DOPING IN KICKBOXING AGAINST THE BACKDROP OF OTHER COMBAT SPORTS

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Keywords:

- kickboxing,
- doping,
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Abstract:

Introduction: Doping is the use of any substances normally absent in the body or physiological substances introduced into the organism in abnormally high doses and/or in an abnormal way by a healthy man in order to improve the performance during a sport competition in an illegal and not natural way.

Material and method: Polish Commission Against Doping in Sport reports on inspections held during the years 2003-2013 were analyzed. The results of anti-doping inspections are published on the Commission's website in the 'Download Center' section. Additionally, the prohibited list published by the World Anti-Doping Agency (WADA) and publications describing the effects of particular substances were used.

Results: The Commission performs nearly 4000 examinations for the use of illegal performance enhancing drugs anually. In 2014, competitors from 44 sports associations were tested. Among all combat sports, the competitors training boxing, judo, traditional karate, kickboxing, taekwondo and wrestling are subject to doping control. Kickboxing as compared to other combat sports is in the group of very low use of illegal substances. During the years 2003-2014, 10 positive results were noted in kickboxing; they referred to the following substances: Ephedrine, Beta-methylphenylethylamine, Furosemide, Methylhexanamine, Cocaine, Methandienone, Clomiphene, Torasemide.

Findings: In the light of the positive reults of the doping control carried out by the Commission Againts Doping in Sport, while analyzing the proportion of the positive results to the total number of samples taken, one can conclude that kickboxing is highly endangered by the use of illegal substances. In addition, a slow but steady rise in the positive results of the doping control should be noted. This may result from several factors: constantly increasing training load of the top competitors, high availability of the illegal substances and probably large independence of competitors during the training process.

Substances mainly used in kickboxing are S6 – stimulant group drugs (Ephedrine, Beta-methylphenylethylamine, Methylhexanamine, Cocaine). Presumably, it reults from a fact that competitors prefer the above mentioned drugs because of their effects which are adequate to the discipline requirements.

INTRODUCTION

Doping, as defined by the Council of Europe Committee for Out-of-School Education in 1963, is the use of any substances normally absent in the body or physiological substances introduced into the organism in abnormally high doses and/or in an abnormal way by a healthy man in order to improve the performance during a sport competition in an illegal and not natural way.

Today, the concept of doping is recognized as any medical methods that are potentially harmful to health and are officially forbidden. Contemporary doping methods when used under the supervision of a specialist are extremely hard to detect and, what is more, when

used skillfully during the period of physical activity may not cause any negative side effects. However, the negative consequences of using illegal substances may occur after the conclusion of the sports career. In amateur and most of the professional disciplines doping is punished by disqualification, taking away medals or prohibitting the participation in sports competition for a given period of time. World Anti-Doping Agency (WADA) deals with the fighting against doping use. (www.antydoping.pl; www.polska.sztanga.prv.pl)

The first organisation which fought doping was International Athletics Federation transformed later into International Association of Athletics Federations (IAAF). The IAAF officially prohibited any forms of aerobic doping in 1928, however, it did not create any organisational structure which would deal with doping detection. The fight against doping was limited only to obligatory statements, made and signed by athletes participating in the competition organized by the IAAF, in which they claimed that they did not use any prohibited performance enhancing methods.

