THE PRINCIPLE OF DOPING IN SPORT AND THE CONSEQUENCES OF ITS USE

Ecaterina LUNGU1*, Natalia NASTAS1

1 State University of Physical Education and Sports, Chișinău, Republic of Moldova
* Corresponding author: kathya.lng.1981@gmail.com

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Abstract. Currently, doping is an acute problem in professional sport. Solving this issue involves a series of related questions such as how to improve the doping control system or what drugs to prohibit for use. Historians believe that the use of doping during the Olympics dates back to the very foundation of the competition in 776 BC. Game participants took hallucinogenic and pain relieving extracts. These drugs would have been banned today, but in ancient times, athletes were not prohibited from using drugs that helped them win. Doping control is an essential part of a comprehensive programme of measures aimed at preventing athletes from using prohibited drugs. The regulations for organizing and conducting the doping control procedure adopted in our country fully comply with the requirements of the IOC Medical Commission. At the first detection of prohibited drugs, the athlete is disqualified for 2 years, and if it happens again, the athlete is disqualified for life. In this case, the athlete’s coach and physician are also liable to penalties. Nowadays, proposals have been made to the country’s legislative bodies to introduce criminal penalties for taking anabolic steroids without medical indications or persuading athletes to take them. Looking back at the history of doping, it can be concluded that that current sports victories are not won by athletes but by pharmacists who have made a profitable business out of professional sport, and their “well-oiled” system is not afraid of any doping control.

Keywords: doping, sport, athletes, prohibited drugs.

Introduction

An important and very current issue of sport in both our country and the world arena is the unauthorised use of drugs and the fight against them. The International Olympic Committee (IOC) estimates that doping is used by at least one in ten athletes. Bird et al. (2016) suggest that “the illicit use of doping agents by athletes and non-athletes may be 1-5% in the population and greater than 50% in some groups, with the prevalence being higher in men” (p. 196), and Dvorak et al. (2014) state that “efforts to deal with doping in sport have intensified in recent years, yet the general public believes that the ‘cheaters’ are ahead of the testers” (p. 807).

According to the decisions taken by the World Anti-Doping Agency (WADA), the International Olympic Committee and the National Olympic and Sports Committee of the Republic of Moldova (CNOS), in compliance with the legislation of the Republic of Moldova, the use of anabolic substances by athletes is strictly prohibited. However, they resort to different methods of using pharmacological preparations to improve their level of physical training, endurance and work capacity, and the “contamination” with this addiction continues to affect new sports. Increasing competitive intensity and the systematically higher volume of exercise bring athletes to the limit of their physical capabilities. Therefore, ambitious athletes often look for additional sources of energy. And this source of energy, to our great regret, is doping. The systematic use of anabolic drugs leads to the loss of stable
results and consequently to an increase in the required dose. Specialists rightly note that this vice has spread throughout the world (Backhouse & McKenna, 2011; Morente-Sanchez & Zabala, 2013; Manolachi & Manolachi, 2019; Savulescu et al., 2004; WADA, 2020).

In this context, an alarming situation emerged in high-level sport, which has led to the formation of structures capable of fighting doping. These organizations are: World Anti-Doping Agency (WADA), Regional Anti-Doping Organization (RADO) in Eastern Europe and National Anti-Doping Agency (NADA). Their function is to develop anti-doping control, namely to check for the use of illicit drugs and pharmacological preparations by athletes. Unfortunately, the sports industry has begun to actively cooperate with anti-doping scientific research institutions.

WADA pays attention to athletes’ use of food additives, as governments in many countries do not properly regulate their production. This means that the ingredients contained in a drug may not correspond to the substances indicated on the packaging. In some cases, substances that are not listed on the packaging may be prohibited under anti-doping rules. A significant part of the positive doping control is a consequence of using substandard food additives.

