



Performance Enhancing Drugs

Name _____

Class _____



	Description from Specification	Pupil comments – How confident do you feel on this topic?
3.5.5	Performance-enhancing drugs (PEDs) and their positive and negative effects on sporting performance and performer lifestyle, including anabolic steroids, beta blockers, diuretics, narcotic analgesics, peptide hormones (erythropoietin (EPO), growth hormones (GH)), stimulants, blood doping	

Performance Enhancing Drugs

Performance enhancing drugs have become a major problem in sport. They are taken to gain an advantage over other competitors but this creates **unfair competition** and drugs also have **harmful side effects**.

Performance Enhancing Drug	Why is this drug taken?	Improves which component(s) of fitness	Side Effects	Used within which sport (s)?
Anabolic Steroids				
Beta Blockers				
Diuretics				
Narcotic Analgesics				
Peptide Hormones (e.g. EPO)				
Growth Hormones (GH)				
Stimulants				
Blood Doping				

Who is the performer and which PED(s) could potentially improve their performance?



9 Mark Question:

Kareem is a weightlifter but is finding it hard to improve his performances. Discuss the performance enhancing drugs that could potentially improve Kareem's performance and evaluate the reasons for and against Kareem taking these drugs? **(9)**

[illegible]

Explain **two** reasons why performance-enhancing drugs are banned.

Reason 1

(2)

Reason 2

(2)

Key Terms:

Anabolic Steroids: Mimic the male sex hormone testosterone and promote muscle and bone growth

Beta Blockers: Used to control the heart rate and have a calming and relaxing effect

Diuretics: Elevate the rate of urine production

Narcotic Analgesics: A Painkilling, or pain relieving drug

Peptide Hormones: Adding hormones into the blood stream e.g. EPO

Growth Hormones: Adding hormones into the blood stream in order to improve muscle growth

Stimulants: Have an effect on the central nervous system, therefore increasing alertness

Blood Doping: Artificially increasing the number of red blood cells in the blood stream



Performance Enhancing Drugs

Teacher Answer Booklet



	Description from Specification	Pupil comments – How confident do you feel on this topic?
3.5.5	Performance-enhancing drugs (PEDs) and their positive and negative effects on sporting performance and performer lifestyle, including anabolic steroids, beta blockers, diuretics, narcotic analgesics, peptide hormones (erythropoietin (EPO), growth hormones (GH)), stimulants, blood doping	

Performance Enhancing Drugs

Performance enhancing drugs have become a major problem in sport. They are taken to gain an advantage over other competitors but this creates **unfair competition** and drugs also have **harmful side effects**.

Performance Enhancing Drug	Why is this drug taken?	Improves which component(s) of fitness	Side Effects	Used within which sport (s)?
Anabolic Steroids	Increase muscle mass and allow a performer to train for longer and harder	Muscular Strength Power	Increased risk of heart attacks/strokes, High blood pressure, Liver Disease, Increased risk of muscle injury, Infertility in women, Death	Sprinting Weight Lifting
Beta Blockers	Reduce heart rate and lower blood pressure. Therefore stress levels and anxiety are reduced	Balance Coordination	Nausea & diarrhoea, Tiredness, Depression, Insomnia & nightmares	Archery Darts Snooker
Diuretics	Increase the amount of urine produced meaning weight loss occurs. Also masks detection of other drugs.	Can have an effect on body composition	Dehydration, Headaches, Dizziness, Nausea, Kidney Problems, Muscle Cramps	Boxing Horse Riding
Narcotic Analgesics	To give relief from injuries by targeting the CNS, meaning that a player can continue.	N/A	Loss of concentration, Loss of balance, Loss of coordination, Hallucinations, Also increases the chance of the injury worsening	Football Rugby Hockey
Peptide Hormones (e.g. EPO)	Increases the production of red blood cells in the body	Cardiovascular Fitness	Thickens the blood – leading to increased chance of heart attack/stroke	Cycling Long distance running
Growth Hormones (GH)	Increases the potential for muscle development	Muscular Strength Power	Swelling in the arms and legs, Joint and muscle pain	Sprinting Weight Lifting
Stimulants	Increase alertness, stimulate the CNS and increase HR	Reaction Time	Insomnia, High Blood Pressure, Addiction, Irritability	Sprinting
Blood Doping	Process rather than a drug. Injecting red blood cells directly into the bloodstream	Cardiovascular Fitness	Formation of blood clots, Overload of the circulatory system – could lead to heart attack/stroke	Cycling Long distance running

Who is the performer and which PED(s) could potentially improve their performance?