The International Federation of Association Football (FIFA), the Union Cycliste Internationale (UCI) and the International Olympic Committee (IOC) had joined IAAF by 1966 and they started similar anti-doping systems, i.e. signing the obligatory statements of not using doping by all athletes affiliated in the associations which belonged to these federations. Tests for doping were used for the first time at the European Championships in Athletics in 1966. As a result of rising signs of the use of prohibited performance enhancing drugs, the International Olympic Committee created a Medical Commision headed by Prince Alexander de Merode. Commission's aim was to counteract doping use. However, in the initial period there was a lack of practical and succesful methods revealing the presence of prohibited substances in the athletes' organisms. It was not until the early 70s that the scientists from Chelsea Laboratory in London developed identification techniques. This allowed the experimental and unofficial tests for the presence of steroids during the Olympic Games in Munich (1972). The first official testings for steroids were undertaken on the Olympic Games in Montreal (1976). The doping control during the Olympic Games in Montreal was carried out in a systematic, complex and modern way for the first time in the history of the Olympics. Legal, formal, technical and methodological principles of control were established. A susbtantial progress in the control methods was made in 1983 when Manfred Donike from Cologne, aided by the results of studies of an eminent biochemist – Raymond V. Brooks, used a new analytical method based on gas chromatography and mass spectrometry combined into one system (GC/MS). In the mid 80s, doping tests started to be carried out not only during the competition but also during the trainings. Pharmacology and genetics progress and the need to unify the various lists of prohibited substances and different testing procedures, made it neccessary to create a worldwide organisation. It was established in 1999 under the leadership of IOC. World Anti-Doping Agency's (WADA) tasks consist of: standarization and unification of the rules of analytical techniques used for detecting doping and development and publication of the World Anti-Doping Code. WADA's jurisdiction is not limited to a mere sporting events. It is eligible to take away profesional athlete's licenses and impose on amateur athletes temporary or permanent bans from competing. However, in many countries, many substances and doping techniques are not prohibited, hence, using them is not considered illegal under the general law of the State concerned.

Commission Against Doping in Sport is responsible for counteracting doping in Poland. The activities of the Commision are based on the Sports Law of 25 June 2010 which prohibits the use of pharmacological agents and other doping substances in sports. The second document, which regulates its activity, is Anti-Doping Convention issued by the Council of Europe and ratified by Poland in 1990. The Convention's aim is to fight the use of prohibited substances and methods by the athletes.

While creating the anti-doping system in Poland, the Anti-Doping Commission was established, acting in 1991 – 1993 under the name of: Council Against Doping in Sport. The Council chaned its name to the Commission Against Doping in Sport in 1993 (Grucza, Pokrywka, 2007).

The anti-doping system in Poland is fulfilled by the Commission Against Doping in Sport and is based on the international standards set by the World Anti-Doping Code and International Conventions ratified by the Polish authorities. Educational activities, doping control testing program, active work in the area of anti-doping legislation and the international cooperation to coordinate the fight for fair sport in the world are realized within the anti-doping system.

THE AIM OF THE STUDY AND RESEARCH QUESTIONS

The aim of this study is to analyze the use of the prohibited substances in kickboxing in comparison with other combat sports. Both, quantitative and qualitative data on the use of these substances were determined. An attempt to identify the main reasons for choosing particular doping subtances was undertaken

Following research questions were asked:

1. What is the number of positive results of control carried out by the Commission Against Doping in Sport in kickboxing and other combat sports?
2. Which of the substances on the prohibited list were used most frequently by the athletes training kickboxing?

RESEARCH METHODOLOGY

Commission Against Doping in Sport reports on inspections held during the years 2003-2013 were analyzed. The results of anti-doping inspections are published on the Commission's website in the 'Download Center' section. Additionally, the prohibited list published by the World Anti-Doping Agency (WADA) and publications describing the effects of particular substances were used.

RESEARCH RESULTS

1. Reports on the inspections held by the Commission Against Doping in Sports during the years 2003-2013.

The Commission performs nearly 4000 examinations for the use of illegal performance enhancing drugs. Among them, the great majority are standard analyses. In addition, tests for the presence of erythropoietin, growth hormone, blood transfusion and isotropic tests are carried out. In 2014, competitors from 44 sports associations were tested. Among all combat sports, the competitors training boxing, judo, traditional karate, kickboxing, taekwondo and wrestling are subject to doping control. It is surprising that the tests are not carried out in other sports associations conducting training in martial arts, i.e.: Polish Association of Ju Jitsu, Polish Karate Association and Polish Wu Shu Association. Currently, there are not any extensive tests for doping in the most exposed to doping use sport – mixed martial arts (only one test of a single urine sample was carried out in 2013). A problematic situation in the case of doping controls is the fact that, according to the regulations, it is the organizer who should bear in mind that it will be necessary to carry out tests for doping. As a result of this, the Polish sports association is the organizer acting on behalf of an international federation. Therefore, the number of tests, the way of choosing the athletes and other detailed information pertaining to the doping control are defined by the international sports federation that is superior to the Polish association. Due to the fact that the associations lack trained personell that would be able to carry out the doping control, it is usually necessary to cooperate with the Commission Against Doping in Sport. What is important – such controls

are financed by the organizer. In the terminology used by the committee, such tests are treated as 'external' controls, i.e. controls which are extra-curricular in relation to the national control plan (Antydoping w Polsce, 2009).

