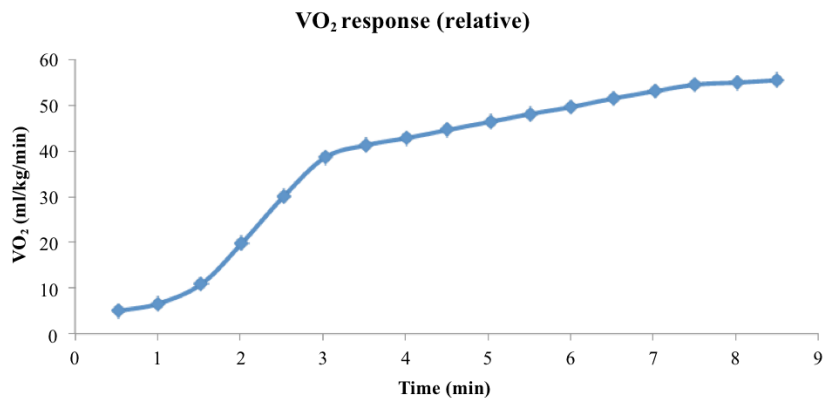
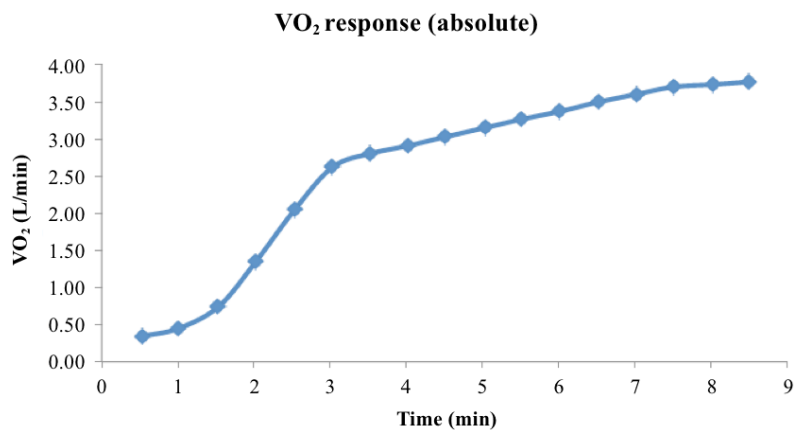
Sex: male

Height: 183.4 cm

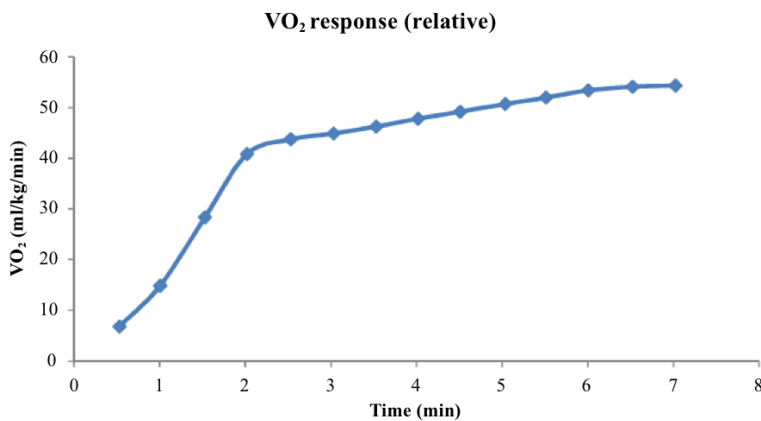
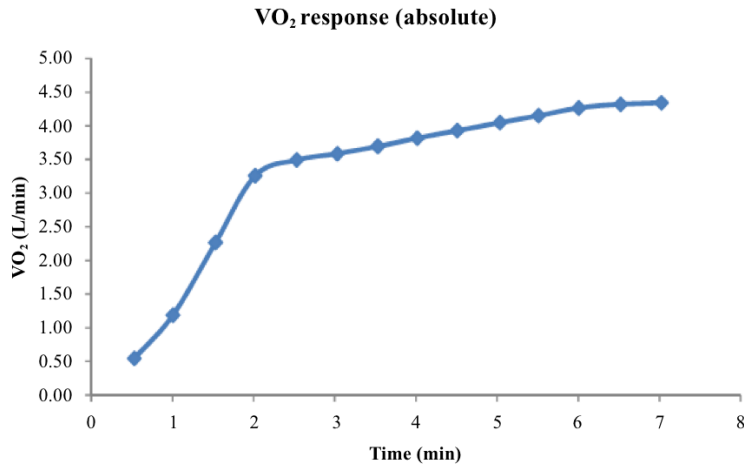
Weight: 67.9 kg

