

**Review article**

**THE MOTIVES FOR DOPING DRUG USE IN NONPROFESSIONAL  
ATHLETES AND METHODS OF PREVENTION**

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**Abstract.** *Doping is commonly associated with professional sport. Unfortunately, doping is not only used by athletes competing 'for medals,' it is also common in various recreational sports activities. Studies carried out in different countries reveal the necessity of preventive action and the reduction of the incidence of doping drug use in this group of athletes. The clear identification of the motives in nonprofessional athletes for using these dangerous substances is the core of the problem and the sole adequate basis for developing operative preventive plans.*

*Results obtained from various relevant studies have been presented. They point out that the athlete's morality, personality characteristics, reference groups and the individuals themselves play vital roles in the process of starting to use doping drugs. Based on these findings, authors propose a comprehensive plan for the prevention and reduction of the incidence for doping drug use among nonprofessional athletes. The plan is based on: informative-educative work on the effect of doping on health, optimal nutrition planning, supplementation planning, and individual training system planning, all in accordance with the personality features, sports discipline and goals that a recreational athlete sets for himself. It is also of vital importance to work on improving the psychosocial characteristics of an individual.*

**Key words:** *doping, nonprofessional sport, motivation, prevention.*

INTRODUCTION

Even though the problem of doping drug use has been popular in the past decades, it stretches through the course of history over a much longer period of time. The human race has always held the belief that the usage of certain substances results in significant intensity enhancement and duration of particular physical activities.

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The use of doping substances and methods, which affects almost all the organs and systems of the human body, is associated with numerous and various adverse effects. Some of the most evident adverse effects due to the abuse of AAS are: liver function damage, sterility, gynecomastia, striae, increased aggressiveness etc. In the case of rhEPO abuse, the greatest risk is of increased arterial blood pressure, which combined with induced polycythemia (increased number of blood cells) increases the incidence of cerebrovascular insult or myocardial infarction (Kelly, 1992). Addiction and conditions similar to schizophrenia with diverse illusions and hallucinations could be caused by the abuse of stimulating substances by athletes (Jovanović & Radovanović, 2001). Younger categories of athletes, characterized by the incomplete growth process, experience particular adverse effects of AAS abuse. Namely, the epiphyseal centers of bone growth are affected by the AAS, which leads to their premature closure and results in restricted longitudinal growth (Komorski & Ricket, 1992).

#### EPIDEMIOLOGICAL STUDIES OF DOPING IN RECREATIONAL SPORTS

The first US national study of AAS use among adolescents was conducted by Charles E. Yesalis (Pennsylvania State University, USA) in 1988. Yesalis was the first to provide us with evidence of psychological dependence on AAS (Yesalis & Bahrke, 2000). Using nationwide data, in 1993, he demonstrated the association between AAS use and violent behavior, as well as an association with the use of other illicit drugs and alcohol (Yesalis & Bahrke, 2002). Studies conducted among adolescents in the USA revealed that AAS were used at least once by about 375.000 boys and 175.000 girls (Elliot & Goldberg, 1996). When longitudinal comparisons were conducted by the same authors, they showed that when compared to 1990, when the studies were carried out for the first time, the number of boys slightly increased, whereas the number of girls doubled. The analysis of the data on the extent of use i.e., abuse of various substances in Great Britain, revealed that AAS holds the third position on the list of the most abused substances among teenagers (13-19 years of age), right after cannabis and amphetamines (Dawson, 2001). The epidemiological investigations which were conducted in France (Laure, 2000) revealed a higher prevalence of doping drug use among men, aged 20-25 and 35-39 and those engaged in competitive sports. Furthermore, there have been indices that doping among recreational athletes in the European Union, the United States and Australia has increased sharply in the past twenty years, from about 5 to over 20% (Handelsman & Gupta, 1997; Irving et al., 2002; Laure et al., 2004; Papadopoulos et al., 2006; McCabe et al., 2007; Wanjek et al., 2007). The investigations have also shown that the percentage of male abusers is 3 to 7 times higher than that of female abusers. When compared with all the possible recreational sporting activities, body-building draws the biggest share in doping.

