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Drugs and Sports: A Serious Affair

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Abstract

Sport makes physical and mental demands on your body. Recreational drugs are also demanding on you whether you want them to or not they affect your mind and body. When you are very active - during sport for example, your body adapts to provide you with the support you need, such as increasing the rate your heart pumps blood and supplies oxygen to your muscles. Your brain works to maintain body temperature, co-ordinate your movement, and make sure you are alert. Your body is designed to co-ordinate itself to allow you to perform at your best. Mixing drugs and sport can disrupt your game in many ways.

Keywords: Drugs, Sports, mental demands, rate of heart pumps

1. Introduction

The use of drugs in sports has had a long and well documented history. The IAAF became the first International Sporting Federation to prohibit doping, doing so in 1928 by including the following wording in its Handbook: "Doping is the use of any stimulant not normally employed to increase the power of action in athletic competition above the average. Any person knowingly acting or assisting as explained above shall be excluded from any place where these rules are in force or, if he is a competitor, be suspended for a time or otherwise from further participation in amateur athletics under the jurisdiction of this Federation." However, soon after World War II it became clear that many athletes in a wide range of sports were using drugs to enhance their performance. This practice was widespread, while measures to resist such use were limited. The death of athletes in cycling events in 1960 and 1967, which was traced to doping, aroused strong reactions and the demand was made that sports authorities should intervene. The Council of Europe first defined doping in 1963 as the use of certain substances or the use of methods that could have the effect of unnaturally improving the physical and/or mental condition of a contestant before or during competition and thus enhance his or her sports performance. Although the danger associated with the use of drugs was the initial incentive for doping control, doping is now no less regarded as cheating and unethical. In general, athletes have used drugs both to speed up development during training and to enhance their performance in the competition itself. The International Olympic Committee (IOC) established a Medical Commission in 1967 and approved a ban on doping in 1968. The Committee defined the list of Prohibited Substances and the first tests for stimulants were performed at the Winter Olympics in 1968. Steroids only became detectable in 1974. International Sports Federations (IFs) also initiated doping controls at their own events and IAAF became the first IF to perform systematic out-of-competition tests, which are considered the most effective form of testing. The authorities (such as National Anti-Doping Agencies) of various countries have taken over doping controls within their own borders and in some countries doping has been banned by law, and is therefore also punishable as such. In 1998, several doping incidents occurred in various parts of the world, and several governments declared their dissatisfaction with the current doping control situation. As a result, the IOC called a conference in Lausanne in early 1999 with the participation of National Olympic Committees (NOCs), Government authorities, IFs, and athletes. More stringent measures were approved and "The Lausanne Declaration" was issued and the decision was made to establish The World Anti-Doping Agency (WADA), with the participation of the IOC, IFs, and governments.

The purpose of WADA is to harmonise and strengthen anti-doping actions and rules across all sports and countries. At a conference in Copenhagen in March 2003 "The World Anti-Doping Code"

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was formally approved and replaced the IOC anti-doping rules. The “Code” sets stricter anti-doping aims, rules, and controls than were previously in effect. WADA also took over the role of publishing the list of Prohibited Substances, which is continually under review and formally updated on 1 January each year. A substance or method is considered for inclusion on the List if WADA determines it meets any two of the following three criteria: a) it is performance enhancing, b) be dangerous to the athlete’s health, c) be contrary to the spirit of sport. A substance or method can also be added to the list if WADA determines it has the capacity to mask the use of other prohibited substances or methods. The scope of the doping problem continues to shift and expand as new compounds, chemical and pharmacological classes, and methods of doping are embraced by succeeding generations of athletes, coaches, and unscrupulous chemists. As a result, anti-doping analytical laboratories have evolved continuously to face these new challenges. In order to meet numerous legal challenges to the anti-doping rules and regulations, more-detailed legal definitions and clarifications were devised. Today’s anti doping regulations, testing procedures, and adjudication processes are developed and refined constantly by teams of legal, medical, and pharmacological-analytical experts. Substances may be prohibited either in-competition, or both in- and out-of- competition, depending upon their short- or long-term potential to enhance performance or endanger the athlete’s health. The determination as to whether a substance or method is banned, or whether it is to be sought either in-competition or both in- and out-of-competition, or neither, may be updated from year to year, depending on current scientific knowledge and an evaluation of the extent to which a substance is being abused. Hence, it is essential that sports physicians, athletes, coaches, and sports administrators regularly apprise themselves of the contents of the WADA Code and List of Prohibited Substances and Methods, which is revised and published at least annually. Each new version comes into effect on 1 January. The List is now published and revised by WADA and is made available to each