Anthony Joshua - Diuretics



Danny Ings – Narcotic
Analgesics



Mark Cavendish – EPO/Blood
Doping



Serena Williams - Stimulants



Manu Tuilagi – Anabolic
Steroids/GH



Elaine Thompson-Herah – Anabolic
Steroids/GH



Mark Selby – Beta
Blockers



Laura Muir –
EPO/Blood Doping



9 Mark Question:

Kareem is a weightlifter but is finding it hard to improve his performances. Discuss the performance enhancing drugs that could potentially improve Kareem's performance and evaluate the reasons for and against Kareem taking these drugs? (9)

A01 – Anabolic Steroids could improve performance.

A02 – This drug will enable him to train for longer and harder in the gym and will also increase muscle mass.

A03 – However this drug has some negative side effects such as high blood pressure and an increased chance of a heart attack, meaning a severe risk to long term health. A performer must weigh up these risks before deciding whether to take PEDs.

A01 – Diuretics could also improve his performance in weightlifting.

A02 – Diuretics cause a performer to increase the amount of urine that they produce, resulting in weight loss. This could put Kareem into a lower weight category, meaning he doesn't have to lift as heavy weights in order to win competitions.

A03 – A further advantage to diuretics is that they mask the presence of other drugs, meaning that if steroids have been taken, they are less likely to show up in a urine sample, meaning he is less likely to get caught.

A01 – However drugs in sport create unfair competition.

A02 – This is because they give an unfair advantage to those taking drugs, meaning that hard work and talent no longer result in wins in medals.

A03 – Punishments for going down this route of taking drugs are heavy. For example Kareem could gain a lifetime ban from the Olympic Games for taking PEDs and this could destroy his ambition in the sport, resulting in demotivation and even quitting the sport.

Accept other appropriate answers

Pupils should also make use of a short introduction and conclusion.

Explain **two** reasons why performance-enhancing drugs are banned.

Reason 1

(2)

Mark One – They create unfair competition.

Mark Two – Which goes against the moral and ethical values of sport.

Reason 2

(2)

Mark One – They often carry harmful side effects

Mark Two – For example Anabolic Steroids can result in increased blood pressure or even heart attacks/strokes.

Accept other appropriate answers

Key Terms:

Anabolic Steroids: Mimic the male sex hormone testosterone and promote muscle and bone growth

Beta Blockers: Used to control the heart rate and have a calming and relaxing effect

Diuretics: Elevate the rate of urine production

Narcotic Analgesics: A Painkilling, or pain relieving drug

Peptide Hormones: Adding hormones into the blood stream e.g. EPO

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Blood Doping: Artificially increasing the number of red blood cells in the blood stream



Performance Enhancing Drugs

Mark Scheme

Q1. Which one of the Performance Enhancing Drugs is an athlete most likely to use in order to gain more muscle? **(1 mark)**

- A** Diuretics
- B** Anabolic Steroids
- C** Peptide Hormones
- D** Narcotic Analgesics

Mark One – B. Anabolic Steroids

Q2. Diuretics are seen as a performance enhancing drug. Explain two reasons why a boxer might consider taking diuretics, and how this could improve their performance? **(4 marks)**

Reason 1

Mark One – Diuretics could be taken in order to lose weight.

Mark Two – This could lead the boxer to fighting in a lower category, giving them a greater chance of winning a fight.

Reason 2

Mark One – Diuretics could be taken in order to make the presence of other drugs.

Mark Two – This could mean that the boxer could get away with taking a drug such as anabolic steroids; aiding muscle mass and delivering stringer punches.

Accept other appropriate answers

Q3. Explain two reasons why Performance Enhancing Drugs are banned. **(4 marks)**

Reason 1

Mark One – They give an unfair advantage to performers who take them.

Mark Two – Which goes against the moral and ethical values of sport.

Reason 2

Mark One – They have dangerous side effects .

Mark Two – For example Anabolic Steroids cause high blood pressure which can lead to a heart attack.

Accept other appropriate answers

Q4. Long distance cycling is a sport whereby performers may come under pressure to take Performance Enhancing Drugs. Discuss the PEDs that cyclists may consider taking and evaluate the costs and benefits of such action. **(9 marks)**

A01 – Cyclists may consider taking Peptide Hormones in the form of EPO.

A02 – This involves injecting hormones into the blood stream which work to increase production of red blood cells.

A03 – This means more oxygen can be carried around the body, providing the muscles with more energy. This increases the chance of succeeding but harmful side effects such as an increased chance of a heart attack or a stroke can be present.

A01 – Cyclists may also consider blood doping.

A02 – This is a process rather than a PED and involves a performer injecting themselves with blood that has a high red blood cell count.