While analyzing the summary list of the positive results of the doping controls carried out in combat sports in the years 2003-2014 presented in the Table 1., it can be noticed that combat sports are placed in the group of disciplines of low risk of doping use. Even in wrestling, where the highest number of positive results was noted, there were only 24 instances of doping use over 12 years. For comparison – only in 2013, there were 10 cases in bodybuilding, 8 in rugby and 10 positive cases of the doping use in weightlifting. In 2014, in powerlifting 9 positive results and 4 in rugby were noted (tab. 1). It should be noticed that it is highly possible that the positive results would grow if the tests were carried out also in the rest of the combat sports, mostly among MMA and Karate Kyokushin competitors. Currently, these sports are not subject to such control.

Table 1. Summary list of the positive results of the doping controls in combat sports in the years 2008 – 2014 carried out by the Commission Against Doping in Sport.

Year	Sport	Positive results	Drug name
2008	Wrestling	7	17a-methyl-5a-androstane-3a, stimulants, anabolic steroids
	Boxing	1	Anabolic steroids
	Kickboxing	1	diuretics
2009	Boxing	1	Nandrolone
	Wrestling	4	Furosemide, Amphetamine, Boldenone, Nandrolone, THC
	Kickboxing	0	
2010	Wrestling	2	THC, chlorothiazide, hydrochlorothiazide
	Kickboxing	1	Ephedrine
2011	Boxing	2	Methylhexanamine, THC
	Wrestling	2	Budesonide, THC
	Kickboxing	1	Beta-methylphenylethylamine
2012	Boxing	2	Methylhexanamine
	MuayThai	1	Methylhexanamine
	Wrestling	2	THC, Methandienone
	Traditional Karate	1	Drostanolone
	Kickboxing	2	Furosemide, Methylhexanamine, Cocaine
	Taekwondo	2	Furosemide, Budesonide
2013	Kickboxing	3	Methylhexanamine, Methandienone
	Boxing	2	Pseudoephedrine, Furosemide
	MuayThai	3	Methylhexanamine, Clenbuterol
2014	Kickboxing	2	Clomiphene, Torasemide, THC
	Boxing	1	Nikethamide
	MuayThai	1	Oxandreolone, Nandrolone
	Wrestling	1	Clomiphene

Among combat sports, boxing and wrestling are the most endangered by doping use. Two groups of prohibited drugs are dominant in wrestling. These are Anabolic Androgenic Steroids (AAS) and diuretics. In boxing we have steroids and drugs which burn fat and energize and the same time. It is visible, that the type of drugs used is directly connected to the specificity of a given sport. The bigger is the emphasis to qualify to a particular weight

class, the greater is the share of thermogenic drugs. Kickboxing is placed in a group of low use of prohibited substances among combat sports, less positive reults were rocerded in muaythai, taekwondo and traditional karate. However, it should be noted that traditional karate is free of full contact combat and doping controls in muaythai have been present only since 2012 when Polish Association of Muaythai was registered.

Ten positive results were noted in kickboxing during the years 2003-2014; they pertain to the following drugs:

- Ephedrine (1),
- Beta-methylphenylethylamine (1),
- Furosemide (2),
- Methylhexanamine (2),
- Cocaine (1),
- Methandienone (1),
- Clomiphene (1),
- Torasemide (1).

