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Doping in amateur sport on the example of mass running events

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Abstract

The last years of general well-being in life significantly influenced the perception of free time by affluent societies. Even in the second half of the 20th century, active recreation and taking care of one's health were not the main pillars necessary to maintain physical and mental health. Sport was treated solely as work and was reserved exclusively for professionals. The situation has changed dramatically in the 21st century. The thesis that active leisure in free time has been raised more and more often allows maintaining mental and physical balance, which contributes to more effective work in other aspects of life. The growing interest in sport in free time contributed to the emerging branches of the economy, which are sports services. Organizing mass runs, opening fitness clubs or training services for amateurs, they became a source of income for many players and allowed them to continue their careers for the next few years. With the growing popularity of amateur sport, it began to resemble professional sport more and more, and finally became a part of it. Improving health ceased to be the basic motivating factor of an amateur athlete, it was replaced by the desire to achieve a high sports result. When a competitor's physical condition prevents him from reaching his goals, it may happen that he will resort to more radical measures, e.g. illegal doping. This situation is especially dangerous for amateur trainers, because they often do not have much knowledge in this field. With the growing popularity of amateur sport, it began to resemble professional sport more and more, and finally became a part of it. Improving health ceased to be the basic motivating factor of an amateur athlete, it was replaced by the desire to achieve a high sports result. When the athlete's physical condition prevents him from reaching his goals, it may happen that he will resort to more radical measures, e.g. illegal doping. This situation is especially dangerous for amateur trainers, because they often do not have much knowledge in this field. With the growing popularity of amateur sport, it began to resemble professional sport more and more, and finally became a part of it. Improving health ceased to be the basic motivating factor of an amateur athlete, it was replaced by the desire to achieve a high sports result. When a competitor's physical condition prevents him from reaching his goals, it may happen that he will resort to more radical measures, e.g. illegal doping. This situation is especially dangerous for amateur trainers, because they often do not have much knowledge in this field. was replaced by the desire to achieve a high sports result. When a competitor's physical condition prevents him from reaching his goals, it may happen that he will resort to more radical measures, e.g. illegal doping. This situation is especially dangerous for amateur trainers, because they often do not have much knowledge in this field. was replaced by the desire to achieve a high sports result. When the athlete's physical condition prevents him from reaching his goals, it may happen that he will resort to more radical measures, e.g. illegal doping. This situation is especially dangerous for amateur trainers, because they often do not have much knowledge in this field.

Keywords: sport, amateur sport, running, running events, doping, technological doping consumers

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The problem of doping

During the Olympic Games in St. Louis in 1904, the American athlete Fred Lorz was the first to finish the marathon. It was declared the winner of the race and was to be decorated with a gold medal. However, it turned out that the second rider at the finish line Thomas Hicks noticed Lorza when this passed him by car. His assistants reported the fact and the American athlete was disqualified (Sports Reference 2016). He became the winner of these professions Thomas Hicks, however, he did not pick up your medal after the competition. It was associated with severe poisoning with strychnine and with alcohol. Together with trainer found that a marathon run is too demanding for the body to run without pharmacological support. At the check-out points, the trainer gave his player strychnine combined with protein and told him to wet his mouth with cognac. Such a combination it hurt Hicks. After crossing the finish line, he was quickly transported to the hospital, where his condition was assessed as critical. Fortunately, we managed to save him (Sas-Nowosielski *2002*). Hicks he was not disqualified for his actions because at the beginning of the 20th century, pharmacological substances He was not forbidden. There was no institution regulating the use of stimulants. There were attempts to regulate the use of adjuvants, but the first legal provisions were made in the 2nd half XX century.

In the 1960s case doping the Council of Europe took up. Established special and commission that was to take specific action on this matter. In 1963 on The first definition was adopted at the International Anti-Doping Conference in Strasbourg doping. The Commission determined that: ,,Doping is giving and taking to healthy people by healthy people, externally derived substances and excess physiological doses or in the wrong way for an artificial and dishonest purpose only enhance their sporting achievements ”(Doping 1980, p. 26). It is not the only applicable one concepts doping. According to the PWN encyclopaedia, doping is an increase in the psychophysical performance of a competitor using prohibited methods and pharmacological substances (doping not allowed in: PWN Encyklopedia Uniwersalna/Universal Encyclopaedia 2019). In turn, in the definition formulated by the International Olympic Committee - IOC, doping is defined as: „Passing or use by the athletes of any substance foreign to the body or any physiological substance used in the incorrect dose or not physiological a way with the intention of increasing the exercise capacity in an artificial or dishonest way” (*Dozwolone i niedozwolone wspomaganie zdolności wysiłkowych człowieka, 2*007, p. 59). The above definitions they are limited to a general description only. Failure to read the necessary information could lead to misleading conclusions about the use of individual substances. Therefore, it was necessary to create uniform regulations that would regulate the conditions of using individual substances in sport.

