Government of **Western Australia**
**School Curriculum and Standards Authority**

# SAMPLE ASSESSMENT TASKS

## PHYSICAL EDUCATION STUDIES

## ATAR YEAR 12

**Acknowledgement of Country**

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.



**Disclaimer**

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

# Sample assessment task

# Physical Education Studies – ATAR Year 12

## Task 3 – Unit 3 and Unit 4

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|---|---|
| **Assessment type** | Investigation |
| **Conditions** | Period allowed for completion of the task: 15 weeks |
| **Task weighting** | 10.5% of the school mark for this pair of units |

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**Performance analysis** **(128 marks)**

You are required to select a sport from the list of prescribed sports in the practical component of the syllabus. You will be provided with a number of sessions during class time to conduct any necessary tests/lab sessions to produce data that will support your investigation (part 2).

**Part 1**

Explain how the following biomechanical concepts have an influence on the performance of various skills within the selected sport. You must present an overview of each concept in relation to your sport, as well as **two** examples from within the sport in which the concept is applied.

- Coefficient of restitution
- Moment of inertia
- Angular velocity
- Conservation of angular momentum
- Third class levers

**Part 2**

Select **two** skills of varying complexity from your sport. Using video footage of yourself performing these skills, apply the Knudson and Morrison analysis model of human movement – you may wish to use video footage of an elite athlete performing these skills for comparison. Explain how each skill was analysed in relation to:

- preparation
- observation
- evaluation
- intervention
- re-observation.

**Part 3**

(a) Research and provide explanations of the nutritional demands of an elite performer in your selected sport in relation to:
   - fats
   - proteins
   - carbohydrates
   - foods with a low glycaemic index
   - foods with a high glycaemic index.

(b) Research and provide descriptions of **three** factors that must be considered when performing in each of the various environmental conditions, i.e. heat/humidity, cold, altitude.

(c) The various environmental conditions have had dramatic effects on the performance of elite athletes. Explore the effects of each of the environmental conditions on an elite performer and include details of the competition; the environment; the effects on the athlete; and the effect on the overall performance at the competition.

## Marking key for sample assessment task 3

| Description | Marks |
|---|---|
| **Part 1**<br>Explain how the following biomechanical concepts have an influence on the performance of various skills within the selected sport. You must present an overview of each concept in relation to your sport, as well as **two** examples from within the sport in which the concept is applied.<br>• Coefficient of restitution<br>• Moment of inertia<br>• Angular velocity<br>• Conservation of angular momentum<br>• Third class levers<br>For each of the **five** concepts: | |
| Provides a comprehensive explanation with all relevant information linked back to the selected sport | 3 |
| Provides a clear explanation with most relevant information included and some link to the selected sport | 2 |
| Provides a simple explanation with some information included and little or no link to the selected sport | 1 |
| **Subtotal** | **/15** |
| Overview of each concept<br>For each of the **five** concepts: | |
| Provides a clear description with all relevant detail included | 2 |
| Provides a simple description with minimal detail | 1 |
| **Subtotal** | **/10** |
| **Two** examples from within the sport in which the concept is applied<br>One mark for each of **two** appropriate examples from within the sport with explicit links to each concept discussed | 1–10 |
| **Subtotal** | **/10** |
| **Part 1 total** | **/35** |
| **Part 2**<br>Select **two** skills from your sport of varying complexity. Using video footage of yourself performing these skills, apply the Knudson and Morrison analysis model of human movement – you may wish to use video footage of an elite athlete performing these skills for comparison. Explain how each skill was analysed in relation to:<br>• preparation<br>• observation<br>• evaluation<br>• intervention<br>• re-observation.<br>For each of the **five** components in each of the two skills: | |
| Provides a comprehensive explanation with all relevant information linked back to the selected skill | 3 |
| Provides a clear explanation with most relevant information included and some link to the selected skill | 2 |
| Provides a simple explanation with some information included and little or no link to the selected sport | 1 |
| **Part 2 total** | **/30** |