In order to acquire a comprehensive insight into this problem, a survey on the use of permitted and banned substances among recreational athletes was conducted (Radovanović, Jovanović, & Ranković, 1998). This survey was anonymous and voluntary. It included 363 male participants, involved in strength training activities i.e., body-building (astatistical investigation of females was rendered impossible due to the insufficiency number of participants). It is important to state that none of the participants were professionally involved in body-building or had taken part in a body-building competition. The results revealed that 5.23% of the surveyed participants used AAS at least once. All of them had these common characteristics: they were above 18 years of age, exercised four or several times a week and they were informed of the damaging effects of doping drug use.

## MOTIVES OF DOPING DRUG USE IN NONPROFESSIONAL ATHLETES

In spite of numerous studies in the field of doping in sport, there have only been a few attempts of comprehensive explanations (models) which could with certainty and on an adequate theoretical basis assume the factors and the extent of their relevance for reaching the decision to use doping in sport. Furthermore, most of the studies were carried out on samples of professional athletes, whereas recreational athletes were used quite rarely. While attempting to clarify the motivation for doping substance use in nonprofessionals, we could start with the models made primarily for explaining the doping behaviour of competition-oriented athletes and thus, in the course of the discussion eliminate the influences characteristic exclusively of competitors and include the factors present primarily in recreational sport.

One of the most complex models was proposed by Donovan et al. (2002). The model proposes six major influences on the attitude and intention of a sportsman toward using PED (PESM) (Performance Enhancing Drugs-Substances): threat appraisal, benefit appraisal, reference group influence, personal morality, legitimacy and the psychological characteristics of individuals.

Doping behaviour is not only influenced by attitudes and intentions, but also by two 'market' factors: availability and affordability i.e., how easy/difficult it is find these substances and what their price is when compared to the material abilities of the potential consumer.

Risk assessment is not a simple variable. It consists of assessing two notions: that the athletes will test positive on the doping test and that the substance abuse will cause negative effects on one's health. Due to the fact that the first component of this variable is irrelevant for recreational athletes (because they are not forced to take the test), we will consider only what Donovan et al. (2002) propose about health damage. These components are: perceived likelihood of negative effects on health, the perceived onset of these effects, perceived reversibility of the effects and the perceived severity of the effects.

Getting acquainted with the real effects and health risks caused by different doping substances forms an integral part of all the models of the prevention of PED use.

## MORALITY AS AN IMPORTANT FACTOR IN STARTING TO USE DOPING DRUGS

When dealing with compliance with the law, Tyler, according to Donovan et al. (2002) distinguishes between two perspectives: instrumental and normative. The instrumental perspective of the law states that an individual weighs the possible benefits and punishments that could be caused by breaking the law. When the benefits prevail in this personal equation, the law is broken. Such an approach is inapplicable for recreational athletes due to the fact that there is a lack of legal sanctions in their case. However, the normative perspective of the law states that it is important to obey the law *per se* i.e., because it is the right thing to do. This is closely related to morality as the athlete's personality trait (regardless of his being a professional or recreational sportsman), because of the utmost importance of sport in a wider social context. This includes: maintaining physical health, developing social values such as cooperation, obeying rules, obeying others, honesty, sympathy, fair play, and everything else that stands for the cluster of components of the general moral development of personality. Moran et al. (2008) observe the usage of doping substances as cheating and claim that moral behaviour and its

psychological correlates play vital roles in deciding whether to use doping drugs or not. Using doping drugs in nonprofessional sport does not stand for cheating in the sense of breaking the rules, but cheating oneself, when one overcomes his own physical potentials in a non-fair way. On the other hand, certain authors (Donovan et al., 2002) believe that pointing out the moral inappropriateness of using doping drugs in sport could play an important role in the models of prevention in recreational sport as well.

