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Sports, exercise and health science
Higher level
Paper 2

29 April 2026

Zone A morning | **Zone B** morning | **Zone C** morning

Session number

2 hours 30 minutes

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Instructions to students

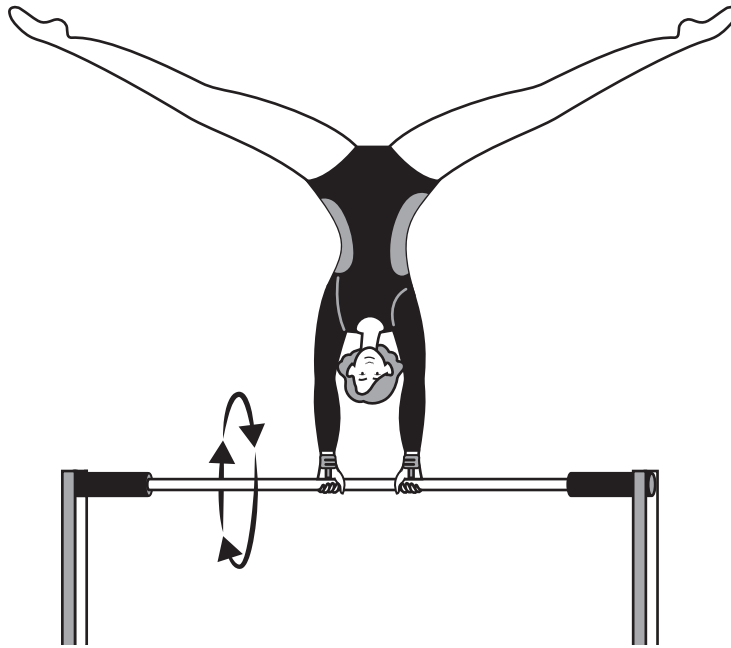
- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- A clean copy of the **SEHS data booklet** is required for this paper.
- The maximum mark for this examination paper is **[80 marks]**.



Answer **all** questions. Answers must be written within the answer boxes provided.

1. A gymnast competing on the uneven bars rotates around one of the bars in a forward motion.

Figure 1: Gymnast on the uneven bars



- (a) State the plane of movement as the gymnast rotates around the bar.

[1]

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- (b) Contrast the mobility of the shoulder and knee joints as the gymnast rotates around the bar.

[2]

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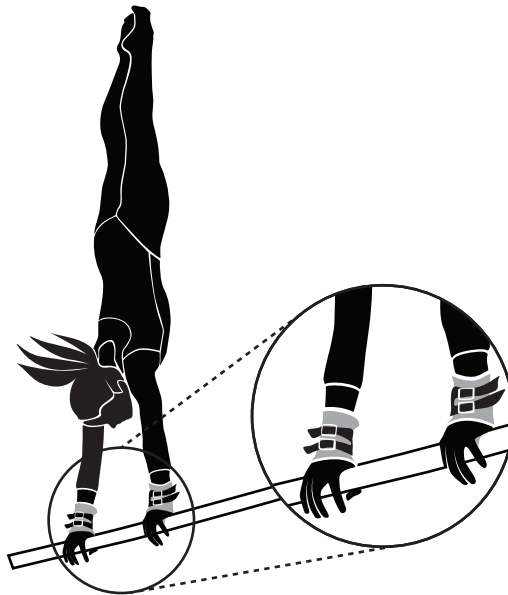
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(Question 1 continued)

- (c) Gymnasts use wrist wraps for support when training for the uneven bars. Using your understanding of ergonomic design, suggest **two** benefits of using wrist wraps. [2]

Figure 2: A gymnast using wrist wraps



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- (d) Chemoreceptors detect chemicals in bodily fluids. Outline **two** other types of receptor **and** an example of their role in supporting a gymnast during a performance. [2]

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(This question continues on page 5)



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(Question 1 continued)

- (e) Organismic integration theory focusses on motivation. Using examples, discuss **two** types of extrinsic motivation that may show why the gymnast participates.

[4]

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- (f) As female gymnasts age, they can be more susceptible to weakened bones which can lead to injury. Distinguish, with a reason, the risk of weakened bones between female gymnasts and their male teammates.

[2]

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2. (a) Suggest **one** way movement analysis supports an athlete's return to gymnastics after an acute injury. [1]

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- (b) Discuss how the height of a gymnast can affect angular momentum during an uneven bars routine. [4]

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- (c) The PETTLEP model of imagery includes physical, learning, and task elements. Apply **three** other elements of the PETTLEP model to the gymnast's preparation before a competition. [3]

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(Question 2 continued)

- (d) During a competition, a gymnast must concentrate to perform well. Using examples, outline **both** internal and external distractors that may impact performance.

