5.4 Health, Fitness and Wellbeing: Micronutrients, Fibre and Water: 30-minute Pack

AQA 8582 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Which vitamin helps the body absorb calcium from food, supporting bone health?

- ☐ A) Vitamin C
- ☐ B) Vitamin D
- ☐ C) Vitamin A
- ☐ D) Vitamin B12

(Total for Question 1 is 1 mark)

---

2 Which of the following best describes 'dehydration'?

- ☐ A) A state where the body has an excess of stored carbohydrate
- ☐ B) A state where the body does not have enough water to function normally
- ☐ C) A state where the body has too much haemoglobin
- ☐ D) A state where the body has an excess of dietary fibre

(Total for Question 2 is 1 mark)

---

3 Which of the following is the main role of dietary fibre?

- ☐ A) Providing the body's main energy source during exercise
- ☐ B) Supporting healthy digestion
- ☐ C) Carrying oxygen in the blood
- ☐ D) Building new muscle tissue

(Total for Question 3 is 1 mark)

---

4 State two symptoms or effects that mild dehydration can have on sporting performance.

(Total for Question 4 is 2 marks)

© Revision Library | revisionlibrary.co.uk

5 Discuss the roles that key micronutrients, such as iron, calcium and vitamin D, and water play in supporting the health and performance of Amara, a county-level 3000m runner, and evaluate why maintaining adequate hydration is likely to be one of her most immediate day-to-day performance priorities, compared with the other nutrients discussed.

(Total for Question 5 is 9 marks)

---

6 State two good dietary sources of calcium.

(Total for Question 6 is 2 marks)

---

7 State the main role in the body of each of the following.

(a) Calcium. **(1)**

(b) Iron. **(1)**

(c) Vitamin D. **(1)**

(Total for Question 7 is 3 marks)

© Revision Library | revisionlibrary.co.uk

8 Which of the following is a good practical strategy for maintaining hydration across a training day, based on the reasoning in this pack?

- ☐ A) Drinking fluids regularly throughout the day, including before, during and after training
- ☐ B) Drinking no fluids until immediately after training finishes
- ☐ C) Drinking one very large volume of water in the minutes before competing
- ☐ D) Only drinking fluids if training in cool, indoor conditions

(Total for Question 8 is 1 mark)

---

9 Water plays several important roles in the body, especially during exercise.

(a) State two functions of water in the body. **(2)**

(b) State two possible effects on the body of not drinking enough water before exercise. **(2)**

(Total for Question 9 is 4 marks)

---

10 State two good dietary sources of iron.

(Total for Question 10 is 2 marks)

---

11 Explain one reason why a performer training indoors in a hot, humid sports hall might need to increase their fluid intake compared with training in cooler conditions.

(Total for Question 11 is 2 marks)

© Revision Library | revisionlibrary.co.uk

12 Explain why a performer training for endurance events, such as distance running, needs to pay particular attention to their iron intake.

(Total for Question 12 is 2 marks)

13 Explain three reasons why the players should pay close attention to their hydration during this training block.

(Total for Question 13 is 3 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 5.4 Health, Fitness and Wellbeing: Micronutrients, Fibre and Water: 30-minute Pack

Question 1

B **B1**

Answer: B

Question 2

B **B1**

Answer: B

Question 3

B **B1**

Answer: B

Question 4

increased perceived effort or fatigue, oe **B1**

reduced concentration, oe **B1**

Answer: Mild dehydration can increase perceived effort and fatigue, and can reduce concentration.

Question 5

Level 3 A detailed and coherent response that accurately explains the roles of iron, calcium/vitamin D and water, applies them specifically to Amara's endurance training, and reaches a well-justified evaluative judgement about hydration's immediacy as a priority compared with the other nutrients. Sustained, accurate use of nutrition terminology throughout. **7-9**

Level 2 Some accurate coverage of at least two of iron, calcium/vitamin D and water, with some application to Amara's situation, though coverage may be incomplete or the evaluative judgement underdeveloped. Generally correct use of terminology. **4-6**

Level 1 Basic or generic statements about micronutrients and/or water with little or no specific application to Amara's situation and little evaluation of relative priority. **1-3**