Rest, according to Stojiljković (2009), proposes four inner processes responsible for moral conduct: interpreting the situation and identifying the moral problem, formulating what the moral course of action would be in a particular situation and building an action plan, making the choice between moral and immoral values in order to reach the decision on how to act in a specific situation and executing and implementing moral actions.

Such an explanation of moral conduct creates great possibilities for preventive actions. Depending on the process we want to affect, we could act by providing detailed information about the negative effects of doping drug use, by offering an adequate nutrition program as a replacement for illegal substances; also by organizing a media campaign on doping as a mode of immoral behavior and working with target individuals and groups on enhancing the power of the ego and the processes of self-regulation.

#### THE INFLUENCE OF REFERENCE GROUPS AND INDIVIDUALS ON DOPING DRUG USE

Morality is also influenced by two variables which, as it has been proven in research, have a direct influence in the start and duration of doping substance use. Their influence has been considered primarily in the theory of reasoned action (Fishbein & Ajzen, 1975), planned behaviour (Ajzen & Fishbein, 1980) and the theory of trying (Bagozzi & Warshaw, 1990). What these theories have in common is that they propose that one's intention to behave in a certain way comes from a set of weighted convictions about the consequences of such behaviour. There are two major input factors: attitude toward the behaviour *per se* (based on beliefs about the consequences of the behaviour and an evaluation of those consequences) and perceived subjective norm (based on beliefs about what relevant others think about proceeding with that behaviour, weighted by the individual's motivation to comply with the relevant others).

The thesis that it is of utmost importance to differentiate between what relevant others say is supposed to be done and what they actually do is to be applied in both nonprofessional and professional sport (Cialdini, according to Donovan et al. (2002)). The convictions about what they actually do are far more important than what they say they do. Many factors influence which individuals and groups will be weighted and marked as the most important while making a decision. Thus, we reach the point of acknowledging the interweaving of the primary motives for nonprofessional going in for sport and the motives for using PED in adolescents. Donahue et al. (2006) find an empirical confirmation of the thesis that intrinsically motivated athletes have a smaller chance of giving in to doping when compared to those who are motivated by external motivation. If the primary motivation of this group of athletes is maintaining and enhancing health and physical fitness, enjoying the very physical activity, as well as the need for a well-shaped and strong body, then the greatest potential threat to not using PED lies in the possible peer consumer group. The mechanism this group might use to influence an individual to start using PED will not differ greatly from the mechanisms applied for any other drug (the need to fit in the group, not to separate, the curiosity connected with the act of trying etc).

If the primary motivation for going in for nonprofessional sport is the desire to build the strongest, often the only, support for the functioning of a personality (and this is done through enhancing strength and forming strong body constitution), then things are very different. The reference individuals and groups are: the peer consumer population, individuals from the surroundings who have the desired physical characteristics and who get noticeable gratifications, 'coaches', the staff working at the location where the individual is training, media personalities and participants in marketing campaigns for products which contain PED. The mechanism these groups and individuals use to influence the person who finds them relevant is, most often, learning through imitating models. The individual observes that gratifications (attracting the opposite sex, popularity and respect from members of the same sex, money, etc.) are given to those individuals (models) who possess certain physical performances. The individual will work on achieving those performances, hoping that it will ensure the same rewards. If this does not happen through additional efforts and exercises, he will apply the same measures which would provide him with the same physical appearance i.e., he will start using PED. The greatest influence on the individual's intention to start using such substances will lie in the model's confession that he himself has used the same. However, when the reference individual comes from field of media, cognitive dissonance appears. If a person perceives that the media models have reached certain physical performances by using PED, it will have an immense influence on his decision to start using the same, regardless of how strongly the models insist that they owe their good looks exclusively to exercising (Petrocelli et al., 2008). While considering learning as a powerful factor, we cannot go without mentioning the speed of behavior reinforcement. Namely, using doping is attractive not only because it enables results which transcend the given biological potentials, but because it enables a faster performance, much faster than exercising. The principle of fast reinforcement causes the fast acquisition of doping behaviour and great difficulties in quitting.