[4]

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- (e) Gymnasts require significant mental toughness to be successful. Evaluate the use of self-reported assessments for measuring mental toughness.

[2]

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(Question 2 continued)

- (f) Gymnastics is a sport that emphasizes aesthetic movement. List **two** risk factors for low energy availability (LEA). [2]

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- (g) A gymnast includes shoulder prehabilitation exercises in their training. Using an example, explain the role of these exercises in supporting a gymnast. [2]

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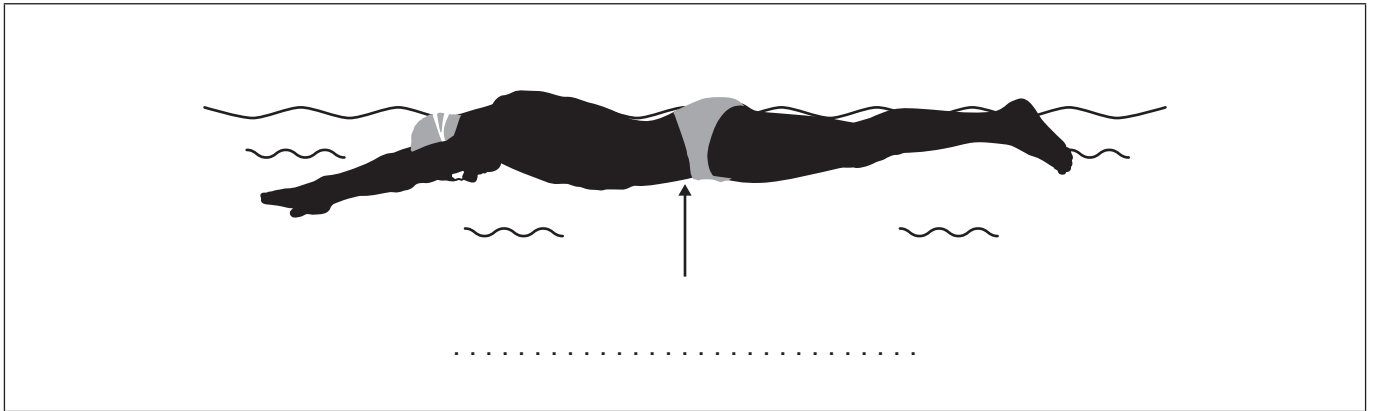
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3. (a) Fluids affect swimming performance. Label on **Figure 3** the force acting on the swimmer shown by the arrow.

[1]

Figure 3: Swimmer with a force acting on them



- (b) Explain why the swimmer has an advantage when swimming in salt water compared to fresh water.

[2]

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- (c) Using an example, explain how surface drag impacts the swimmer.

[2]

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(This question continues on the following page)



(Question 3 continued)

- (d) Swimming in open water presents an uncontrollable stressor. Outline a coping strategy that can be utilized if a swimmer is uncomfortable racing in open water.

[1]

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- (e) Discuss the relationship between arousal and performance in the catastrophe and inverted U theories.

[2]

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4. (a) Outline **four** cardiovascular responses that occur as the intensity of exercise increases.

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Figure 4 depicts an open water swimmer competing in a 10 km race.

Figure 4: An open water swimmer competing in a race



- (b) Explain how the menstrual cycle may affect thermoregulation in open water swimming during the luteal and follicular phases.

[3]

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- (c) Using an example, state a learning-focused performance goal for a 10 km swimmer.

[1]

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5. (a) A 42-year-old male swimmer is preparing for a 10 km open-water swim. Describe how their age will impact their VO_2max .

[1]

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- (b) A swimmer used hypoxic facilities in preparation for a high-altitude race. Discuss **two** possible benefits of the live high, train low (LHTL) approach to altitude training.

[2]

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- (c) As a swimmer begins a race, their blood pressure increases leading to greater blood flow in the muscles. Explain why this is advantageous to their performance.