VO_2 max (absolute): 3.77 L/min

VO_2 max (relative): 55.48 mL/kg·min



Name: Jack
 Age: 18 years
 Sex: male
 Height: 192.0 cm
 Weight: 70.9 kg
 VO₂ max (absolute): 4.34 L/min
 VO₂ max (relative): 54.32 mL/kg·min



Both James and Jack had very similar relative VO₂ max results, but significantly different absolute VO₂ max results.

a. Explain the difference between relative and absolute VO₂ max.

2 marks

b. With reference to the data, explain why James' relative VO_2 max was higher than Jack's, yet his absolute VO_2 max was lower.

2 marks

Both participants would have worked at intensities above their lactate inflection point during the final stages of the test.

c. What occurs at the lactate inflection point?

2 marks

- d. Discuss the predominant energy system and chemical fuel being used when Jack and James work above their lactate inflection points.

3 marks

- e. Explain how improving an athlete’s lactate inflection point will lead to improved performance.

3 marks

Question 5 (2 marks)

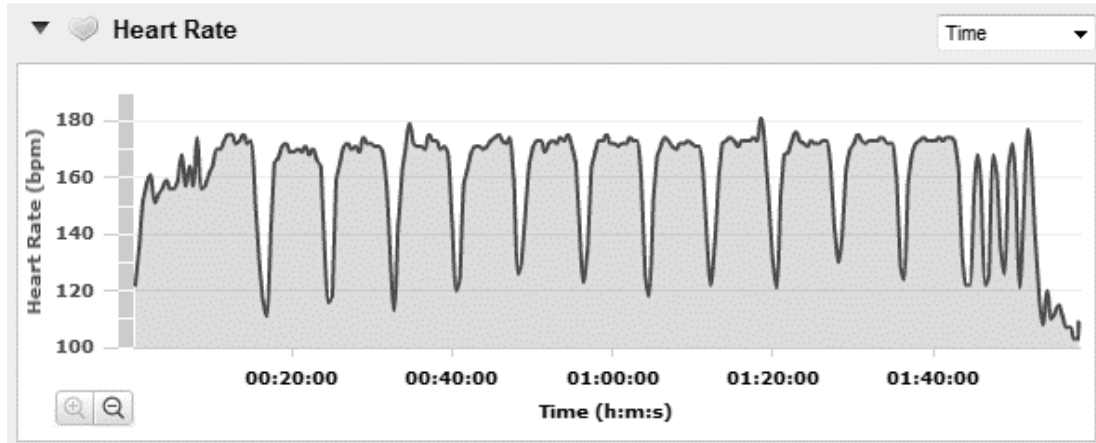
In 2017, the Australian Football League’s Draft Combine was held from October 3 to October 6. Potential draftees were put through a battery of fitness tests over the four days.

Outline **two** purposes for conducting fitness assessments.

Question 6 (9 marks)

A centre player in netball is required to cover the greatest distance of any position during a game and therefore requires a high level of cardiovascular fitness. A player from the Melbourne Vixens completed three training sessions per week for six weeks during the club’s pre-season training with the aim of improving her aerobic capacity.

The graph below shows her heart rate information during one of her training sessions.



Source: Ray Maker, 2018, <<https://www.dcrainmaker.com>>

a. What type of training session did the player complete?

1 mark

At the beginning of the training session, the player would have experienced oxygen deficit.

b. Define oxygen deficit and explain why this would occur.

3 marks

The graph shows that the player’s training intensity changes throughout the session.