Biggest the anti-doping regulations set out in the World Anti-Doping Code are relevant. The definition contained in the code specifies cheering as: "the occurrence of one or more violations of the anti-doping regulations specified in the World Anti-Doping Code" (Pawłowski, 2017, p. 57). Which leads to conclude that a crime without a legal provision does not exist (lat. *Nullum crimen sinelege*, PWN Encyklopedia Uniwersalna/Universal Encyclopaedia 2019). World Anti-Doping Codey, was created by the World Anti-Doping Agency (WADA) to promote anti-doping activities in sport. It is a set of rules, definitions and descriptions that explain the use of substances in sports competitions (World Anti-Doping Code 2019). Quoting the World Anti-Doping Code, an anti-doping rule violation is:

1. Presence of prohibited substances or their metabolites in a sample taken from the athlete, except when the athlete has not exceeded the quantitative threshold for a given agent, if any, or has the appropriate medical records.
2. Documented use or attempted use of a substance or prohibited method. It should be noted here that it is not important whether the substance got into the athlete's body. The mere attempt is a sufficient basis for the application of the penalty.
3. Refusing to consent to doping testing without explicit justification.
4. Breach of the Athlete's Readiness for Out-of-Competition inspection requirements. This applies to situations when the competitor repeatedly avoids giving a sample and does not provide information about his whereabouts.
5. Manipulation, or an attempt to manipulate the indicator during the test, e.g. on purpose break sample container.
6. Possession of prohibited substances or prohibited methods without appropriate documents confirming the purpose of using the substances.
7. Trade in any Prohibited Substance or Method.
8. Helping, concealing or cooperating with other athletes, in violation of anti-doping regulations (Pawłowski 2017).

The tables are arranged very precisely so that it is impossible to bypass them. However, it is not impossible, as proved by the law of the American coach Alberto Salazar. After a 4-year investigation by the US Anti-Doping Agency, USADA, Salazar and his friend Jeffrey Brown were found guilty of non-compliance with anti-doping regulations and banned from sports for 4 years. The case concerned three offenses. The first was a tampering with doping control, which was linked to the fact that Alberto was testing the testosterone ointment on his sons. Another allegation was the use of above-average intravenous infusions of L-carnitine, which is an approved agent, but in controlled doses. The investigation confirmed one case of illegal use of this drug. However, it was not used on the competitor, but on an associate. The last allegation concerned the manipulation of athletes' medical records (Alberto Salazar and a cooperating doctor with a ban on training runners for 4 years 2019). There is none documented violation of rules by Salazar in relation to his charges, however, in relation to today's regulations, he was found guilty (Salazar, Brant 2013).

World Anti-Doping Agency was established on November 10 1999 with initiative Of the International Olympic Committee. Its task was to monitor and punish unclean behaviour in sports. It was partially funded by national governments of the world, which additionally created smaller organizations in their areas, subject to directly under WADA, e.g. USADA in the United States. WADA is divided into two bodies: the Education Committee and the Board of Directors. The committee deals with matters of fact, incl. approves the list of methods and means prohibited in sports competition. He also manages smaller organizations individual countries. The management board deals with staff selection, financial matters and changes to the World Anti-Doping Code. Both systems have their share also in educating various sports communities about the effects of doping. WADA makes available annually list of banned methods and substances for the next calendar year. Any country that wants to participate in international struggles must undertake to comply with the code established by the WADA structures and create on country dependent on the World Anti-Doping Agency legal institution responsible for adjustment doping in your sports environment (National Anti-Doping Organizations 2019).

Polish Anti-Doping Agency POLADA was established on July 1, 2017 and replaced the older legal body, the Commission Against Doping in Sport. POLADA

cooperates with the World Anti-Doping Agency as part of the Institute of National Anti-Doping Agencies - NADO. It is a very complicated apparatus and although POLADA at the national level has great independence, among others. may conduct its own anti-doping investigations and exchange confidential information with state investigative services, then outside the country, it is subject to WADA subordination (POLADA 2019). On page World Anti-Doping Agency there is a wealth of information on anti-fraud training and education. Additionally, athletes and amateur athletes who do not control the composition supplements which they eat they have the right use the Prohibited Medicines Base. It is a free application attached to the website of the Polish Anti-Doping Agency, which allows you to check whether the composition of the consumed stimulant or drug does notis located is forbidden ingredient (Baza Leków Zabronionych/Prohibited Medicines Database 2019*).* In addition, the situation of doping in polish sport is regulated by two legal acts (*Ustawa o sporcie/Act of sport* 2010 and *Ustawa o zwalczaniu dopingu w sporcie/Act of combating doping in sport* 2017).