Of course, these are certainly not all cases of doping. Most probably these are the cases when the substances were taken too shortly before the competition and the athletes were not able to clean their bodies from the residues of the substances. The value, however, is important because a similar situation exists in all other sports where the cases that are detected constitute a percentage of the total number of athletes using doping. Because of this, the committee carries out controls not only during the competition but also during the whole training process. In 2014, the commitee carried out two doping controls on the competitors representing the Polish Asociation of Kickboxing. During the tests 15 samples were taken (6 during the competition and 9 during a training camp). The control results may not give complete figures illustrating the whole phenomenon but they allow to define the proportion between the sport, and what is equally important, they enable us to determine which prohibited substances are used in a given sport. In addition, while analyzing the reports, one may notice that over the initial years many of the tests were positive as a result of avoiding the tests by the athletes. Nowadays, such cases are not recorded anymore. Analyzing the doping use in kickboxing, it is possible to analyze this phenomenon in a discipline with very similar requirements and training process – muaythai (Thai boxing). Five positive results were recorded in muaythai during the years 2012-2014. While taking into consideration a corresponding period, there were seven cases in kickboxing, which shows large similarity between the sports. Taking into account the drugs used, we can also observe a huge analogy. The substances that are used in Thai boxing are Methylhexanamine and Clenbuterol, both of which have the thermogenic and energetic effect. However, despite the regular checks, the phenomenon of doping has been growing for the last three years in kickboxing, which is unsettling. Each subsequent year is a small but steady increase in the positive results. This fact, while considering the players who have not been subject to the control (who ended the competition on further places) and those who managed to clear the body before the competition, additionally indicates, that the number of athletes using prohibited substances is growing.

Table 2. The percentage of positive results in the total number of doping control in combat sports performed by the Commission Against Doping in Sport in 2009-2014.

year	sport	No. of controls	Samples amount	The number of violations	% of positive
2009	boxing	16	107	1	0,9
	judo	13	77		0,0
	ju jitsu	1	8		0,0
	karate	3	24		0,0
	kickboxing	4	23		0,0
	taekwondo ITF	3	21		0,0
	taekwondo WTF	4	26		0,0
	wrestling	27	173	4	2,3
2010	boxing	20	127		0,0
	judo	12	73		0,0
	karate	3	23		0,0
	kickboxing	5	27	1	3,7
	taekwondo ITF	1	8		0,0
	taekwondo WTF	2	12		0,0
	wrestling	31	175	2	1,1
2011	boxing	16	98	2	2,0
	judo	6	55		0,0
	karate	2	16		0,0
	kickboxing	3	20	1	5,0
	taekwondo ITF	1	10		0,0
	taekwondo WTF	3	20		0,0
	wrestling	25	161	2	1,2
2012	boxing	17	140	2	1,4
	judo	9	64		0,0
	karate	2	16	1	6,3
	kickboxing	2	14	2	14,3
	muay thai	1	6	1	16,7
	taekwondo WTF	2	11	2	18,2
	wrestling	22	143	2	1,4
2013	boxing	16	113	2	1,8
	judo	9	67		0,0
	karate	2	16		0,0
	kickboxing	3	20	3	15,0
	muay thai	1	8	3	37,5
	taekwondo ITF	2	15		0,0
	taekwondo WTF	2	16		0,0
	wrestling	22	134		0,0
2014	boxing	14	104	1	1,0
	judo	12	94		0,0
	karate	1	8		0,0
	kickboxing	2	15	2	13,3
	muay thai	2	18	1	5,6
	taekwondo ITF	1	5		0,0
	taekwondo WTF	1	8		0,0
	wrestling	14	107	1	0,9

While analyzing the proportion of positive results to the total number of samples taken in each sport (table 2.), it turns out that it is no longer possible to classify kickboxing in the group of sports of low risk of the doping use. The data clearly shows the increasing scale of

the phenomenon which amounts to more than ten percent of the total number of samples taken. First of all, since 2010, there has been a gradual increase in the use of illegal substances. While in taekwondo, which is an Olympic sport, the negative phenomenon was quickly dealt with and the subsequent years did not see any positive reults, the situation in non-Olympic kickboxing and muaythai worsened in 2013 (almost every second sample was positive in muaythai, which gives a picture of the prevalence of doping in the sport at a time when the Polish Association of MuayThai has not been registered yet. This may also give a signal on the current situation in uncontrolled MMA and Karate Kyokushin operating under uncontrolled Polish Karate Federation). The next year – 2014 – saw the reduction of the phenomenon of doping in muaythai, however, in kickboxing it stabilized at more than ten percent. Considering that in wrestling and boxing over 100 samples were taken and only one positive result was recorded in each of the sports, in the case of 15 samples in kickboxing, two positive results indicate a fairly large scale of the phenomenon. The positive results stood at more than ten percent since the last three years. This should be a singal to the authorities of the Polish Association of Kickboxing, that likewise in Taekwondo WTF some action shall be undertaken to eliminate this negative phenomenon.

