

## DOPING: HEALTH RISK AND ETHICAL CONSIDERATION IN ADULT AND ADOLESCENT

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### ABSTRACT

**Introduction:** The advent of the widespread use and abuse of Performance Enhancement Substances has resulted in unique ethical challenges for physician and athlete. Advancements in medicine have produced chemical compounds capable of boosting physical performance.

**Material and method:** When disparities in talent are minimal, an intervention that provides an edge can mean the difference between victory and defeat. Much attention has been paid to drug use by athletes, and the list of banned substances in competitive sport is lengthy and growing.

**Results:** At first glance, the very notion of banning drug use appears to violate respect for autonomy. After all, the risks of using chemical enhancements are assumed entirely by the individual.

**Conclusion:** Greater risks for greater gains is a philosophy familiar to competitive sport whether referring to individuals or game management decisions made by a coach.

**Keywords:** Doping, PEDs, Health risk, adolescent, supplement use.

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### Introduction

The interplay between ethics and medicine has in recent times fueled rather animated debate. As society transforms the relationship between doctor and patient, the body of principles that forms a basis for this interaction continues to evolve. Technological advancements and an evolving emphasis on self-determination have changed the nature of the dialogue. All physicians are faced at some time with fundamental challenges while striving to respect the principle canons which define a physician's ethical code<sup>(1)</sup>.

These canons are: I. Primacy of patient interests, II. Patient confidentiality, III. Informed consent, and 4. Maintenance of a high standard of care.

Athletes, because of their focus on performance, often present unique situations which lead to ethical challenges not seen in the general patient population. However, strict adherence to the four principle ethical canons guides physicians to make ethical decisions when dealing with these unique patients.

In the limited circle of sports medicine, the term doping is used when there is an indication of a healthy subject using performance-enhancing drugs (PEDs), along with an improper intake of pharmacologically active substances or inappropriate use of certain therapeutic practices. A solution to the problem of doping still occupies an important part of scientific research and of the philosophy of sport. Nevertheless, when discussed by the mass media, doping is regarded primarily as a medical aspect with legal

consequences<sup>(2,3)</sup>. This is due to the fact that sports governing bodies at all levels use a checking system to identify and sanction unsportsmanlike conduct and spread the message of doping only from a medical/legal standpoint<sup>(4,5)</sup>. Inevitably, this raises important questions which are often avoided: do doping and its related medical procedures always damage the health of the athlete or do the majority of these drugs have minimal or negligible consequences? If the latter is true, does doping mainly represent a violation of sporting rules and laws due to excessive regulations?<sup>(6,7)</sup>

*And furthermore:* why are certain practices considered doping only in some countries and/or for certain sport disciplines and not in others? Or, why are some performance-enhancing drugs (PEDs) banned in certain countries only during official athletic contests and not off-season? To answer all these questions we need an anti-doping legislation that represents a precise international reference model, and that the concepts of excess drug dosage and of PEDs in relation to organ damage be encompassed within a globally recognized legal philosophy. At present this does not exist.

### Health risk

The list of potentially PEDs and performance-enhancing supplements used by competitive athletes is extensive<sup>(8-10)</sup>. Despite assertions that drug cheats will be caught, many of these drugs are not detectable with routine drug testing, or via the modern approach of the Athlete Biological Passport.

Although the cardiovascular side effects of some of the drug classes can be anticipated, many athletes will use multiple agents and the effects of drug combinations is almost nonexistent. It is also critical to note that of potentially greater risk to athletes' health are the many agents that are likely to be in use currently that are unknown to authorities<sup>(11,12)</sup>. The known side effects of some of the more commonly abused agents are presented below but, given the limited evidence base, these should be considered a best guess. Much of the medical literature focuses appropriately on the adverse health effects of PEDs, but these deterrents have proved insufficient to discourage some athletes<sup>(13,14)</sup>.

The evidence for efficacy of PEDs in improving performance is more limited than might be expected given the widespread belief that they are in many cases a game changer. This may relate to the fact that few scientists are willing to study PEDs

given the complex ethics of providing evidence that may be used to support doping and reinforced by the refusal of some journals to accept any articles pertaining to PEDs. However, it is often argued that the drug cheats are 1 step ahead, and it could be argued that concerted efforts from reputable scientists are required to develop the knowledge base that will anticipate drug use and to develop tests that can accurately identify known and novel PEDs in the dosing regimens used in modern sports<sup>(15,16)</sup>.