| Description | Marks |
|---|---|
| **Part 3**<br>(a) Research and provide explanations of the nutritional demands of an elite performer in your selected sport in relation to:<br>• fats<br>• proteins<br>• carbohydrates<br>• foods with a low glycaemic index<br>• foods with a high glycaemic index. | |
| For each of the **five** nutritional elements: | |
| Provides a comprehensive explanation with all relevant information linking the nutritional demands of various aspects of the sport and the use of the element as a fuel source | 3 |
| Provides a clear explanation with most relevant information included and some links between the nutritional demands of most aspects of the sport and the use of the element as a fuel source | 2 |
| Provides a simple explanation with some information included and minimal links between aspects of the sport and the use of the element as a fuel source | 1 |
| **Subtotal** | **/15** |
| (b) Research and provide descriptions of **three** factors that must be considered when performing in each of the various environmental conditions, i.e. heat/humidity, cold, altitude. | |
| For each of **three** factors relating to heat/humidity, cold, and altitude (nine factors in total): | |
| Provides a comprehensive description that includes links between the factor and performance in the relevant condition | 2 |
| Provides a simple description with minimal links between the factor and performance in the relevant condition | 1 |
| **Subtotal** | **/18** |
| (c) The various environmental conditions have had dramatic effects on the performance of elite athletes. Explore the effects of each of the environmental conditions on an elite performer and include details of the competition; the environment; the effects on the athlete; and the effect on the overall performance at the competition. | |
| For competition in each of the **three** environmental conditions: | |
| Provides details of the | |
| • competition level | 1 |
| • time of competition | 1 |
| • length of competition | 1 |
| **Subtotal** | **/9** |
| Provides comprehensive details of the environment and includes factors such as temperature, humidity, rain, wind, altitude or other relevant environmental factors | 2 |
| Provides some details of the environment | 1 |
| **Subtotal** | **/6** |
| Provides a comprehensive explanation with all relevant information that links the environmental conditions and the athlete's performance | 3 |
| Provides a clear explanation with most relevant information and links between the environmental conditions and the athlete's performance | 2 |

| Description | Marks |
|---|---|
| Provides a simple explanation with some information included and little or no link between environmental conditions and the athlete's performance | 1 |
| **Subtotal** | **/9** |
| Provides a clear explanation with relevant information and links between the environmental conditions and the athlete's overall performance at the competition | 2 |
| Provides a simple explanation with some information included and little or no link between the environmental conditions and the athlete's overall performance at the competition | 1 |
| **Subtotal** | **/6** |
| **Part 3 total** | **/63** |
| **Total** | **/128** |

# Sample assessment task

# Physical Education Studies – ATAR Year 12

## Task 6 – Unit 3 and Unit 4

**Assessment type** Response

**Conditions** Time for the task: 60 minutes

**Task weighting** 7% of the school mark for this pair of units

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**Topic test: Functional anatomy and biomechanics** **(60 marks)**

**Question 1**

(a) For a punt kick, identify **two** biomechanical concepts or principles a player can apply to produce maximum velocity on the ball. (2 marks)

(b) Outline **three** reasons why the biomechanical concepts or principles identified above do not apply to the golf putt or the netball goal shot. (3 marks)

(c) With reference to the sliding filament theory, provide **three** factors that explain how contraction occurs in skeletal muscle. Include a diagram in your answer and label **four** parts of the sliding filament. (7 marks)

**Question 2**

(a) A rugby league player is about to tackle an oncoming opponent. Outline **three** actions the tackling player could take to increase their stability just before the impact of the tackle. (3 marks)

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(b) A stable position for a wicketkeeper in cricket would be crouched, feet shoulder-width apart, gloves touching (palms facing upwards) and placed in front of the body, slightly above the ground. To allow quick lateral movement, some sports require low levels of stability. Outline **two** ways in which a cricket wicketkeeper could reduce stability to improve sideways movement. (2 marks)

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**Question 3**

With reference to the images below, identify and explain **four** biomechanical concepts that apply to the successful performance of the javelin throw for maximum speed and accuracy. (12 marks)

**Question 4**

(a) With reference to the application of forces and spin, explain the following scenarios.

i. A tennis player wants to hit a ball deep into the opponent's court, with a large error margin at the net. (2 marks)

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_____

_____

_____

_____

ii. A soccer player is taking a free kick 25 metres out from goal. The opposition has formed a wall and the player wants to curl the ball around the wall from right to left to score. (2 marks)

_____

_____

_____

_____

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(b) Select one of the scenarios, then draw and label a diagram indicating direction of travel; direction of spin; Magnus force; location of turbulent airflow; and low-pressure area. (6 marks)

**Question 5**

An Australian test cricketer wishes to increase the force with which they can strike a cricket ball. They purchase a bat with a longer handle which is also heavier. Describe **three** factors that account for how each of these bat characteristics affects their objective.

