

Teachers Notes

Science Debate Kit: Drugs in sport

Lesson plan

The different 'rounds' of the debate help students think through the issues and reconsider their opinions. The structure also shows them how to build a discussion and back up their opinions with facts.

Starter: 5 minutes.

What performance enhancing drugs do the students know about in sport? What are the other ways athletes and sportspeople improve their performance? There are many ways of enhancing performance – some are legal and some are not and this raises practical and ethical issues.

Main Activity: 35 minutes.

- 1) Split students into as many groups as characters you want to cover.
- 2) Give them their **character cards** – one per group, and give them a few minutes to read them over.
- 3) Get one student in each group to **read out** their **first section** to the rest of the class. What are the class's initial thoughts? Is there one position they identify with or reject?

Has been used with students aged 11-18 years.

I'm a
Scientist
Get me out of here

- 4) Take it in turn to **read out** their **fact**. Does it change the way they think?
- 5) **Read** the **issue**. Any different feelings?
- 6) Each team **asks** their **question** to the **character of their choice**.

Support: To help students you can put the following prompt sentences up on the board:

"I think ALL drugs in sport should/shouldn't be banned because....."

"I think is the most important point to think about."

Plenary: 10 minutes

Vote for which position they agree with most (if there is one). Why? Which arguments were the most persuasive?

Note – Students can stay in roles all the way through debate, or only for the first round if you prefer. If it's all the way through, give them a chance to express their own opinion at the end and in the plenary.

For groups who are not confident at class discussion, it might help to have them start by discussing the question and/or their character's position in pairs, and then compare notes in fours. They've then had chance to rehearse some of what they want to say before having to do it in front of the whole class.

Background notes

Doping in sport usually means the use of performance-enhancing drugs, but it can also mean techniques like 'blood-doping' (explained below). The main ethical issues around drug-use in sport are:-

Possible harms to the athlete.

Some drugs, like steroids, can cause serious harm. But it's worth noting that with other drugs the risks to the athlete may be fairly minimal – and often many other things athletes do (punishing training regime, psychological stress, etc) are also potentially harmful.

Unfairness. This is both between individual athletes, and between countries (when thinking about the Olympics and other international competitions). For example we know that for decades East Germany had a state policy of doping their athletes, which was reflected in them winning Olympic medals and world records. Also, issues of unfairness exist independent of drugs, for example, access to training facilities, top equipment, sports scientists.

Doping in sport is regulated by the World Anti-Doping Agency, which was set up in 1999. They draw up a list of prohibited drugs and other technologies and regulate drugs testing, etc. Those other technologies are only biomedical ones (blood doping, gene doping). They don't regulate things like what equipment sportspeople might use, although this can make a considerable difference.

Some of the more common performance-enhancing drugs are:-

Anabolic Agents

Anabolic agents (e.g. steroids) are synthetically produced substances which mimic the effects of testosterone, a hormone naturally derived in the body. Anabolic steroids increase protein synthesis and enhance muscle growth. They also have androgenic effects, including the development and maintenance of masculine characteristics such as the growth of the vocal cords and body hair.

Stimulants

Stimulants, for example amphetamine and cocaine, are substances that act on the central nervous system. Stimulants can increase alertness, reduce tiredness, and increase competitiveness and aggression in athletes.

Beta blockers

Beta blockers counteract the 'fight or flight' response and are used medically for some heart conditions, and also for anxiety. For example, they are used by some musicians and performers, to deal with stage fright. Because they reduce tremor they are banned in sports like archery, snooker and darts, but not in many other sports.

Erythropoietin (EPO)

A naturally-occurring hormone which stimulates production of red blood cells. It's used medically to treat some forms of anaemia, and in sports, to increase the number of red blood cells, and hence the blood's ability to carry oxygen (like blood-doping, or training at altitude). There was a spate of young, elite cyclists dying in their sleep in the 1990s. Many think this was caused by EPO use. Increasing your red blood

cell count increases blood viscosity. Elite cyclists have a very low pulse rate anyway, and particularly when they are sleeping. The combination is obviously dangerous. A test for EPO in athletes was developed in 2000 and its abuse is now thought to be less common than it was.

Blood-doping

Not a drug, but a prohibited medical technique. This involves taking some of the athlete's blood some weeks before a competition, extracting the red blood cells, freezing them, and then putting them back into the athlete just before the event. They'll then have a lot more red blood cells than normal, and their blood will be able to carry more oxygen. Training at altitude has a similar effect.

Guidance note: Just to warn you, the character Alina Dent talks about her brother who died young of a heart attack from using steroids. She also points out that impotence is one of the side effects of steroid use. Her character may upset students who have been in a similar situation. You can miss out any character, as long as you also miss out one from the other side, so the two sides are still matched.

Suggested homeworks:

1. **Attitude continuum.** Ask students to write a list of all the methods that athletes might use to improve their performance. Get them to arrange them in order of possible harm to the athlete. Also in order of how unfair they might be (because other athletes may not get the same access to them). Then separate them into things they think should be banned and things they don't. Can they explain why things go in one category and not the other?

OR

2. **Research task.** Students to research gene doping (a new technology not yet used on humans, but which is already banned) and write an essay explaining what it is and what ethical problems it raises.

All facts in this kit have been researched. References can be found online at: debate.imascientist.org.uk/sportsdoping

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This debate kit is funded by The Physiological Society. Through its educational website, www.understanding-life.org, The Society provides interactive resources and competitions to enhance physiology teaching at ages 11-19 as well as information on physiology-related careers. Bringing together over 3,000 scientists from more than 60 countries, The Society also offers schools the opportunity to engage with scientists online, in the classroom or at universities. For further information, please email education@physoc.org.



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