#### PERSONALITY COMPONENTS AS PREDICTORS FOR DOPING DRUG USE IN NONPROFESSIONAL SPORT

The personality components which are most commonly mentioned in the literature, and which are relevant for predicting doping drug use are: low self-respect, pessimism as opposed to optimism (Seligman, 1991), being outer- or inner-directed (Reisman, 1950), dissatisfaction with one's appearance, impulsiveness, hostility, the attitude 'win-at-all-costs' (Elliot & Goldberg, 1996). Low self-respect is an important risk factor because the individual often attempts to compensate for his flaws, which are more or less realistic, in other spheres of his life through his exquisite physical appearance and strength. It has already been mentioned that this is very important when an individual chooses his physical appearance as the only compensation. This is particularly apparent in individuals who have been teased or underestimated by their peer population. Such a person, once he starts exercising, will be inclined to undertake all the necessary measures to secure the desired results. One problem occurs - what happens with the person who has used doping substances and thus enhanced his muscle mass and now has to stop using doping substances for some reason. Quitting doping substances leads to the reduction of muscle mass, which can cause psychological consequences, especially if the powerful physical appearance has become the individual's main attribute. In such cases, the individual needs the help of experts and his surrounding in rebuilding a system of values i.e., it is

important to point out that that is not his only value and that many other values outside the gym are of far more importance for life (Petrocelli et al., 2008). The same authors state that in such cases, it is necessary to prevent and very often cure depressive disorders and suicidal thoughts caused by the lack of a real support for the individual.

Seligman (1991) found that optimistic athletes are less affected by a previous poor performance because they attribute it to external obstacles and that such individuals are less predisposed to use PED. This finding is somewhat contrary to the theories of the influence of locus of control on behaviour. Individuals with inner locus of control attribute the causes of success and failure to inner factors (abilities, commitment, specific characteristics), while individuals with outer locus of control find the reasons in external factors. If the locus of control is defined in such a manner, then it could be included in the list of risk factors for using PED, especially in individuals with stronger external locus of control.

This is closely connected with inner-/outer- directed behaviour i.e., where most of the support for an individual comes from. Outer-directed individuals are characterised by sensitivity to social prestige, financial rewards, victories, praise and are thus, more predisposed to PED use.

In young individuals who use PED, especially AAS, 'muscle dysmorphia' is noticed (Mandić-Gajić, 2008) as a kind of a subjective perception disorder of one's own body scheme by estimating that the body is not muscular enough, that it is weaker and smaller than it objectively is. Being dissatisfied and burdened with body appearance should theoretically be associated with the adolescent population and somewhat an integral part of their development. However, when the dissatisfaction is combined with social pressures and when it is extremely manifested, when the mechanism of (over)compensation acts stronger, an individual is more likely to start using PED. The psychodynamic approach could explain the reasons relevant for one part of the adolescent population that uses doping drugs (Dimitrijević, 2010). The combination of poor body appearance followed by teasing, low self-confidence and self-respect will lead to transforming the defense mechanism into its opposite. The person exercises hard, makes the body constitution stronger and gets immense (false) self-confidence. In order to preserve the current shape, the individual will not even be afraid of using PED.

Laure (2009) finds that the consumers of forbidden substances have low self-respect and pronounced anxiety. Furthermore, he states that these two psychological factors are connected with risky behaviour in general and that they could represent the association between using PED, alcohol and cannabis. This author broadens the perspective when it comes to substance abuse and observes that the proper way is to consider this as doping behavior, not doping drug use. According to Laure (2009) doping behaviour represents using substances with the aim of enhancing performances when facing obstacles (real or imaginary), which are perceived as real by the consumer himself or the people surrounding him. Thus, it is not the substance which defines behaviour, but the reasons which cause its consumption. The author also believes that contemporary society puts pressure on people through its institutions (schools, companies, family, sport clubs, media). It is important to mention that his work is not concerned only with physical PED and sport activities.