Level 0 No relevant content. **0**

Indicative content:

- Iron's role in making haemoglobin, which carries oxygen to the working muscles, directly relevant to a 3000m runner's aerobic endurance performance.
- Calcium and vitamin D's role in maintaining strong bones, relevant to reducing stress-fracture and other overuse injury risk from repetitive high-mileage training.
- Water's role in regulating body temperature, transporting nutrients and oxygen, and supporting concentration and performance.
- Evaluative point: hydration status changes within a single day or even within a single session, and can be corrected relatively quickly by drinking fluids, so it needs constant, session-by-session attention.
- Evaluative point: iron and calcium/vitamin D status build up or deplete over a much longer timescale (weeks to months) and are managed through longer-term dietary habits rather than needing adjustment before every session.
- Evaluative point: this does not mean iron and calcium/vitamin D matter less overall, only that hydration is the more immediate, day-to-day priority given how quickly its effects on performance can appear.
- Balanced conclusion: an effective overall nutrition approach for Amara would combine consistent daily hydration habits with a longer-term dietary pattern that supports iron and bone health.

Question 6

dairy products (e.g. milk, cheese or yoghurt), oe **B1**

fortified plant milks or green leafy vegetables, oe **B1**

Answer: Dairy products such as milk, cheese or yoghurt, and fortified plant milks or green leafy vegetables, are all good dietary sources of calcium.

© Revision Library | revisionlibrary.co.uk

Question 7

(a) needed for strong, healthy bones and teeth, and plays a role in muscle contraction, oe **B1**

(a) Answer: Needed for strong, healthy bones and teeth, and plays a role in muscle contraction.

(b) needed to make haemoglobin in red blood cells, which carries oxygen around the body, oe **B1**

(b) Answer: Needed to make haemoglobin in red blood cells, which carries oxygen around the body.

(c) helps the body absorb calcium, supporting bone health, oe **B1**

(c) Answer: Helps the body absorb calcium, supporting bone health.

Question 8

A **B1**

Answer: A

Question 9

(a) regulating body temperature through sweating, oe **B1**

(a) transporting nutrients and oxygen around the body in the blood, oe **B1**

(a) Answer: Water regulates body temperature through sweating, and transports nutrients and oxygen around the body in the blood.

(b) reduced concentration or increased perceived effort, oe **B1**

(b) increased heart rate for the same work rate, oe **B1**

(b) Answer: Not drinking enough water before exercise can reduce concentration and increase perceived effort, and can raise heart rate for the same work rate.

Question 10

red meat, oe **B1**

dark green leafy vegetables (e.g. spinach) or pulses/lentils, oe **B1**

Answer: Red meat, and dark green leafy vegetables such as spinach, are both good dietary sources of iron.

Question 11

hot, humid conditions increase sweat rate as the body works harder to regulate temperature, oe **B1**

more fluid is therefore lost and needs replacing to avoid dehydration affecting performance, oe **B1**

Answer: Hot, humid conditions increase sweat rate as the body works harder to regulate temperature, so more fluid is lost and needs replacing to avoid dehydration affecting performance.

Question 12

iron is needed to make haemoglobin, which carries oxygen to the working muscles, oe **B1**

low iron levels can reduce the blood's oxygen-carrying capacity, which can cause fatigue and reduce aerobic performance, oe **B1**

Answer: Iron is needed to make haemoglobin, which carries oxygen to the working muscles. Low iron levels can reduce the blood's oxygen-carrying capacity, which can cause fatigue and reduce aerobic performance.

Question 13

exercising in warm conditions increases sweat loss, which increases the risk of dehydration, oe **B1**

dehydration can raise heart rate and perceived effort for the same work rate, reducing training quality, oe **B1**

adequate hydration supports concentration, which matters for a fast-moving team sport such as hockey, oe **B1**

Answer: Exercising in warm conditions increases sweat loss and the risk of dehydration; dehydration can raise heart rate and perceived effort for the same work rate; and adequate hydration supports concentration, which matters for a fast-moving team sport such as hockey.

© Revision Library | revisionlibrary.co.uk