[2]

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(Question 5 continued)

- (d) Explain how water balance in a swimmer is regulated to prevent dehydration. [4]

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- (e) A swimmer is breathing heavily during the recovery period because their initial energy demands were met by anaerobic respiration. Outline **three** reasons for excess oxygen consumption at the end of their swim. [3]

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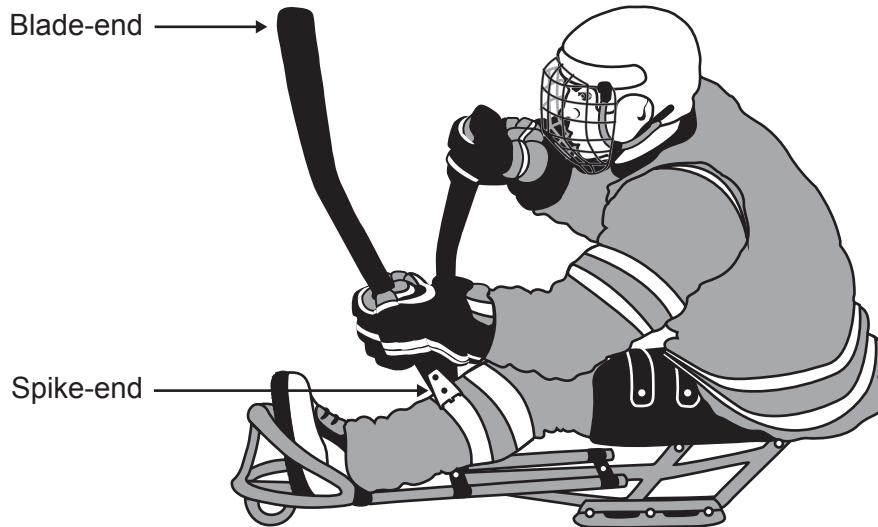
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6. In the team sport of para ice hockey, an athlete sits on a double-bladed sledge. Players use two sticks, each with a spike-end and a blade-end. Players use the spike-end of the sticks to move the sledge and the blade-end to play the puck.

Figure 5: Para ice hockey player on a double-bladed sledge



- (a) State the type of synovial joint that articulates at the proximal end of the femur. [1]

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- (b) Suggest how the height of the centre of mass impacts the stability of the para ice hockey player. [1]

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- (c) Using an example from para ice hockey, outline **one** way frictional forces can be modified. [1]

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(This question continues on the following page)



(Question 6 continued)

- (d) Explain how inorganic phosphate (Pi) accumulation throughout a match can impact the muscle cell force of a para ice hockey player.

[3]

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- (e) Using the principle of specificity, outline **one** example of how the glycolytic system of a para ice hockey player can be improved through speed training.

[1]

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(Question 6 continued)

- (f) List **two** benefits of using creatine monohydrate as a nutritional strategy for recovery in para ice hockey.

[2]

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- (g) As part of para ice hockey training, a coach tries to create a mastery motivational climate through the TARGET approach. In addition to grouping and evaluation, explain **three** other behaviours that support a mastery climate.

[3]

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7. (a) Strength training and velocity training are two ways to increase power output. Outline **one** other way a para ice hockey player can increase power output. [1]

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- (b) Using an example, outline **one** way to lower acute injury risk for para ice hockey players. [1]

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- (c) Propulsion in para ice hockey is the act of using the spike-ends of the hockey sticks to move the sledge. Outline **one** way to reduce biomechanical injury risk when performing this act. [1]

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- (d) A para ice hockey player may attribute a lost game to factors such as poor ice conditions or refereeing decisions. Using attribution theory, describe **one** way this may impact the player's future decisions. [1]

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(Question 7 continued)

(e) Outline the concept of learned helplessness.

[2]

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(f) Suggest how hypertrophy training impacts motor unit recruitment for a para ice hockey player.

[1]

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(g) State **two** ways to reduce bias when conducting experiments.

[2]

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References:

- Figure 1** Yokunen, 2021. *Uneven bars woman training isolated on white. Vector concept illustration with elegant sportswoman doing swing element upside down - stock illustration.* [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/uneven-bars-woman-training-isolated-on-white-royalty-free-illustration/1302653588?adppopup=true> [Accessed 8 April 2025]. Source adapted.
- Figure 2** Sportpoint, 2017. *Girl athlete gymnast - stock illustration.* [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/girl-athlete-gymnast-royalty-free-illustration/648308290> [Accessed 8 April 2025]. Source adapted.
- Figure 3** 4x6, 2013. *Swimmer in action - stock illustration.* [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/swimmer-in-action-royalty-free-illustration/465393037> [Accessed 8 April 2025]. Source adapted.
- Figure 5** MaxSM, 2015. *Sledge hockey player - stock illustration.* [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/sledge-hockey-player-royalty-free-illustration/537548863> [Accessed 6 June 2025]. Source adapted.

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