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HEAD TO HEAD

Should athletes be allowed to use performance enhancing drugs?

Stories about illegal doping in sport are a regular occurrence. **Julian Savulescu** argues that rather than banning performance enhancing drugs we should regulate their use, but **Leon Creaney** and **Anna Vondy** say this would lead to escalating use and call for tougher enforcement

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Yes— Julian Savulescu

The zero tolerance ban on doping has failed. The second fastest runner ever, the American Tyson Gay, recently tested positive for a banned substance, along with Jamaican sprinters Asafa Powell and Sherone Simpson. There is evidence of widespread doping across many sports including athletics, tennis, and cycling.[1] Recent evidence from Germany suggests doping is rife in football.[2] Despite apparent advances in the "war on doping," our success in detecting drug misuse is limited. In 2000, the first tests for erythropoietin were introduced.[3] Yet in 2012, the US Anti-Doping Agency expert Larry Bowers said that a negative test cannot be equated with the absence of doping.[4]

According to Hermann and Henneberg, "Using typical values of detectability . . . the probability of detecting a cheater who uses doping methods every week is only 2.9% per test."[5] It is time for a different approach.

Human nature

It appears we reached the limits of human performance in sprinting about 15 years ago. Starting with Ben Johnson in 1988, only 10 men have ever run under 9.8 sec. Only two (including Usain Bolt) are currently untainted by doping.

To keep improving, to keep beating records, to continue to train at the peak of fitness, to recover from the injury that modern training inevitably inflicts, athletes need enhanced physiology. We have exhausted human potential. But to be human is to be better, and doping is not going to go away.

Regulation could improve safety

The strongest argument against doping is safety. Since there have been no scientific tests of the effects of doping in healthy athletes, there are few good data available. Some have pointed to deaths of athletes as proof, but there is little evidence to attribute many of these to doping.[6] In fact, a recent study shows French Tour de France competitors (1947-2012) had 41% lower mortality than the French male population as a whole.[7]

Modern doping with anabolic steroids, growth hormone, erythropoietin, and blood can be tightly monitored and, as we put together the evidence, safe limits set. An indication of their likely safety is that most current doping agents are routinely used for patient care under medical supervision. For example, growth hormone is given to children who have normal levels but who are a certain amount below the height expected for their age.[8]

Pushing humans way beyond what is physiological can have ill effects, as the East German experiments with steroids in the 70s showed. On the other hand, extreme exercise itself depletes natural levels of red blood cells,[9] testosterone,[10] and other hormones.[11] But testosterone and growth hormone can all be increased within physiological endpoints (which still constitutes doping) safely under medical supervision with clear, well understood risk-benefit profiles.

Anything is dangerous if taken to excess. Caffeine, a legal and popular performance enhancing substance, has been linked to deaths and dangerous overdoses.[12] Yet it is consumed by both athletes and the general population, including children, as a performance enhancer, usually safely.

Moreover, there is no such thing as risk-free sport, or life. We need a balance between the values of safety, human contribution and participation, enforceability, and spectacle. Elite sport is itself risky. Around 20% of professional riders starting the Tour de France do not complete, many because of crash injuries. Since 1980, at least 21 cyclists have died during competition.[13]

We should assess each substance on an individual basis. We should set enforceable, fair, and safe physiological limits. For example, blood doping and the use of erythropoietin could be

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dealt with at a stroke by allowing doping up to a blood cell count of 50%.

Spirit of sport

A second objection lies in the nature of the intervention. If a substance came to dominate or corrupt performance, there would be good reason to ban it. For example, if drugs cause boxers to feel no fear or β blockers cause archers and pistol shooters to have steady hands, they should be banned because overcoming fear and tremor are integral to these sports.

But if a substance allows safer, faster recovery from training or injury then it does not corrupt sport or remove essential human contribution. Indeed, analgesics and anti-inflammatory drugs are already widely used to enhance performance after injury, in competition and out. That is more unnatural and probably more dangerous than physiological doping.

Athletes are using many doping products to optimise their physiology, just as they do with diet, fluid, and glucose management. Cyclist Tyler Hamilton claims in *The Secret Race* that he lost a race because he did not take a 100 calorie energy gel at the correct time (despite the fact he was also doping).[14]

Will allowing elite athletes to take drugs under medical supervision encourage children and amateurs to imitate their heroes?

Again, the current ban fails this test. Amateur doping is already happening in an unsupervised manner. There is doping at college,[15] and it is estimated that 3-5% of school athletes use doping.[16]

It is better to send the message that you can safely enhance physiology with a doctor when you are an adult. Many practices that have risks if taken to excess, or carried out recklessly, like driving a car or drinking alcohol, are banned for children.