During these intensity changes, a redistribution of blood flow away from organs such as the kidneys and stomach to the working muscles occurs.

- c. Explain why a redistribution of blood flow is needed during periods of higher intensity exercise.

3 marks

- d. Explain, physiologically, how this redistribution takes place.

2 marks

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Question 7 (12 marks)

Little-known Scottish swimmer Duncan Scott caused a minor upset by defeating Australia's Kyle Chalmers in the men's 100 m freestyle at the 2018 Commonwealth Games.

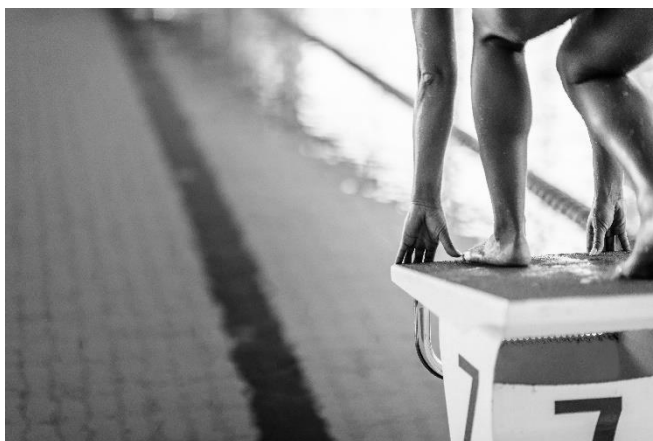
The results of the race are provided below.

Place	Name	Weight	Time
1st	Duncan Scott	76 kg	48.02
= 2nd	Kyle Chalmers	90 kg	48.15
= 2nd	Chad Le Clos	83 kg	48.15

Data: Results – Men's 100 m Freestyle Final,
<<https://results.gc2018.com/en/swimming/results-men-s-100m-freestyle-fnl-000100-.htm>>

- a.** Describe Scott's type of motion as he swam down the pool.

2 marks



Source: Microgen/Shutterstock.com

- b.** Referencing the image above of the grab starting technique often used in swimming, and using the principles of balance and stability, explain why this technique can allow the swimmer to have a faster reaction time off the blocks.

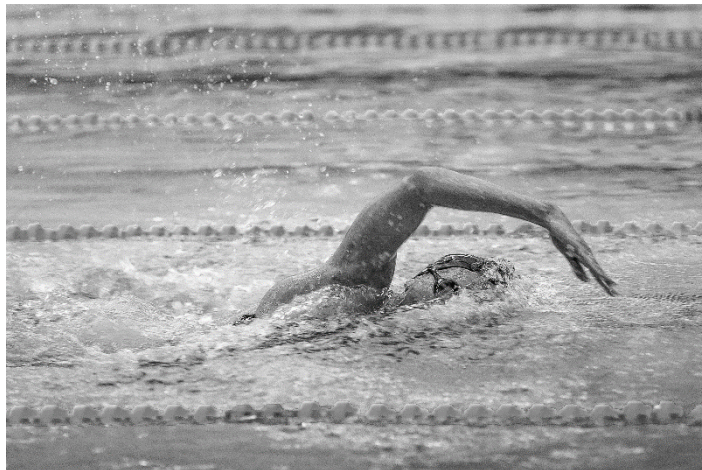
3 marks

- c.** With a weight of 76 kg, Duncan Scott is considerably lighter than the other two placegetters in the 100 m freestyle final.
Using Newton's second law of motion, explain how this could advantage Duncan Scott at the start of the race.

2 marks

- d. State the relationship between angular momentum, angular velocity and moment of inertia.

1 mark



Source: sportpoint/Shutterstock.com

- e. The image above shows the recovery phase of the freestyle stroke, which begins when the hand exits the water and ends when the hand re-enters the water.

Using the relationship described in **part d.**, explain why a swimmer should bend their arm at the elbow during this phase of the swim.

4 marks

Question 8 (8 marks)

Auskick is the Australian Football League's nationwide program that delivers weekly Australian rules football clinics to children from five to twelve years old in a non-contact, safe and fun setting. Children can learn the basic skills and rules of the sport using simple skill-focused drills, modified equipment, age-specific rules and shorter games.