(a) Bat with longer handle (6 marks)

(b) Bat that is heavier (6 marks)

**Question 6**

(a) Define the principle of conservation of angular momentum. Use a sporting example to illustrate the principle. (2 marks)

(b) A high-platform diver takes off and goes into a tuck position and rotates before straightening in preparation for a hands-first entry into the water. Outline **three** factors that describe the relationship between the axis of rotation, moment of inertia and angular velocity when the diver moves into the tuck position. (3 marks)

(c) As a coach, you have identified that your diver is not successfully completing the somersault in time to enter the water vertically. As a result, they enter the water with a belly flop (landing on their front). With reference to the principle of levers, explain **two** ways in which moving the fulcrum of the springboard might assist the diver to complete the dive successfully. (4 marks)

## Marking key for sample assessment task 6

**Question 1**

(a) For a punt kick, identify **two** biomechanical concepts or principles a player can apply to produce maximum velocity on the ball.

| Description | Marks |
|---|---|
| Identifies any **two** of the following: | |
| • angular velocity<br>• segmental interaction<br>• summation of forces<br>• balance | 1–2 |
| **Subtotal** | **/2** |

(b) Outline **three** reasons why the biomechanical concepts or principles identified above do not apply to the golf putt or the netball goal shot.

| Description | Marks |
|---|---|
| Outlines each of the following: | |
| • putting and goal-shooting require simultaneous summation of force | 1 |
| • skills require that all body parts move together | 1 |
| • tasks do not require maximum force or velocity – accuracy is the key factor | 1 |
| **Subtotal** | **/3** |

(c) With reference to the sliding filament theory, provide **three** factors that explain how contraction occurs in skeletal muscle. Include a diagram in your answer and label **four** parts of the sliding filament.

| Description | Marks |
|---|---|
| For each of the following: | |
| • myofibrils have several sections known as sarcomeres | 1 |
| • within each myofibril are two myofilaments (myosin and actin) | 1 |
| • during muscular contraction, the bunching occurs when myosin glides between the actin and the sarcomere shortens and creates movement | 1 |
| Accept any other appropriate response. | |
| Correctly labels any **four** of the following on an appropriate diagram:<br>• myosin (cross bridges)<br>• actin (binding sites)<br>• sarcomere<br>  ▪ H zone<br>  ▪ I band<br>  ▪ A band<br>  ▪ Z line | 1–4 |
| **Subtotal** | **/7** |

**Question 2**

(a) A rugby league player is about to tackle an oncoming opponent. Outline **three** actions the tackling player could take to increase their stability just before the impact of the tackle.

| Description | Marks |
|---|---|
| One mark for each of the following: | |
| • increase size of base of support in direction of oncoming player | 1 |
| • lower centre of gravity | 1 |
| • move line of gravity towards oncoming player | 1 |
| Accept any other appropriate response. | |
| **Subtotal** | **/3** |

(b) A stable position for a wicketkeeper in cricket would be crouched, feet shoulder-width apart, gloves touching (palms facing upwards) and placed in front of the body, slightly above the ground. To allow quick lateral movement, some sports require low levels of stability. Outline **two** ways in which a cricket wicketkeeper could reduce stability to improve sideways movement.

| Description | Marks |
|---|---|
| For any **two** of the following: | |
| • raise height of centre of gravity | 1 |
| • decrease size of base of support | 1 |
| • move hands forwards or to the side to move line of gravity to edge of base of support | 1 |
| **Subtotal** | **/2** |

**Question 3**

With reference to the images below, identify and explain **four** biomechanical concepts that apply to the successful performance of the javelin throw for maximum speed and accuracy.

| Description | Marks |
|---|---|
| Identifies any **four** of:<br>• impulse–momentum relationship<br>• summation of forces<br>• optimal projection<br>• balance<br>• conservation of angular momentum<br>• range of motion | 1–4 |
| For each of the **four** principles identified: | |
| Provides a clear and comprehensive explanation with appropriate detail included | 2 |
| Provides a simple explanation with some detail included | 1 |
| **Subtotal** | **/12** |

**Question 4**

(a) With reference to the application of forces and spin, explain the following scenarios.

i. A tennis player wants to hit a ball deep into the opponent's court, with a large error margin at the net.