2. Illegal substances used in kickboxing and their impact on the athletes.

According to the reports of the Commission Against Doping in Sport, the illegal substances used by kickboxers are: Ephedrine, Beta-methylphenylethylamine, Furosemide, Methylhexanamine, Methandienone, Clomiphene, Torasemide, aditionally Methylhexanamine and Clenbuterol used by thaiboxers can be taken into account.

Ephedrine belongs to the group of stimulants, however, it is widely used as a component of thermogenics that reduce body fat. Ephedrine is a sympathomimetic agent Beta 2 and stimulates the central nervous system, causing the release of norepinephrine. As a result of its activity folliwing effects occur: agitation, increased sweating and increased body temperature. It is the increase in the body temperature that is the most desirable effect, because it leads to the release and burning of fatty acids from adipose tissue. Side effects of taking ephedrine can be palpitations, high blood pressure, anxiety, insomnia, loss of appetite, tremor, sweating, and urinary incontinence.

Beta-methylphenylethylamine is a new stimulant, chemically very similar to amphetamine. Beta phenylethylamine functions as a neurotransmitter, and can increase the levels of dopamine and norepinephrine. R-Beta-methylphenylethylamine HCI, according to the assurances of producers, is an active derivative of phenylethylamine. In the sports supplementation, this compund is used as a stimulant substance, improving mood and intensifying thermogenesis. It is a part of the pre-workout products and modern fat burners.

Furosemide and torasemide are commoly used diuretics. These are drugs with a fast diuretic effect and torasemide is about 4 times stronger than furosemide. A long-term use of diuretics causes hypokalemia and hyperuricemia, hypomagnesemia, metabolic alkalosis, increased risk of forming blood clots. In high doses it may lead to nephrotoxicity and ototoxicity. Moreover, it can cause fatigue, loss of appetite, nausea, vomiting, constiplation, allergic reactions, acute pancreatitis, jaundice, anorexia.

Methylhexanamine also known as DMAA, 1,3-dimethylamylamine, Geranamine, Geranium is a widely used stimulant and above all the component of thermogenic substances. Methylhexanamine was supposed to be a legal variety of ephedrine and was originally a part of an aerosol named Forthan. Methylhexanamine contained therein was to eliminate local nasal congestion. At the beginning of the XXI century it turned out that it is also suitable for burning fat.

Because of the ban on the use of ephedrine, sympathomimetics which intended to be less powerful enterned the market. In 2006, Patric Arnold, known for introducing a prohormone on the market, started selling supplement called AMP, containing Geranamine. From a chemical point of view, the structure of DMAA is similar to the structure of amphetamine. In September 2011, the results of a study were published in which it was observed that methylhexanamine at doses of 50 or 75 mg, administered alone or in combination with 250 mg of caffeine, increses both systolic and diastolic blood pressure directly proportional to the dose. In 2013 in the United States there were a few dozen cases of hospitalization and several deaths cause by non-viral hepatitis as a result of taking thermogenic drug named OxyElite Pro. Its main component was 1,3-dimethylamylamine. As a result of the cases, the sale of the drug was banned in the US; in Poland the Chief Sanitary Inspector issued a statement warning of this drug use. (http://www.gis.gov.pl/?go=news&id=130).