- a. Explain whether a closed or open environment would be more beneficial for the children involved in the Auskick program.

2 marks

- b. In the table below, provide an example of how each of the three constraints could be addressed to assist the learning process for the children involved in the Auskick program.

3 marks

Constraint	Example
Individual	
Task	
Environment	

- c. Coaches often use a combination of constraint-based and direct coaching strategies to provide the most effective learning environment for participants.

Identify **two** characteristics of direct coaching strategies and suggest an example of a direct-based coaching drill for Auskick.

3 marks

Question 9 (10 marks)

The picture below shows Italian tennis player Roberta Vinci performing a forehand stroke.



Source: lev radin/Shutterstock.com

- a.** On the picture, label the **three** components of a lever. 3 marks
- b.** Name the classification of lever seen in the forehand stroke. 1 mark
-
- c.** State the other **two** classifications of levers and draw a diagram of each in the boxes provided. 2 marks

i. Classification 1 _____

ii. Classification 2 _____

An up-and-coming junior tennis player has been advised by their coach to use a longer tennis racquet.

- d.** Using your knowledge of levers, explain how this may benefit the player's performance.

2 marks

- e.** Justify which type of augmented feedback would be better for an autonomous-level tennis player to receive and provide an example of the suggested feedback.

2 marks

Question 10 (9 marks)

American gridiron football is becoming increasingly popular in Australia, with four Australians currently holding positions in National Football League (NFL) teams in the United States.

- a. In the table below, identify and describe **three** sociocultural factors that could contribute to the increase in popularity and participation in American gridiron football in Australia.

6 marks

Sociocultural factor	Explanation

- b. Define 'momentum'.

1 mark

- c. In the example below, two American gridiron footballers run towards each other and collide.

Determine which of the two players has the greatest momentum and describe the likely outcome of this collision for both players.

2 marks

Player A	Player B
Weight: 85 kg	Weight: 90 kg
Velocity: 7 m/s	Velocity: 6 m/s

Question 11 (4 marks)

Marquette University researchers surveyed 20 National Basketball Association (NBA) strength-and-conditioning coaches and found that they all use plyometric training with their athletes to improve their ability to play the game.

List **two** chronic adaptations of the muscular system that would occur as a result of plyometric training and explain how each adaptation would be beneficial in basketball.

Adaptations

1. _____

2. _____

Benefits

1. _____

2. _____

Question 12 (7 marks)

A sedentary 30-year-old woman decides to join a triathlon club with the goal of completing an Olympic-distance triathlon (1500 m swim, 40 km cycle and 10 km run).

Most of her training is endurance-based; for example, continuous or long interval training. After 16 weeks of training she completes the triathlon in a time of 3 hours and 12 minutes.

- a.** Contrast the changes that occur to oxygen consumption as a result of aerobic training to an individual at rest, during submaximal exercise and during maximal exercise.

3 marks

- b.** Identify **one** respiratory adaptation that would have occurred as a result of changes to oxygen consumption from the aerobic training and explain how this leads to improved performance for a triathlete.

3 marks

Changes in the muscles also occur as a result of aerobic training.

- c.** Which type of muscle fibres would be most affected by these changes?

1 mark

Question 13 (2 marks)

Anna Hursey was the youngest athlete to compete in the Commonwealth Games at the Gold Coast. At only 11 years old, Hursey competed for Wales in the table tennis.

Hursey's coach, Stephen Jenkins, has to ensure that he keeps her calm and relaxed so that she doesn't get overexcited before her matches.

Discuss an arousal regulation technique that Jenkins could use with Hursey to help her perform optimally.

Question 14 (3 marks)

Source: Nestor Rizhniak/Shutterstock.com

The image above shows a gymnast performing a routine.

- a.** To complete the routine, the gymnast requires balance, body composition and which other key fitness component?

1 mark

- b.** Identify and explain a factor that affects the fitness component identified in **part a.**

2 marks

END OF QUESTION AND ANSWER BOOK