



PE.SC8 Drug Misuse in Sport: Types of Performance-Enhancing Drugs and Their Effects

AQA 8582 • Calculators not allowed • about 35 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer all questions. Write full sentences for any question worth 3 marks or more. Time guidance 35 minutes.

- 1** Tick one box. Which of the following is a reason a performer might use a banned substance, given the context of elite sport?

- ☐ A) To improve teamwork in training
- ☐ B) To gain an unfair competitive advantage
- ☐ C) To increase the size of the stadium audience
- ☐ D) To reduce the number of training sessions

(Total for Question 1 is 1 mark)

- 2** State one main effect of stimulants when misused by performers, naming the effect in the context of competition such as sprinting or cycling.

(Total for Question 2 is 1 mark)

- 3** State one physical effect of anabolic steroids that may benefit a weightlifter during competition.

(Total for Question 3 is 1 mark)

- 4** Name one sporting example where β blockers might be misused and state the effect they produce that makes them useful in that sport, using the context of precision tasks such as archery.

(Total for Question 4 is 1 mark)

- 5** State one function of diuretics when misused by athletes in weight-category sports such as boxing.

- 6** Name the peptide hormone often misused in endurance sports and state its primary performance effect in the context of distance running or cycling.

(Total for Question 6 is 1 mark)

- 7** State one risk to a performer who is caught doping, beyond health harms, using the context of professional sport and sponsorship.

(Total for Question 7 is 1 mark)

- 8** Describe how narcotic analgesics might be misused by a contact sport athlete, for example a rugby player, and name one immediate effect.

(Total for Question 8 is 2 marks)

- 9** Explain why a weight-category boxer might deliberately take a diuretic before weigh in, using the context of preparing for competition.

(Total for Question 9 is 3 marks)

- 10** Explain why an archer might misuse β blockers before a major competition, making clear how the drug effect links to a performance advantage.

(Total for Question 10 is 3 marks)

- 11** Explain why an endurance cyclist might be tempted to use EPO during a multi-stage race, linking physiology to the sporting demands of cycling.

(Total for Question 11 is 4 marks)

- 12** Explain why some sprinters might use stimulants before a final, making clear both the immediate physiological effects and how those effects could improve sprint performance.

(Total for Question 12 is 3 marks)

- 13** Discuss and evaluate why athletes continue to dope despite the health, legal and reputational risks, using examples from professional sport and making a reasoned judgement.

(Total for Question 13 is 6 marks)

Mark scheme · PE.SC8 Drug Misuse in Sport: Types of Performance-Enhancing Drugs and Their Effects

Question 1

- **B1 B**
- **Answer: B (to gain an unfair competitive advantage)**

Question 2

- **B1 increased alertness/reduced perception of fatigue, oe**
- **Answer: Increased alertness and reduced perception of fatigue.**

Question 3

- **B1 increased muscle mass and strength, oe**
- **Answer: Increased muscle mass and strength.**

Question 4

- **B1 example: archery or shooting; effect: reduce heart rate and hand tremor/calm nerves, oe**
- **Answer: Archery or shooting; they reduce heart rate and hand tremor and calm nerves.**

Question 5

- **B1 rapid weight loss by increasing urine output or masking other banned substances, oe**
- **Answer: They cause rapid weight loss by increasing urine output and can help mask other banned substances.**

Question 6

- **B1 EPO (erythropoietin); increases red blood cell count and oxygen carrying capacity, oe**
- **Answer: EPO, which increases red blood cell count and oxygen carrying capacity.**

Question 7

- **B1 disqualification, bans from competition, or loss of sponsorship and reputational damage, oe**
- **Answer: Disqualification or bans from competition and loss of sponsorship or reputational damage.**

Question 8

- **B1 they mask pain, allowing an injured athlete to continue playing, oe**
- **B1 immediate effect: reduced perception of pain and temporary increase in ability to play despite injury, oe**
- **Answer: Narcotic analgesics mask pain, allowing an injured rugby player to continue playing; the immediate effect is a reduced perception of pain and a temporary ability to perform despite injury.**

Question 9

- **B1 diuretics increase urine output, causing rapid loss of body water and therefore weight, oe**
- **B1 this can help the boxer meet the required weight category at the official weigh in, oe**
- **B1 also diuretics can dilute urine samples and may mask presence of other banned substances, giving an additional motive, oe**
- **Answer: Diuretics increase urine output so the boxer loses body water and weight quickly, helping them meet the required weight at weigh in; additionally diuretics can dilute urine which may mask other banned substances.**

Question 10

- **B1 β blockers reduce heart rate and reduce tremor by blocking adrenaline effects, oe**
- **B1 a lower heart rate and steadier hands reduce movement of the bow and arrow at the moment of release, improving precision, oe**
- **B1 therefore using β blockers can give a measurable accuracy advantage in precision sports like archery, oe**
- **Answer: Beta blockers block adrenaline so heart rate and hand tremor are reduced; this steadier physiology reduces movement of the bow and arrow at release, improving accuracy, so the archer may gain a measurable precision advantage.**

Question 11

- **B1** EPO increases red blood cell production, raising haemoglobin concentration, oe
- **B1** more red blood cells increase the blood's oxygen carrying capacity, oe
- **B1** higher oxygen delivery to muscles improves aerobic capacity and delays fatigue, important over long stages, oe
- **B1** therefore a cyclist could gain a clear endurance advantage over many hours of racing, making EPO attractive despite risks, oe
- **Answer: EPO stimulates red blood cell production so haemoglobin rises; this increases oxygen carrying capacity of the blood and delivers more oxygen to working muscles, improving aerobic capacity and delaying fatigue across long stages; consequently a cyclist can gain a clear endurance advantage in multi-stage racing.**

Question 12

- **B1** stimulants increase central nervous system activity, raising alertness and reaction speed, oe
- **B1** they reduce perceived fatigue and can increase aggression or focus, aiding explosive efforts, oe
- **B1** quicker reaction and maintained power over a short race can improve start and acceleration in a sprint, giving a competitive edge, oe
- **Answer: Stimulants raise central nervous system activity so alertness and reaction speed increase and perceived fatigue falls; this can sharpen the start and sustain explosive power through the acceleration phase, improving sprint performance.**

Question 13

- **Level 3** (5-6): A well developed evaluation that identifies multiple reasons why athletes dope, explains the influence of incentives and pressures, considers the strength of counterarguments about risks and deterrents, and reaches a clear, supported judgement about why doping persists.
- **Level 2** (3-4): Clear explanation of some reasons why athletes dope and some consideration of risks or deterrents, with limited judgement or balance between arguments.
- **Level 1** (1-2): Simple statements about why athletes dope or that it is risky, with little development or no judgement.
- **Level 0** (0): No relevant content.
- **Indicative content:**
 - High rewards and incentives: financial prizes, sponsorships and fame create strong motivation to win and recover quickly.
 - External pressure: coaches, teams, national expectations or fear of losing selection can push athletes toward doping.
 - Perceived low detection probability: athletes may judge the chance of being caught as small or believe they can evade tests.
 - Short career span and injury risk: the need to perform during a limited career or return quickly from injury can encourage risky choices.
 - Counterarguments: health harms, bans, loss of reputation and legal consequences act as deterrents, and improved testing raises detection risk.
 - Evaluation/judgement might weigh that while risks are significant, the immediate and large rewards, combined with pressure and belief in evasion, explain why some athletes still choose to dope.