WADA’s position on the use of food additives is that international athletes need them. WADA is concerned about the fact that many athletes will take certain food supplements without having sufficient knowledge of their benefits and whether the prohibited substance is contained or not in the preparation. Using a substandard dietary supplement is not an excuse when considering doping cases. Athletes should remember that food additives may contain hazardous and harmful substances, as well as the principle of full responsibility of the athlete (Triboi & Nastas, 2020; WADA, 2020).

However, alongside the positive effects of food supplements, there are also well-known negative effects, in particular the intake of steroid hormones, which results in loss of mechanical and elastic properties of the connective tissue (tendons) with ease of rupture and the facilitation of thrombi formation, thus increasing the risk of heart attack and cardiovascular complications.

Amphetamines, on the other hand, can cause hypertension, cardiac arrhythmias, seizures, vomiting, abdominal pain, cerebral haemorrhage, psychosis, addiction and death; masking physical fatigue can lead to overexertion with subsequent damage to tendons, muscles and joints.

Cocaine works by inhibiting the dopamine reuptake at the synapse; as side effects, it can cause cardiac arrhythmias, myocardial infarction, hypertension or hypotension, anxiety, depression, panic attacks, aggression, irritability, toxic psychosis, tremors, convulsions, reflex disorders, lack of motor coordination, muscle paralysis, irregular breathing, addiction and death.

Changes in haematocrit, in particular its increase, can result in the formation of intravascular thrombi with massive tissue necrosis and embolism.

In principle, growth hormone (GH) was extracted from the pituitary gland of corpses; for this reason, among the people undergoing treatment, there were cases of Creutzfeldt-Jakob disease (one of the human forms of encephalopathy caused by prions) and therefore human GH was withdrawn from the market in 1985.

One of the biggest challenges for anti-doping laboratories is precisely to recognise the effects of using these recombinant peptides with specific anti-doping tests.
Complicating the scenario, recent advances in the field of gene therapy have been added, such as evidence of increased muscle performance in animal models after genetic modification.

The fear that genetic manipulation techniques and gene therapy are applied to try to improve sports performance has led WADA to include genetic doping in its list of prohibited methods, defining it as “the non-therapeutic use of cells, genes, gene elements, and/or cells that have the capacity to enhance athletic performance”.

The development level of modern sports and the overexertion experienced by athletes are so high that it is impossible for them to stop using drugs. Over the past 15-20 years, the volume and intensity of training and competitive demands have increased 2-3 times, and athletes in many sports have approached the limit of the physiological capabilities of their bodies. At the same time, the vitamin and nutritional deficiencies of many athletes, their need for recovery and preventive measures, the adaptation of their bodies to high physical and psycho-emotional stress, their transition to other climatic conditions but also other reasons dictate their need to use pharmacological preparations to ensure a full-fledged sports activity.

In professional sport, a paradoxical situation has developed: on the one hand, the laws of show business, which is now the big sport, and the increased demands on athletes, which are beyond human capabilities and translate into results, and on the other hand, banning athletes from taking substances that help their bodies cope with these huge demands.

The late Prince Alexandre de Merode, former Chairman of the IOC Medical Commission, wrote: “Unfortunately, the reasons for doping are due to the very nature modern sports, which has turned into a kind of branch of the economy. Victory today is not only fame, but also a lot of money. Millions or even tens of millions at stake are dizzy and few are capable to resist this temptation. Therefore, it is not surprising that the slogan is victory at any cost: these days, many take it too literally. It happens that even parents bless, and sometimes persistently push their athletic gifted children on this path. A significant contribution to the unhealthy environment is also made by sports businessmen. Having signed a contract with the athlete, they are in pursuit of profits, deliberately forcing them to take chemistry. Sometimes an athlete is forced to perform well in almost all competitions of the year, and such a schedule, in principle, cannot be sustained without stimulants”.

A number of sporting achievements are associated with the “successes of pharmacology”: for example, a leap in world records for heavyweight weightlifters in the 1970s was explained by the use of steroids and a sharp improvement in the results for long-distance running in the 1990s was explained by the use of erythropoietin.