For endurance athletes, the most efficacious PEDs appear to be those that increase oxygen availability to the working muscles<sup>(17,18)</sup>. This is achieved by increasing oxygen content in the blood, improving cardiac output, or improving peripheral oxygen extraction. Blood doping (usually consisting of transfusion of autologous blood collected some time earlier) has been used for decades, is extremely difficult to detect, and has been shown to quite dramatically improve endurance sports performance<sup>(19,20)</sup>.

In 1987, recombinant erythropoietin (EPO) was introduced to the European market, resulting in a rapid and dramatic transformation of endurance sports. EPO stimulates hemoglobin production, and the mean values of participants' hemoglobin and hematocrit climbed steadily over the ensuing years with a simultaneous increase in race speeds<sup>(21,22)</sup>.

The WADA list of banned androgenic anabolic steroids (AASs) is extensive, and the identification of these substances is responsible for around 60% of positive doping results. They represent one of the oldest classes of drugs of abuse and, accordingly, their effects have been most extensively investigated. When combined with exercise training, AASs increase muscle mass and strength and reduce fat<sup>(23,24)</sup>. Significant increases in strength have been observed in double-blinded randomized trails comparing 12 weeks of AAS versus placebo in small cohorts (n=10)<sup>(25)</sup>. A common misconception is that they are used exclusively by strength athletes, but they are also used to aid in recovery and strength in endurance pursuits. The concomitant use of anabolic agents with EPO is common both in strength and endurance athletes<sup>(11,26)</sup>.

### Performance-enhancing drugs abuse in adolescent

Adolescent athletes may be considered particularly vulnerable to the abuse of PEDs. From a health perspective, adolescent users are at high risk of the side effects of PEDs such as anabolic steroids<sup>(27,28)</sup>

From a psychological perspective, adolescents are especially susceptible to social pressures and expectations regarding sports competition and physical appearance<sup>(29,30)</sup> and tend to participate in risky behavior with possible harmful long-term effects<sup>(31,32)</sup>. An important investigation<sup>(33)</sup> showed that 3%-6.5% of boys and 1%-2% of girls reported current or past use of PEDs. Other national surveys have showed that 2.1%-11% of adolescents reported past or current use of PEDs<sup>(34,35)</sup>. A number of behavioral and psychological factors have been related to PED abuse in adolescents. Adolescent users of PEDs report more positive attitudes toward doping, show higher levels of moral disengagement toward doping and perceive higher approval of doping abuse by other people<sup>(36,37)</sup>. Adolescent users of PEDs also report lower self-confidence and lower status in their peer group and experience higher levels of anxiety<sup>(38,39)</sup>, more frequent depression<sup>(27)</sup>, lower self-regulation<sup>(36)</sup>, and more frequent use of other addictive substances, such as alcohol, tobacco, and hard drugs<sup>(27)</sup>.

Adolescent users of PEDs also experience more frequent eating disorders and engage in other types of risk behavior, ranging from school absences to membership in violent groups<sup>(40,41)</sup>. Two major motivations for adolescents' use of PEDs have been discussed in the literature. First, adolescents use PEDs because they strive for physical attractiveness, which appears to be an especially dominant motive among adolescent athletes not engaged in competitive sports. Second, adolescent athletes use PEDs to obtain a competitive advantage and succeed in sports competition. It appears that a focus on victory and success in competition has become a dominant discourse even in youth sports, which has increased the incidence of problematic behavior such as cheating and doping<sup>(42)</sup>. Motivational orientations that emphasize competitive performance and "winning at all costs" have been related to positive attitudes toward doping as well as toward doping behavior<sup>(27)</sup>.

Although adolescent athletes generally report negative attitudes toward doping, they sometimes admit that they would be willing to use PEDs to develop their professional athletic careers<sup>(43)</sup>. Numerous research studies have suggested that attitudes toward doping, intentions to dope and actual doping abuse are significantly influenced by sports motivation; i.e., the subjective reasons underlying why athletes participate in sports affect the decision to use PEDs<sup>(27,44,45)</sup>. However, there are some limits to current research on the relationship between sports motivation and doping.