Methandienone is a steroid anabolic-androgenic better known under its name used in trade – Metanabol. It is one of the best known and most widely used anabolic androgenic steroids. Methandienone effects are extremeley strong anbolic and androgenic, what is more it reduces the secretion of cortisol as a result of which it has strong anti-catabolic effect, in addition it stimulates the production of IGF 1 in muscle cells and liver. As a result of the aforementioned effects, methandienone causes very large increses in body weight and maximum strength. To its side effects one may include: a heavy burden on the digestive system and the liver. The reason is that alkylated methandienone is a group of 17 alpha, which aims to facilitate to cross the liver-blood barrier. Another negative effect is its very high aromatization and large accumulation of water in the muscles, which explains the large increase in mass during the initial period of application. Another side effect resulting from the high degree of aromatization and conversion in methylstradiol may be gynecomastia.

Clomiphene is used by athletes in the form of citrate and is available as Clomid. It is a medicine for women who have problems with infertility. In the sport it is used by the athletes to block estrogen production. It is used most frequently at the end of a steroid cycle to unlock the production of testosterone.

Although clenbuterol was not detected among kickboxing athletes, it was found among the athletes of a very similar sport – muaythai. Because of the high degree of similarity of the sports and the fact that many athletes train kickboxing and muaythai simultaneously, it is highly possible that clenbuterol is also used by the kickboxers. Clenbuterol HCL is a sympathomimetic beta2 used in medicine as a treatment for asthma. It acts as a muscle relaxant in the lobes of the lungs, resulting in a deeper and more intensive breathing. In sports, on the one hand clenbuterol is ascribed to have anabolic effects, which has never been confirmed by any research (Schmitt H., Kiesbauer O., 2006), on the other hand it appears to be a strong fat burner. The side effects include: tremor, sweating occurrence, irritability, insomnia, arrythmia and high blood pressure.

SUMMARY

In order to answer the question ‘Why do kickboxers use doping and why do they prefer just such and not the other substances?’ one must specify the psychomotor requirements that characterize a desired ideal athlete in kickboxing. The fight in full-contact kickboxing formulas lasts for 3 rounds of 2 minutes which are separated by one minute pause. The fight is done in a mixed area of glycolytic changes and the competitor should primarily have a high anaerobic resistance, so he should possess a high level of both phosphagenes and glycogen and an efficient mechanism of their utilization. Because the sport competition consists in fighting with fists and legs, the athlete has to generate very high power. Maximum force component does not play such a significant role here, but its presence is essential in order to

generate maximum power. The situation is additionally complicated by the weight categories and the range of arms and legs. Unlike an MMA athlete, a kickboxer cannot fight in a too high weight category because he would confront much taller opponents with much bigger range of kicks and punches, which would result in an inability to make the fight equal. To sum up – an ideal kickboxer is a slim, fast, agile and tall person with minimal body fat and not too large muscle mass. He should also be enduring in the anaerobic zone and be able to generate maximimum power punches and kicks, what is more he should also have a high aggressiveness in the ring.

When analyzing the illegal substances used by the kickboxers it is visible that they meet the abovementioned requirements. Beyond the individual cases of the furosemide and methandienone use, the substances preferred by the kickboxers are stimulants, i.e.: ephedrine, Beta-methylphenylethylamine, Methylhexanamine and a single case of cocaine. While analyzing the similar sport – muaythai, it is visible that stimulants are also preferred. In addition, Thaiboxers use also clenbuterol. In summary, it can be stated, that there is a very significant correlation between the requirements of the sport and the nature of the sports competition in kickboxing and the used illegal performance enhancing drugs.

FINDINGS

The study allows to draw the following conclusions:

1. In the light of the positive reults of the doping control carried out by the Commission Againts Doping in Sport, while analyzing the proportion of the positive results to the total number of samples taken, one can conclude that kickboxing is highly endangered by the use of illegal substances. In addition, a slow but steady rise in the positive results of the doping control should be noted. This may result from several factors: constantly increasing training load of the top competitors, high availability of the illegal substances and probably large independance of competitors during the training process.
2. Substances mainly used in kickboxing are S6 – stimulant group drugs (Ephedrine, Beta-methylphenylethylamine, Methylhexanamine, Cocaine). Presumably, it reults from a fact that competitors prefer the above mentioned drugs because of their effects which are adequate to the discipline requirements.

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