Why Do Athletes Use Drugs?

Athletes are no different than other adolescents. They understand that using alcohol and other drugs is illegal, potentially harmful of their health and safety, and is a violation of the athletic code and school rules, yet choices are made to use these substances. Coaches, athletes and parents need to be aware of why athletes, and other adolescents, may be using alcohol and other drugs. They can be over-whelmed by the pressure to:

- Win
- Perform well and always be successful
- Maintain a “cool” image

Many adolescents, including athletes, use drugs to relieve stress, to feel “high” similar to coming off the field after winning a game, or to replace depressed feelings after losing a game or not performing well.

What Are The Effects of Using Drugs?

Keep talking to you athletes and make them aware of the risk involved in alcohol and other drug use. A simple description, continual reinforcement of the topic, combined with a realistic approach is more effective than a long lecture filled with “horror” stories.

Performance is hampered

Drugs have a lasting effect on the brain and body. Using drugs often compromises judgment and physical abilities and makes a person unable to perform in a variety of context. Drugs use also diminishes health, physical appearance and motivation. It impairs judgment, leading to risky decisions and behaviors, and directly reduces physical and intellectual performance.

Drug-related problems increase.

- An adolescent who uses alcohol and other drugs increases their risk of experiencing any or all of the following:
- legal problems
- addiction
- involvement in traffic, boating, swimming, and other types of accidents
- engaging in risky sexual behaviors
- social conflict
- athletic injuries

Development of “Life-Skills” is decreased.

An adolescents’ use of alcohol and other drugs also masks problems and interferes with the normal development of “life-skills”. Included are the skills of stress management, conflict resolution, problem solving, and goal setting.

Game effectiveness will be affected.

Sports were designed to be a fun and competitive way to gain exercise and enjoyment from participation. They were not designed to included the use of alcohol and other drugs. Scientific studies show that the use of alcohol and other drugs by adolescents impairs coordination, physical/mental abilities, and increases the risk of injury.

Team spirit will be impacted.

Alcohol and other drug use negatively affect not only individual athletes or teams performance, but its sense

Effect of drugs on breathing

Depressant drugs such as cannabis, alcohol and opiates, slow down your breathing. Cannabis reduces your lung capacity, so it’s harder to get the oxygen your muscles need during sport. Opiates, such heroin and codeine, slow down your breathing and narrow your airways. This makes it harder to breathe and reduces your breathing at a time when your body needs extra oxygen.

Effect of drugs on heart rate

Stimulant drugs, such as cocaine, ecstasy and speed, increase your heart rate and put undue stress on your heart. Cocaine can cause heart attack and abnormal heart rhythm. When you use speed, the lack of blood to your heart can cause angina (severe chest pain). Depressants such as alcohol slow down your heart rate, meaning less oxygen-rich blood reaches your muscles.

Effects of drugs on muscles

The last thing you want during sport is to disrupt your co-ordination and relax your muscles. Depressants such as cannabis reduce your motor activity so it’s hard to co-ordinate your movements during sport. Alcohol is high in calories so you may start piling on the weight. Stimulants increase your movements so you are more likely to injure yourself during sport. Cocaine at higher doses can act as an anaesthetic so you can’t feel pain and may play on after an injury, causing even more damage.