Such a careful study of the problem formed a model of doping behaviour prevention based on enhancing the psychosocial competence through adaptive viability. The aim is to enhance prosocial and healthy behaviour and decrease risky behaviour in general. The viabilities that strengthen an individual are: self-conscious decision-making, empathy, critical thinking, overcoming stress and interpersonal abilities through interactive techniques (role-playing, open discussions, situation analysis). However, the greatest accent is

on the developing of assertiveness and the ability of rejection (the 'how to say no' strategy). These programs require active and repeated involvement on the part of the participants i.e., they demand a lot of time, which results in their being rejected by sports associations.

#### PLAN OF DECREASE IN DOPING ABUSE IN NONPROFESSIONAL SPORT

Laure and Lecerf (1999) suggested a possible program of prevention. According to them, it is necessary to conduct a specific teaching program that would decrease the interest of adolescents in doping substance use. The suggested program consists of four parts: information on the frequency of doping drug use in sport, conversations on the use of permitted supplements, simulation of possible negative influence of doping on an athlete's performance, information on drugs that athletes can purchase and use by themselves.

The role of a physician would be of significance in the careful planning and dosage of nutrition and the training system providing the enhancement of physical abilities, and for achieving the set goals without doping drug use. Realization of this objective requires the close cooperation of the physician and coach, which would by careful planning and coordination of the training process, develop the physiological maximum of an athlete and provide the conditions for maximum performance. It would be optimal to include a psychologist in the whole process; however, professional sport usually excludes that aspect.

A well worked-out plan for preventive acting on doping drug use in nonprofessional athletes has been proposed, for the first time ever in Serbia, by Radovanovic, Jovanovic and Rankovic (1998). The plan was updated in 2009. by Radovanović. This proposal includes:

1. Educative work:
  - Information on what doping is, that is, which substances and methods are forbidden for use in sport;
  - Information regarding the possible harmful effect of doping substances and methods on particular organs and the body in general;
  - Information on the long-term consequences of doping use on health.
2. Information and planning of optimal nutrition as of the basis for the enhancement of physical abilities:
  - Information on the role of nutritious substances;
  - Information regarding the biological and energetic value of food;
  - Information on the combination and coordination of groceries in nutrition;
  - Making a nutrition plan covering a certain time period in accordance with the set goals and training system.
3. Conversation and the creation of a plan of supplement use in relation to the individual, sports discipline, plan of preparation and set goals:
  - Information on supplement use in the diet of athletes;
  - Information and advice on supplement choice, use, dosage and duration of supplementation process;
  - Designing the plan of supplementation for a certain time period in accordance with the set goals and training system.
4. Conversation and instructions for making of a plan of individual training system in relation to personality features, sports discipline and set goals:
  - Information on the physiological bases of the training process;
  - Information on managing the process and methods of training;
  - Making an individual training plan.

Doping drug abusers are skeptical of health warnings. This, combined with the obvious physical benefits from using steroids and other banned substances, makes the vast majority of users unwilling to stop. Another important issue is that doping abusers should be convinced to undergo regular health checks, such as tests for blood lipids, liver function and blood pressure. The majority of doping users do not do this.

The application of such a plan in recreational athletes is aimed at the realization of aspirations and wishes present in this group of athletes, and thereby outgrowing i.e. excluding the motives for doping drug use. In this way, a comprehensive prevention and reduction in doping incidence would be realized.

While implementing this plan, it is very important to work simultaneously on the development of assertiveness and the ability of rejection (the 'how to say no' strategy, proposed by Laure, 2009). It has already been mentioned that these programs require active and repeated involvement i.e., they require a lot of time, which causes their being rejected by sports associations. However, after the successful implementation of such programs and other similar training involving enhancing psychosocial competence, one could be certain that those who underwent the program would be resistant to the temptations of forbidden substance abuse.

At the end of this discussion, we have to refer to one of the leading authors in this field, Charles E. Yesalis. Although Yesalis emphasizes the necessity and importance of educative and preventive work and the creation of certain programs, he believes that requirements for doping drug use originate from the social fixations on winning and physical appearance, so that the use of doping will be present and increase until the change of such values takes place (Yesalis et al., 2000). In order to fulfill this goal, it is of vital importance to reach a complete social consensus, which would require a lot of time for its realisation.