Many researchers (Dunn et al., 2010; Soldatenkov, 2010; Henning et al., 2020; Herzog, 2017) believe that sports competitions, including the Olympic Games, are increasingly turning into competitions for pharmacists: some are looking for ways to detect doping, others are competing to create new drugs and develop a scheme for their use, which allows to get a high sports result and hide the means of achieving it.

Research purpose: to demonstrate, based on the theoretical-conceptual analysis of the practical essentials exposed in the scientific-methodological literature, the opportunity to improve the anti-doping legislation in the world in order to combat the use of prohibited substances in sport.
Topic Addressed

By the time of the first modern Olympic Games, in 1896, athletes possessed a wide range of pharmacological support agents, from codeine to strychnine (which is a powerful stimulant in near-lethal doses). It is true that, in most cases, athletes actually blindly performed experiments on themselves, which at times could end in disaster for them.

There were special herbal tinctures and much more - sesame seeds and some types of psychotropic mushrooms. The Romans really enjoyed giving gladiators to drink and eat so as to make their show even more exciting and dramatic.

The IOC first addressed the issue of doping in the Warsaw session of June 8-11, 1937. On that occasion, Lord David Burghley, a gold medallist in the 400 m hurdles at the 1928 Amsterdam Games, spoke about the use and spread of drugs and the effects of doping. But it was only in 1961 that the Olympic Committee created a medical commission chaired by Sir Arthur Porritt, a physician of the English royal family. In the 1965 Madrid session, Prince Alexandre de Merode presented a report entitled “The Doping Problem at the Olympic Games”. One of the striking examples of the use of doping is the story of the American marathoner Thomas Hicks. In 1904, during a competition in St Louis, Hicks was several kilometres ahead of his rivals. When he still had more than 20 km to go, he lost consciousness. Coaches forced the marathon runner to drink some secret drug, after which Hicks got up and ran again.

By 1932, sprinters were experimenting with nitroglycerine in an attempt to widen their coronary arteries, and later they started experimenting with benzidrine. But the real beginning of the modern era of doping must be considered 1935, when injectable testosterone was created. First used by Nazi doctors to increase aggression among soldiers, it later confidently entered the world of sport with German athletes at the 1936 Berlin Olympics. Prior to this, Olympic champions had used oral testosterone preparations, but the creation of injectable testosterone was a quantum leap, and German athletes took all the gold that year.

In 1958, an American pharmaceutical company started producing anabolic steroids. Despite the fact that it soon became clear that these drugs had serious side effects, it was already too late to withdraw them from the market, since they were in great demand among athletes.

In 1968, the International Olympic Committee introduced a procedure for compulsory urine tests to detect doping in athletes.

Doping (from the English “giving drugs”) refers to biologically active medicinal substances used to artificially increase physical and emotional capabilities. According to a survey, almost 100% of athletes get information about doping (and its impact on sports performance, selection, dosage and order of reception) from their gym colleagues.

Most “jocks” are convinced that without doping it is impossible to achieve success in terms of gaining muscle mass and increasing athletic results, therefore they consider doping as a necessity in the struggle for leadership. They willingly share this information with newcomers (who, of course, believe them - after all, the result is “obvious”!) and convince them that doping is not only harmless but also helps the body to cope with physical and mental stress. We have no intention to offend the “chemists” and we have a deep respect for them: they are hardworking and purposeful. Let us try to figure out the essence of the
problem together. The list of drugs banned for use in sport is constantly growing and currently has about 10 thousand items. The official list of prohibited pharmaceuticals, which was approved by the Medical Commission of the Olympic Committee in 1988, is divided into several main classes:

- doping substances;
- stimulants (central nervous system stimulants, sympathomimetics, analeptics);
- drugs (narcotic analgesics);
- anabolic steroids and other hormonal anabolic agents;
- doping methods (various manipulations with blood and urine);
- pharmacological agents of limited use;
- alcohol;
- local anaesthetics;
- corticosteroids.

