

Review article

Doping in sports: Physiology Review

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Abstract:

Any form of practices leading to use of specific drugs with an objective to improve performance or stamina in sport can be referred as Doping. In competitive sports, **doping** is the use of banned athletic performance-enhancing drugs by athletic competitors. The term *doping* is widely used by organizations that regulate sporting competitions. The use of drugs to enhance performance is considered unethical, and therefore prohibited, by most international sports organizations, including the International Olympic Committee. Furthermore, athletes (or athletic programs) taking explicit measures to evade detection exacerbates the ethical violation with overt deception and cheating.

Athletes caught doping may be subject to penalties from their locality as well from the individual sporting governing body. The legal status of anabolic steroids varies from country to country. Using performance-enhancing drugs in mixed martial arts competitions like the UFC could find the guilty fighter charged or sued once Bill S-209 passes .

Keywords : doping , steroids

Introduction:

Any form of practices leading to use of specific drugs with an objective to improve performance or stamina in sport can be referred as Doping. ¹ In competitive sports, **doping** is the use of banned athletic performance-enhancing drugs by athletic competitors.

The term *doping* is widely used by organizations that regulate sporting competitions. The use of drugs to enhance performance is considered unethical, and therefore prohibited, by most international sports organizations, including the International Olympic Committee. Furthermore, athletes (or athletic programs) taking explicit measures to evade detection exacerbates the ethical violation with overt deception and cheating.²

Historically speaking, the origins of doping in sports go back to the very creation of sport itself. From ancient usage of substances in chariot racing to more recent controversies in baseball and cycling, popular views among athletes have varied widely from country to country over the years. The general trend among authorities and sporting organizations over the past several decades has been to strictly regulate the use of drugs in sport. The reasons for the ban are mainly the health risks of performance-enhancing drugs, the equality of opportunity for athletes, and the exemplary effect of drug-free sport for the public. Anti-doping authorities state that using performance-enhancing drugs goes against the "spirit of sport".³

Steroids

Over the last 20 years the appearance of steroids in sports has been seen as an epidemic. Research and limited tests have been conducted only to find short-term, reversible effects on athletes that are both physical and mental. These side effects would be alleviated if athletes would be allowed the use of controlled substances under proper medical supervision. These side-effects include Intramuscular abscesses and other microbial bacteria that can cause infections, from counterfeited products the user decides to purchase on the black market, high blood pressure and cholesterol, as well as infertility, and dermatological conditions like severe acne. Mental effects include increased aggression, depression, and in rare cases suicide has been seen as well. Most studies on the effects of steroids have shown to be improper and lacking credible tests as well as performing studies in a skewed fashion to predetermine the world's view on the use of steroids in sports. Long-term effects have not been able to be pinpointed just yet due to the recency of testing these substances but would start show up as early steroid users reach the age of 50 and older.

Stimulants

Stimulants are drugs that usually act on the central nervous system to modulate mental function and behavior, increasing an individual's sense of excitement and decreasing the sensation of fatigue. In the World Anti-Doping Agency list of prohibited substances, stimulants are the second largest class after the anabolic steroids.⁴ Examples of well known stimulants include caffeine, cocaine, amphetamine, modafinil, and ephedrine. Caffeine, although a stimulant has not been banned by the International Olympic Committee or the World Anti Doping Agency since 2004.⁵

Anabolic-androgenic steroids (AAS) were first isolated, identified and synthesized in the 1930s, and are now used therapeutically in medicine to induce bone growth, stimulate appetite, induce male puberty, and treat chronic wasting conditions, such as cancer and AIDS. Anabolic steroids also increase muscle mass and physical strength, and are therefore used in sports and bodybuilding to enhance strength or physique. Known side effects include harmful changes in cholesterol levels (increased Low density lipoprotein and decreased High density lipoprotein), acne, high blood pressure, and liver damage. Some of these effects can be mitigated by taking supplemental drugs.⁶

Under established doping control protocols, the participant will be asked to provide a urine sample, which will be divided into two, each portion to be preserved within sealed containers bearing the same unique identifying number and designation respectively as A- and B-samples.

Sports organizations:

WADA's Executive Committee and Foundation Board clarified at a meeting on 19–20 November, that an athlete whose A-sample has revealed the presence of a prohibited substance or method to request the analysis of his or her B-sample:

"The B-sample helps confirm that an anti-doping rule violation has occurred and protects the rights of the athletes," said WADA Director General David Howman. "It should be stressed that anti-doping is one of the few types of controls in society in which a confirmation procedure is used in order to protect individuals, and the very rare cases in which the analysis of the B-sample did not match the results of the A-sample have shown the usefulness of such procedure⁷

Anti-doping policies instituted by individual sporting governing bodies may conflict with local laws. A notable case includes the National Football League (NFL) inability to suspend players found with banned substances, after it was ruled by a federal court, that local labor laws superseded the NFL's anti-doping regime. The challenge was supported by the National Football League Players Association.⁸

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References:

1. Tayade MC, Bhamare S ,Kamble P , Jadhav K, Doping in sports: Current Review , Int J Cur Res Rev, Apr 2013, Vol 05 (07),83-86
2. Parienté, R; Lagorce, G (1973). La Fabuleuse Histoire des Jeux Olympiques. France: ODIL. ISBN 2-8307-0583-1.
3. Deventer, K; Roels, K; Delbeke, FT; Van Eenoo, P (August 2011). "Prevalence of legal and illegal stimulating agents in sports". *Analytical and Bioanalytical Chemistry*. **401** (2): 421–32.
4. Doping of athletes, a European survey, Council of Europe, France, 1964
5. Grant, D.N.W.; Air Force, UK, 1944
6. Van Dijk, Pieter: Doping bestaat en doen we eraan, Het Vrije Volk, Holland, 13 December 1961
7. "WADA Clarifies B-Sample Procedure". WADA.com. 22 November 2006. Archived from the original on 6 January 2007. Retrieved 29 August 2009.
8. Magraken, Erik (9 March 2013). "Legal Ramifications for Using PEDs in MMA?". TopMMANews.com. Retrieved 9 March 2013.