5.8 Hydration Strategies and the Effects of Dehydration on Performance: 10-minute Pack

AQA 8582 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer all questions. Write full sentences for questions worth 3 marks or more. Aim to complete the pack in about 40 minutes.

1 Name one common early sign of dehydration that a tennis player might notice during a long match in warm weather.

(Total for Question 1 is 1 mark)

2 Identify one effect of moderate dehydration on a football player's concentration during a competitive match.

(Total for Question 2 is 1 mark)

3 State one reason why maintaining hydration is particularly important for a marathon runner during a race in hot weather.

(Total for Question 3 is 1 mark)

4 Tick one box: Which of the following is a likely muscular symptom caused by dehydration during high intensity sprint work?

- [ ] A) Muscle cramps
- [ ] B) Increased flexibility
- [ ] C) Faster reaction time
- [ ] D) Greater power output

(Total for Question 4 is 1 mark)

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5 A coach considers advising runners to do a pre-event salt loading protocol to reduce cramp risk in a hot 10 km race. Suggest one advantage and one limitation of this approach.

(Total for Question 5 is 2 marks)

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6 Evaluate the hydration strategy of a marathon runner who plans to drink 150 ml of an isotonic sports drink every 20 minutes during a race in hot conditions, and to drink freely after the finish. In your answer, judge whether this plan is likely to maintain performance and avoid heat illness, and suggest any improvements. Use sporting examples and make a clear judgement.

(Total for Question 6 is 6 marks)

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Mark scheme · 5.8 Hydration Strategies and the Effects of Dehydration on Performance: 10-minute Pack

Question 1

any one of: thirst / dry mouth / dark urine / reduced urine volume / lightheadedness **B1**

Answer: For example, thirst.

Question 2

reduced attention / slowed decision making / increased errors in judgement **B1**

Answer: Reduced attention leading to poorer concentration.

Question 3

any one of: to aid thermoregulation / to replace sweat losses / to maintain blood volume / to support cardiac output **B1**

Answer: To aid thermoregulation by replacing sweat losses.

Question 4

A **B1**

Answer: A (Muscle cramps)

Question 5

advantage: may increase plasma sodium and help retain fluid, reducing likelihood of cramp and hyponatraemia, oe **B1**

limitation: excess salt can cause gastrointestinal discomfort, increased blood pressure in some athletes, and is not a substitute for appropriate fluid intake, oe **B1**

Answer: Advantage: it may increase plasma sodium and help retain fluid, reducing cramp risk. Limitation: excess salt can cause gastrointestinal discomfort or raise blood pressure and is not a substitute for proper fluid intake.

Question 6

Level 3 A well developed evaluation that considers multiple strengths and weaknesses of the plan, links points to marathon performance in hot conditions, suggests practical improvements, and reaches a clear justified judgement using appropriate sporting terminology. **5-6**

Level 2 Provides several relevant points about the plan with some application to marathon performance and makes a reasonable judgement, but the discussion may lack depth or full justification. **3-4**

Level 1 Offers simple points about the plan with little application or judgement, for example noting one pro or one con without development. **1-2**

Level 0 No relevant content. **0**

Indicative content:

- Strength: regular sipping of 150 ml every 20 minutes gives about 450 ml per hour, which can partially replace sweat losses and supply electrolytes and carbohydrate to sustain performance.
- Strength: isotonic composition helps with fluid absorption and sodium replacement, reducing risk of hyponatraemia and helping retention.
- Weakness: individual sweat rates vary; 150 ml every 20 minutes may be insufficient for a heavy sweater losing more than 1 litre per hour, so personalised pre-race testing is needed.
- Weakness: drinking 'freely' only after the finish risks neglecting post-race rehydration planning during the immediate recovery window; a more specific post-race replacement target based on body mass loss is better.
- Improvement: measure pre- and post-training body mass to estimate sweat rate and adjust volume; consider slightly larger volumes or more frequent sipping if sweat loss is high, and include a scheduled small post-race bolus of electrolyte drink within 30 minutes.
- Improvement: combine fluid plan with cooling strategies in hot conditions such as ice vests or sponging to reduce heat strain in addition to hydration.
- Judgement: the plan is a sensible baseline and likely to help many runners but requires individualisation and an explicit post-race rehydration protocol to be fully effective at maintaining performance and avoiding heat illness.

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