For example, only some central nervous system stimulants are: amphetamine, phenamine, caffeine, ephedrine, corazole, cordiamine.

Doping control is an essential part of a comprehensive programme of measures aimed at preventing athletes from using prohibited drugs. The regulations for organizing and conducting the doping control procedure adopted in our country fully comply with the requirements of the IOC Medical Commission. The doping control procedure consists of the following stages: taking biological samples for analysis, physicochemical examination of the samples and drawing conclusions, then imposing sanctions on the offenders. During the competition, the athlete is notified that, according to the rules, they must undergo doping control, which is mandatory for the winners of the 1st, 2nd and 3rd places but also for one of the athletes who did not win any prize (the selection is made by drawing lots) following the decision of the commission. After their performance, the selected athletes are sent to the doping control room where each of them chooses a container to collect a urine sample for analysis. Then, in the presence of an observer (who ensures that there is no falsification of the sample), a urine sample is taken. After collecting the sample, a number is labelled on a vessel that is also chosen by the athlete. After that, the biological sample is divided into two equal parts - A and B samples, which are sealed and assigned a certain code. Thus, the name of the athlete is not mentioned at any working stage (to maintain their full anonymity). Copies of the codes are affixed to the doping control protocol. The samples are then packed into shipping containers and transported to the Doping Control Laboratory. Before signing the doping control protocol, the athlete must tell the commission the name of all drugs taken before the competition (because some of them may contain prohibited substances in minimal quantities, for example, solutane). After signing the doping control protocol, the athlete waits for the test results. According to the regulations for doping control, the A sample must be analysed no later than three days after collecting the biological sample. If prohibited drugs are found in it, the B sample is opened and analysed. When the B sample is uncovered, either the athlete or an authorised representative of the athlete may be present. If prohibited substances are also found in the B sample, the athlete will be sanctioned accordingly. If no prohibited drug is found in the B sample, then the A sample report will be considered invalid and no sanction will be imposed on the athlete. The refusal of an athlete to undergo doping control or an attempt to falsify its result is considered to be the recognition of doping with all
the ensuing consequences. Falsification of doping control results consists in various kinds of manipulation aimed at distorting the results. Athletes may attempt to falsify the results when they are sure that their biological samples will be positive for doping. In this regard, urine substitution can be attempted (catheterisation and injection into the bladder of a person who is free from banned drugs, urine liquid mimicking, using micro-containers, deliberate contamination of urine with aromatic compounds that make it difficult to identify doping). Prohibited manipulation also includes special surgical procedures such as stitching placental tissue under the skin. Physicochemical methods of analysing biological urine samples to detect doping (chromatography, mass spectrometry, radio-immunoassay, enzyme immunoassay, etc.) are highly sensitive and include computerised identification of doping drugs and their derivatives. They allow to determine with great accuracy all drugs used by an athlete, including those used in the last weeks and even months. In addition, methods have been developed to determine the so-called “blood doping”, i.e., transfusion of an athlete’s own or another person’s blood prior to the test. (Odessa National Medical University, 2021)

If before only highly qualified athletes underwent doping control and only in important international and domestic competitions, now such control is performed during both the competition period and training sessions; moreover, all people involved in sport undergo doping testing, regardless of their sporting affiliation.

Doping detection threatens the athlete with severe penalties, up to exclusion from sport. At the first detection of prohibited drugs (with the exception of sympathomimetics such as ephedrine and its derivatives), the athlete is disqualified for 2 years, and if it happens again, the athlete is disqualified for life. If taking sympathomimetic drugs for the first time - disqualification for 6 months, the second time - for 2 years, and the third time - for life. In this case, the athlete’s coach and physician are also liable to penalties.

The use of any means officially classified as narcotics and doping entails appropriate administrative and criminal penalties. Currently, proposals have been made to the country’s legislative bodies to introduce criminal penalties for taking anabolic steroids without medical indications or persuading athletes to take them.