Over time the rules of the sport have evolved. They must evolve as humans and their technology evolve and the rules begin to create more problems than they solve. It is time to rethink the absolute ban and instead to pick limits that are safe and enforceable.

No—Leon Creaney and Anna Vondy

The argument against doping in sport is moral, not medical. If performance enhancing drugs were no longer prohibited in sport, then being a talented sportsperson would rapidly become a dangerous occupation. Within weeks of the decision, it would no longer be a choice of whether to take performance enhancing drugs or not. You would either take them and stay competitive, or refuse and retire. Athletes who wanted to live a healthy existence would be pushed out altogether. Soon, the only competition that would matter would be the one to develop the most powerful drugs, and athletic opponents would enter into an exchange of ever escalating doses to stay ahead of each other. In a supposed attempt to level the playing field the exact opposite problem would be created. Only rich and powerful nations would have access to the best technologies, meaning the gap between the privileged and poor would actually widen.

Escalating problems

In some nations we might see a return of the state sponsored doping programmes of the 70s and 80s. We still have many countries with totalitarian governments and dictators who show scant compassion for their citizens. Such governments would exploit and abuse their best talent from childhood to create centrally coordinated doping programmes. Politicians would bask in the reflected glory of their gladiator champions, who would later die young.

Some from the pro-doping camp argue that the cheats are always one step ahead and therefore the anti-doping programme serves only to give the smartest cheaters an advantage. However the anti-doping programme also serves as a useful lid on the pressure cooker. Without it, the use of performance enhancing drugs would expand exponentially and filter deeper into our society. Some cheats are never caught, but they may still pay a heavy price for their doping. Anabolic androgenic steroids create a deleterious lipid profile[17] (reduced high density lipoprotein cholesterol, raised low density lipoprotein cholesterol), leading to premature atherosclerosis and the risk of premature cardiac death.[18] Much media suspicion surrounded the death of Flo-Jo, sprint queen of the Seoul 1988 Olympics.[19] Provisional reports of a "heart seizure" became epileptic seizure in the final autopsy. Erythropoietin is not risk-free either, with many anecdotal accounts of high blood cell counts leading to sudden cardiac death.[20] Our health systems are already creaking under the pressure of alcohol, smoking, heroin, and cocaine related illnesses. Do we really want to add to this the problems that performance enhancing drugs could create?

Engineered athletes

Legitimising performance enhancing drugs in elite and professional sport would change the message sport sends to society. A meritocratic society is one in which success is proportional to effort and ability. Sporting success is generally achieved through positive attributes such as diligence in training, effort, and self denial. Athletes inspire us because we appreciate that they got where they are through hard work. Would a bioengineered athlete be able to inspire in the same way? Like the case for a Formula 1 champion (where it is impossible to tell whether success is due to the car or the driver), it would be impossible to separate the effects of the drugs and gene doping from the human element.

Bans can work

Some have argued that because we will never be able to catch every cheat, we should give up trying. The answer to futility is not to give up, however, but to make the anti-doping system more effective. In the words of the Irish political philosopher Edmund Burke, "All that is needed for evil to triumph is that good men do nothing."

So how do we make the system less futile and the deterrent respectable? Recently an area of mathematical study known as game theory has been proposed to have some of the answers.[21] Game theory is the study of how players choose strategies to maximise their own return, in anticipation of what their opponents will do. Currently drug testing covers only a random and incomplete sample of competitors. Therefore inevitably some will elude detection through chance alone. Game theory dictates that the only rational logic is to match your rival's anticipated strategy—to cheat yourself. However, if testing was ubiquitous, it would be virtually impossible to evade detection, and the equilibrium would be reset in favour of not cheating.

Another application lies in relation to the duration of drug bans. Currently a first offence generally only leads to a two year ban, and it is very hard for sponsors and promoters to reclaim their prize money. Many athletes are prepared to take the risk of getting caught, followed by serving a soft sentence. Evidence from a retrospective cohort trial[22 23] suggests that anabolic steroids continue to enhance performance for years (8.1±3.2) after a washout period, so an athlete is able to return to his or

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her sport legally yet still gain a competitive advantage. In such circumstances, lenient sanctions are not an effective deterrent to doping. Game theory suggests that increasing the risks associated with cheating would greatly reduce its prevalence. To dope is a premeditated, planned, and enduring decision—it is not entered into unwittingly, so leniency is not appropriate when considering the sanction. If a first offence led to a lifetime ban, the risks involved would become much greater, such that fewer people would take the gamble of getting caught in the first place.

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