## Supplement use

There are several reasons why it is important to understand the athlete's motivation for supplements use, whereas one reason is to develop strategies for responsible supplement use. Another reason is to minimize the risk of excessive and harmful supplement use and to separate sports foods and medical supplements (used to treat clinical issues) from the use of ergogenic supplements that are intended specifically to enhance performance<sup>(46,47)</sup>.

There may be several different motivational factors for each category of supplements; food and supplements containing essential nutrients (e.g., vitamins) are mainly used for health reasons, with performance effects being secondary to better health, while ergogenic aids are used with the intention of maximizing performance. Further, athlete support staff may want to encourage a food-based approach to nutrition education, since the literature shows that most athletes can cover their nutrient needs through a varied diet, provided the energy intake is moderate to high<sup>(48,49)</sup>. The final reason may be to identify the "gray zone", where athletes who use dietary supplements may be associated with an accepting attitude of doping at a later stage. There are some data to suggest that supplement users have more positive attitudes toward doping, and that they believe that doping is an effective way to increase performance<sup>(50,51)</sup>.

Others report that there seems to be an underlying cognitive component in the association between use of supplements and doping, and that use of supplements may influence reasoning patterns and the motivational incentive in favor of using prohibited substances at a later stage, even among adolescent athletes<sup>(52,53)</sup>. According to the literature, the prevalence of doping is higher in supplement users than in athletes who do not use supplements<sup>(50,52)</sup>. It is, however, important to note that these studies were not designed to identify a direct causality between supplement use and doping.

## Ethical consideration

Doping in sports is not a recent phenomenon. In the Tour de France, doping was common for most of the race's century-long history, during the first half quite openly<sup>(54,55)</sup>. In the 1960s, doping was more openly condemned; however, it was hardly combated. Contemporary antidoping, labelled a 'war on doping'<sup>(56,57)</sup>, is a recent development. Due to the 1998 Festina affair, which is when systematic dop-

ing was discovered on the Tour de France<sup>(58,59)</sup>, the World Anti-Doping Agency (WADA) now strives for the globalization of anti-doping across sports and the strengthening of surveillance and repression. This is ongoing and not an immediate success, as illustrated by the evidence that doping is still rife<sup>(60,61)</sup>. Contemporary media generally present doping as intrinsically evil, but the rationale behind the anti-doping rule is not self-evident nor universally accepted. There is an ongoing academic debate about the rule, its effects and alternatives<sup>(62)</sup>.

This debate generally opposes two discourses, in their extreme versions, as follows: ‘Conservative’ refers to the stance that defends strict prohibition enforced by surveillance and punitive repression, and ‘liberal’ refers to the stance that finds anti-doping illogical and calls for the liberalization of doping<sup>(63)</sup>. Kayser and Broers<sup>(56)</sup> find these positions defend non-realizable idealistic goals. The liberalization of doping is deemed politically not feasible, while today’s prohibition is unsuccessful since doping continues. The latter is problematic because the objective of anti-doping, eradicating doping to guarantee ‘clean’ champions, cannot be met because of limits to testing technology and surveillance density. This imperative distinguishes doping from other transgressions for which such an ideal does not exist.

Furthermore, anti-doping has side effects. For example, the relegation of doping behavior into clandestine behavior, a consequence of repression, increases health risks.

*Thus, we can identify the following three concurrent dynamics:*

- Doping poses potential harm to the user.
- Doping is insufficiently deterred by prohibitive policies.
- The risk to the user is exacerbated by prohibitive policies. This is very similar to the effects of the repression of illicit recreational drugs<sup>(37,64)</sup>.

Nevertheless, under pressure from WADA, increasingly punitive legislation is introduced, in several countries in the form of a criminal law (a law also applicable to non-athletes), even though there are also arguments in favor of differentiated regulation inside and outside competitive sports. The extension of anti-doping outside competitive sports (e.g., in fitness centers) can result in increased harm<sup>(65)</sup>.

Similar to the consequences of the ‘war on drugs’, a ‘war on doping’ (anchored in international conventions obliging national governments to combat doping inside and outside of elite sports) may lead to greater societal harm than it prevents<sup>(66)</sup>.

There is, therefore, a rationale for a debate on alternative policies. Based on experience with illicit drugs, for which experimenting with alternative policies with harm-reduction strategies have come of age and proven their societal benefits<sup>(67-69)</sup>, several scholars have argued in favor of relaxing the anti-doping rule and accompanying it with harm-reduction strategies<sup>(70,71)</sup>.

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