A03 – Again this increases the amount of oxygen being carried to the muscles, meaning the cardiovascular system can work more effectively. Blood doping doesn't create as many harmful

side effects and is also more difficult to detect when testing for PEDs, meaning that cyclists may be more likely to use this method.

A01 – A third drug that could be used by cyclists is stimulants.

A02 – Stimulants make a performer more alert by increasing adrenaline and heart rate, meaning fatigue is no longer an issue.

A03 – Cyclists often perform for hours at a time and often go without rest days or recovery. Stimulants can allow them to continue performing day after day. However dangerous side effects such as addiction and insomnia often occur and an athlete must also consider whether they are happy to go against the values and ethics of sport when taking this PED.

Accept other appropriate answers – this could include other PEDs and both benefits/costs of taking them.

Pupils should also make use of a short introduction and conclusion.



Name: _____

Performance Enhancing Drugs

Date:

Total marks available: 18

Total marks achieved: _____

Percentage: _____

Q1. Which one of the Performance Enhancing Drugs is an athlete most likely to use in order to gain more muscle? **(1 mark)**

(1)

- A** Diuretics
- B** Anabolic Steroids
- C** Peptide Hormones
- D** Narcotic Analgesics

Q2. Diuretics are seen as a performance enhancing drug. Explain two reasons why a boxer might consider taking diuretics, and how this could improve their performance? **(4 marks)**

Reason 1

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Reason 2

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Q3. Explain two reasons why Performance Enhancing Drugs are banned. **(4 marks)**

Reason 1

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Blood Doping

- **Process** rather than a drug - **Injecting red blood cells** directly into the bloodstream
- Used by **cyclists, runners & other endurance athletes**
- Side effects: blood clots which can lead to heart attacks



Beta Blockers

- **Reduce heart rate and lower blood pressure**, so stress levels and anxiety are reduced
- Used by **darts & snooker players**
- Side effects: depression & insomnia

Stimulants

- **Increase alertness**, stimulate the Central Nervous System and **increased HR**
- Used by **sprinters, swimmers & goalkeepers**
- Side effects: insomnia, irritability & addiction

Anabolic Steroids

- **Increase muscle mass** and allow a performer to train for longer and harder
- Taken by **sprinters & weightlifters**
- Side effects: high blood pressure, heart attacks & strokes



PE COMPONENT 1 - PEDs



Growth Hormones

- Increase the potential for **muscle development**
- Used by **rugby players & sprinters**
- Side effects: swelling of joints & muscle pain



Diuretics

- **Increase** the amount of **urine** produced meaning **weight loss** occurs. Also masks detection of other drugs
- Used by **boxers & jockeys**
- Side effects: dehydration & kidney problems



Narcotic Analgesics

- Give **relief from injuries** by targeting the CNS, meaning that a performer can continue
- Used in **all sports** to combat minor injuries
- Side effects: loss of balance & hallucinations

EPO

- Increases the production of **red blood cells** in the body
- Used by endurance athletes such as **runners & cyclists**
- Side effects: thickening of the blood which can lead to a heart attack



Blood Doping

- **Process** rather than a drug - **Injecting** ____ **blood cells** directly into the bloodstream
- Used by **cyclists, runners & other** ____ **athletes**
- Side effects: blood clots which can lead to ____



Beta Blockers

- **Reduce heart rate** and lower ____ **pressure**, so stress levels and anxiety are reduced
- Used by **darts & ____** **players**
- Side effects: ____ & insomnia

Stimulants

- **Increase** ____, stimulate the Central Nervous System and **increased HR**
- Used by **sprinters, swimmers & goalkeepers**
- Side effects: insomnia, irritability & addiction

Anabolic Steroids

- **Increase** ____ **mass** and allow a performer to train for longer and ____
- Taken by **sprinters & weightlifters**
- Side effects: high blood ____, heart attacks & strokes



PE COMPONENT 1 - PEDs



Growth Hormones

- **Increase** the potential for ____ **development**
- Used by **rugby players & sprinters**
- Side effects: swelling of joints & muscle pain



Diuretics

- **Increase** the amount of ____ produced meaning **weight loss** occurs. Also masks detection of other ____
- Used by **boxers & jockeys**
- Side effects: ____ & kidney problems



Narcotic Analgesics

- **Give relief** from ____ by targeting the CNS, meaning that a performer can continue
- Used in **all sports** to combat minor ____
- Side effects: loss of balance & hallucinations

EPO

- **Increases** the production of ____ **blood cells** in the body
- Used by ____ athletes such as **runners & cyclists**
- Side effects: thickening of the blood which can lead to a ____ attack