Any athlete can receive notification of doping control procedure anywhere and anytime. Upon receipt of such notification, the athlete must sign it and go to the doping control station. Within the framework of implementing doping control, the athlete has a number of rights and responsibilities.

Athlete’s responsibilities are: to report to the doping control point; to provide an official document with a photo attesting the athlete’s identity or accreditation for the competition; to provide the necessary information to complete the protocol. The athlete must be under the constant supervision of a doping control officer (DCO) or chaperone.

The regulations of the World Anti-Doping Code and the Swiss Olympic Doping Statute form an integral part of the general rules of sport and protect the right of athletes to compete in doping-free environments. Therefore, anti-doping rules apply to all athletes who are registered in or members of a sports club or federation associated with Swiss Olympic. The same applies to those who take part in competitions relating to the aforesaid organizations. It is essential for athletes at all levels of performance to know their rights and duties.

The “Athletes’ Anti-Doping Rights Act” (WADA, 2019) summarises the fundamental rights of athletes, which are established and anchored in the World Anti-Doping Code and
International Standards. It is of great importance for athletes to know their rights and duties and how to exercise them.

The following rights and obligations of athletes are taken from the website of Swiss Sport Integrity (2021).

Thus, athletes have the right to:
- enjoy equal opportunities in training and competition in an environment strictly free from people who violate anti-doping rules;
- benefit from fair testing programmes implemented in accordance with applicable standards, everywhere and in all countries;
- be free from any form of pressure that could jeopardise their physical and emotional health through doping;
- obtain a therapeutic exemption in accordance with the current enforcement requirements;
- take legal action and in particular be heard, benefit from fair hearings from impartial and independent decision-making panels and use the possibility of lodging complaints;
- report anonymously and confidentially any third-party deceit and be protected from intimidation or threats;
- benefit from anti-doping training;
- benefit from correct doping testing procedures performed in accordance with the terms and conditions in force during a confidential and discreet process on the part of anti-doping organizations.

In addition to the rights listed above, athletes must comply with anti-doping regulations at all times. In particular, they are required to:
- get accurately informed about the anti-doping regulations in force;
- take care not to consume prohibited substances or use prohibited methods;
- if undergoing medical treatment, inform their health professionals that they are subject to anti-doping provisions;
- observe the implementation requirements for therapeutic exemptions if prohibited substances or methods are used as part of medical treatments;
- comply with the notification obligation if they are included in a control group;
- meet the requirements of the responsible sanctioning authority (in Switzerland, it is the Disciplinary Chamber for Doping Cases of Swiss Olympic);
- avoid any collaboration with banned support personnel.

Conclusion

Summarising the results of our study, we can conclude that doping causes irreparable damage to the health of an athlete. Doping in sport destroys the idea of fair and “clean” competition, which is the basis of sport and the Olympic Movement. It is necessary to actively introduce a policy in the training and competition process that encourages the moral principles of fair sports competition, and each athlete, sports physician and coach must be aware of the deadly danger of doping.

Looking back at the history of doping, it can be concluded that that current sports victories are not won by athletes but by pharmacists who have made a profitable business out of professional sport, and their “well-oiled” system is not afraid of any doping control. Support
for the false claim that it would be possible for “pure” sport to revive, when in reality it has never existed, soon escalated from idealism to cynicism, because doping has never been unethical. They treated chemistry no worse than the spikes and rubber coating of treadmills. Doping has become unethical only after the ban. (UWSD, 2014)

Doping controllers pushed for prohibition, calling on ethics to help “solve” the problem that they had created themselves. They did not invent anything, did not create anything and did not help any athlete. They simply clung like parasites to the big sport. It was just an attempt to exalt by all means. Athletes have never allowed themselves to be limited to a result and not go forward. Now, they face another dilemma: “breaking the rules or losing”.

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