| Description | Marks |
|---|---|
| • hit a top spin shot – increases margin for error at net, drops quickly after passing net<br>Accept any other appropriate response. | 1–2 |
| **Subtotal** | **/2** |

ii. A soccer player is taking a free kick 25 metres out from goal. The opposition has formed a wall and the player wants to curl the ball around the wall from right to left to score.

| Description | Marks |
|---|---|
| • kick the ball on the right-hand side of the ball to make the ball swerve from right to left<br>Accept any other appropriate response. | 1–2 |
| **Subtotal** | **/2** |

(b) Select one of the scenarios, then draw and label a diagram indicating direction of travel; direction of spin; Magnus force; location of turbulent airflow; and low-pressure area.

| Description | Marks |
|---|---|
| Draws diagram appropriate to the scenario selected | 1 |
| Correctly labels diagram with | |
| • direction of travel | 1 |
| • direction of spin | 1 |
| • Magnus force | 1 |
| • location of turbulent air-flow | 1 |
| • low-pressure area | 1 |
| **Subtotal** | **/6** |

**Question 5**

An Australian test cricketer wishes to increase the force with which they can strike a cricket ball. They purchase a bat with a longer handle which is also heavier. Describe **three** factors that account for how each of these bat characteristics affects their objective.

(a) Bat with longer handle

| Description | Marks |
|---|---|
| For each of the **three** appropriate factors: | |
| Provides a comprehensive description, with relevant links between the length of the bat and the force produced | 2 |
| Provides a description with a simple link between the length of the bat and the force produced | 1 |
| **Responses may include:** | |
| • increased lever length increases velocity at the end of the bat<br>• increased radius of rotation increases velocity at the end of the bat<br>• may be a loss of control with increased length<br>Accept any other appropriate response. | |
| **Subtotal** | **/6** |

(b) Bat that is heavier

| Description | Marks |
|---|---|
| For each of the **three** appropriate factors: | |
| Provides a comprehensive description, with relevant links between the length of the bat and the force produced | 2 |
| Provides a description with a simple link between the length of the bat and the force produced | 1 |
| **Responses may include:** | |
| • increased mass of bat means increased moment of inertia, as greater amount of weight is distributed away from axis of rotation<br>• heavier bat may be harder to swing – decreased angular velocity<br>• if the mass is larger, then the amount of force is greater if acceleration remains constant<br>Accept any other appropriate response. | |
| **Subtotal** | **/6** |

**Question 6**

(a) Define the principle of conservation of angular momentum. Use a sporting example to illustrate the principle.

| Description | Marks |
|---|---|
| Correctly defines the principle of conservation of angular momentum<br>• a rotating body continues to rotate about its axis of rotation, unless acted upon by an external force | 1 |
| Provides an appropriate example | 1 |
| **Subtotal** | **/2** |

(b) A high-platform diver takes off and goes into a tuck position and rotates before straightening in preparation for a hands-first entry into the water. Outline **three** factors that describe the relationship between the axis of rotation, moment of inertia and angular velocity when the diver moves into the tuck position.

| Description | Marks |
|---|---|
| • tuck decreases the moment of inertia<br>• tuck results in an increase in angular velocity<br>• action makes it easier for the diver to rotate<br>Accept any other appropriate response. | 1–3 |
| **Subtotal** | **/3** |

(c) As a coach, you have identified that your diver is not successfully completing the somersault in time to enter the water vertically. As a result, they enter the water with a belly flop (landing on their front). With reference to the principle of levers, explain **two** ways in which moving the fulcrum of the springboard might assist the diver to complete the dive successfully.

| Description | Marks |
|---|---|
| For any **two** appropriate ways: | |
| Provides a comprehensive description with relevant links between the position of the fulcrum and the amount of rotation produced | 2 |
| Provide a description with a simple link between the position of the fulcrum and the amount of rotation produced | 1 |
| **Answers may include:** | |
| • increased length of force arm increases the force generated at the end<br>• increased force at end of lever enables diver to get higher into the air<br>• increased time in the air allows more time to complete rotation<br>Accept any other appropriate response. | |
| **Subtotal** | **/4** |
| **Total** | **/60** |

# Acknowledgements

**Sample assessment task 6 – Unit 3 and Unit 4**

Evdcoldeportes. (2009). *Javalina* [Photograph]. Retrieved December, 2024, from https://commons.wikimedia.org/wiki/File:Evd-javalina-028.JPG
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