## CONCLUSION

The problem of forbidden substance use in sport draws the attention of both the sports and general public. Professional athletes are usually the center of attention. However, the data obtained from recent research and presented in this paper point out that the problem of doping drug use is also very common among recreational athletes, especially adolescents.

The core of the problem and the sole adequate basis for the development of operative preventive plans is the detection of the reasons for dangerous substance use among nonprofessional athletes. Former research has led to the conclusion that morality is a factor which could significantly influence refraining from illegal doping substance abuse. Even though morality represents an abstract notion, a number of authors have elaborated on the phases and principles of moral behaviour. This opens the possibility of using models of prevention to successfully influence making the right decisions when it comes to doping use.

Personality characteristics which are more common in recreational athletes who use doping drugs than in those who do not do so indicate the necessity of strengthening the psychosocial personality components of recreational athletes, especially those who express a strong desire to improve their physical appearance and enhance their strength.

A model, consisting of four phases, has been proposed as a specific prevention plan. The four phases are: informative-educative work on the effect of doping on health, optimal nutrition planning, supplementation planning, and individual training system planning, all in accordance with the personality features, sports discipline and goals that a recreational athlete sets for himself. This program should be accompanied by the strengthening of the



psychosocial personality components, especially assertiveness. The program relies mostly on providing the recreational athlete with aid in his attempt to achieve his goal, but in a fair and permissible way. The supportive psychological training would see to setting proper goals, not unrealistic ones, which would be unhealthy and dysfunctional in real life. The advantages of this plan are its comprehensiveness and the fact that it is rather adjustable, in all its parts, to each particular individual. Still, we have to emphasize that there can be no global reduction of doping drug use without changing the social climate in which the young regard winning and physical appearance as the most important values.

Further research should go in the direction of a more clear and precise determination of the motives and psychological characteristics of nonprofessional athletes who use doping drugs, and they should consider the athletes's age, socio-economic status and the kind of substance they are using. Special attention should be paid to recreational athletes older than 25. The specific prevention plan should be implemented systematically, evaluated and possibly modified until complete effectiveness is reached.

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## MOTIVI KORIŠĆENJA DOPINGA KOD NEPROFESIONALNIH SPORTISTA I METODE PREVENCIJE

**Petar Mitić, Dragan Radovanović**

*Doping se najčešće povezuje sa profesionalnim bavljenjem sportom. Nažalost, doping ne koriste samo sportisti koji se takmiče "za medalje", već je prisutan i u različitim rekreativnim sportskim aktivnostima. U istraživanjima sprovedenim u više zemalja pokazuje se neophodnost preventivnog delovanja i smanjivanja incidence korišćenja dopinga kod ove, veoma brojne, kategorije sportista. Jasno prepoznavanje motiva zbog kojih sportisti, koji nisu profesionalci, koriste ove opasne preparate, jeste srž problema i jedina adekvatna osnova na kojoj se mogu graditi operativni preventivni planovi. Prikazani su rezultati različitih referentnih istraživanja, koji ukazuju da su moralnost sportiste, karakteristike ličnosti, referentne grupe i pojedinci od presudnog značaja za početak korišćenja dopinga. Na osnovu ovakvih saznanja autori predlažu obuhvatni plan za prevenciju i smanjenje incidence korišćenja dopinga kod sportista koji se ne bave profesionalno sportom. Plan u osnovi sadrži: informativno-edukativni rad o uticaju dopinga na zdravlje, planiranje optimalne ishrane, suplementacije i individualnog sistema treninga u skladu sa karakteristikama osobe, sportskom disciplinom i željenim ciljevima koje neprofesionalni sportista ima. Neophodno je da se uz ove četiri faze radi na poboljšanju psiho-socijalnih karakteristika pojedinca.*

**Ključne reči:** *doping, neprofesionalni sport, motivacija, prevencija.*