Effects of drugs on concentration

Depressants like cannabis, alcohol and opiates affect your alertness and concentration, so you are slower to react. Stimulants, such as cocaine, speed and ecstasy can make you irritable and restless – making you less focused on the game.

Effects of drugs on senses

Hallucinogens like cannabis and magic mushrooms can play havoc with your senses. They affect your sights and sounds, which could disrupt your performance.

Effects of drugs on pain

Some depressants, such as alcohol, cause mild anaesthesia or loss of feeling, so you may not notice when you're injured. This can lead to delays in getting rapid treatment and in recovery.

Effects of drugs on brain and behavior

Stimulants, such as cocaine and speed, can keep you awake so you don't get the rest you need and this can affect your performance. They also decrease your appetite when you should be replacing calories after using so much energy. Side effects also include confusion, delirium and paranoia. At higher doses stimulants can cause you to become irritable and aggressive, they can also cause blood vessels in the brain to rupture leading to convulsions.

Different drugs and their effects

Marijuana

- The effects of pot on athletic performance are increased reaction time, decreased fine motor coordination, and increased heart rate. These effects, along with vasodilating effect, cause an athlete to reach maximum heart rate at a lower than normal intensity of exercise, which decreases maximum work capacity.
- Chronic marijuana use has been associated with decreased motivation to perform and to give a maximum effort.

Cocaine

- Cocaine is notable for distorting the user's perception of reality; for example an athlete may perceive increased performance and decreased fatigue in the face of actual decreased performance in both strength and endurance activities.
- Use causes a direct negative effect on glycogenolysis, which affects athletic performance.

Amphetamines

- Amphetamines are not known to enhance athletic performance, but enhanced confidence and aggression may lead to 1-2% increase in short-term power activities.
- Use of amphetamines may allow an athlete to tolerate a longer period of anaerobic metabolism, although credible data on this effect are not available.
- Of greater importance are the serious, and sometimes fatal side effects of amphetamine use, such as heatstroke due to shunting of blood away from the skin.
- A more common problem is impaired judgment, which may cause an athlete to participate while injured, possibly leading to worse injury or putting others at risk

Source: UMASS Athletic Health Enhancement Program and Mount Holyoke Health Educator

Cannabis

There is limited research on the longterm effects of cannabis. On the available evidence, the major probable adverse effects are:

- Increased risk of the symptoms of respiratory diseases associated with smoking such as bronchitis dependence
- decreased memory and learning abilities
- decreased motivation in areas such as study, work or concentration.

Ecstasy

- Euphoria and a feeling of well being feelings of increased closeness with others
- feelings of confidence and lack of inhibitions
- increased blood pressure and pulse rate
- sweating
- jaw clenching and teeth grinding
- nausea and anxiety.

Conclusion

The topics covered are summarized in Table 1 and represent only the major contemporary PEDs and detection approaches. The WADA prohibited list includes many more categories, such as masking agents and methods. The next challenge on the horizon for testers is gene doping. This is an offshoot of gene therapy research, whereby an individual's genes are modified, deleted, or substituted to treat disease. Technically, this is not difficult, but clinical trial outcomes have been highly problematic and even fatal (56). Nonetheless, the appeal to athletes of a gene modification that could, as examples, enhance uEPO or IGF-1 levels is very strong (57). Could such manipulations be detected? WADA has hosted several symposia to address this issue in a proactive manner but has not yet approved any method to detect gene doping (58). Chemists face formidable challenges in the "cat-and-mouse game" with those who enable PED use among athletes. This provides opportunities to bring daily headlines into the chemistry classroom, thereby placing important chemical concepts and methods in a social context. Jacques Rogge, president of the International Olympic Committee, has pointed out that "Doping is to sport what criminality is to society, and there will always be criminality in society" (59). In this regard, the topic has parallels with forensic chemistry as a source of interesting and relevant pedagogical examples to enrich and deepen the classroom experience.

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