The first doping substances list was published by a medical committee of the International Olympic Committee in 1972 in Munich. The list of prohibited substances was divided into four types of substances:

1. Psychomotor drugs, eg amphetamines, cocaine.
2. Sympathomimetic amines, eg ephedrine.
3. Stimulants, eg strychnine, amifenazole.
4. Painkillers, eg heroin, morphine.

Before the Montreal Olympics, another point was added to the list relating to anabolic steroids that were excessively used in strength sports (Doping 1980). Over the next decades, the inventory was updated, but still no designation for derivative measures. The turning point was the beginning of the 21st century, when the World Anti-Doping Agency WADA issued the first publication of the list of prohibited drugs. The list of doping substances appears annually, always three months in advance, before its entry into force (Permitted and prohibited support of human exercise capacity, 2007). A substance is included on the banned list when it meets three basic criteria. Researchers determine whether a given substance improves athletic performance, whether it is dangerous to health and whether its use is contrary to the idea of Olympism. The tested specifics can be included in the list only if the answers to the above questions are at least positive in two cases (Pawłowski 2017).

Substances and methods prohibited in and out of competition	**Substances and methods prohibited in-competition**	**Substances prohibited in selected sports**
S1 - Anabolic agents S2 - Peptide hormones, growth factors, S3 - Beta-2 agonists S4 - Hormone and metabolic modulators S5 - Diuretics and masking agents M1 - Manipulation of blood and blood components M2 - Physical and chemical manipulations M3 - Gene doping	S6 - Stimulants S7 - Drugs S8 - Cannabis S9 - Glucocorticoids	P1 - Beta-blockers

Fig. 1: WADA classification for 2020

Source: Own study based on WADA Prohibited List 2020, wadaama.org/sites/default/files/wada_2020_english_prohibited_list_0.pdf

The list divides doping agents and methods into three types:
- Completely prohibited to use;
- Prohibited only during competitions;
- Prohibited in specific sports (WADA Prohibited List 2020);

In the first case, there is an additional sub-item called S0. It applies to all pharmacological substances that have not been listed in the entire list and have not been approved as agents for human use. This is mainly about medicinal products for animals, drugs in the research phase or modified stimulants (WADA Prohibited List 2020).

Innovative forms of doping in running sport

According to the report of the Polish Anti-Doping Agency published in 2018 in Poland, the most popular banned substance among athletes are anabolic androgenic steroids, such as testosterone, clenbuterol or androsterone (POLADA Raport Roczny/Annual Report 2018). Out of a total of 3,742 blood and urine samples taken from athletes, anabolic steroids were detected in 54 cases. Also, 18 cases of taking diuretics, which cause changes in the excretion of nutrients from the body, have been detected. Hormones were another group of drugs readily used by athletes. They were detected in 14 samples. The most common cases of positive results from the tested samples were in strength sports, bodybuilding, weightlifting and power triplets. 36 proceedings concerning anti-doping rule violations have been initiated, 16 of which concerned strength sports (POLADA Raport Roczny/Annual Report 2018). The report published by the Ministry of Sport and Tourism in 2017, conducted by Kantar Public, also clearly shows that the most common adjuvants are anabolic steroids, which are used mainly in strength sports (*Research and analytical report on attitudes and opinions in the field of doping/Raport badawczo-analityczny dotyczący postaw i opinii w zakresie stosowania dopingu* 2017). Widespread access to technology may in the future create a different, more refined and defect-free form of doping.

Gene doping

The goal of gene doping is to program the body to achieve the best sports results. It concerns the improvement of only selected genes in the embryo, causing, for example, muscle growth or increasing strength in adulthood. For 2020, such studies are conducted only on laboratory animals. One such study involved the introduction of genes encoding IGF-1 into the leg muscles of mice during pregnancy. It is an insulin-resistant growth factor produced by the liver in the early stages of life. It is the strongest growth factor responsible for muscle growth. The results of the research were very promising, as it was found in born individuals 20% greater muscle mass of the lower limbs in adulthood in relation to naturally born individuals (Sas-Nowosielski 2002). Scientists ensure that further work on genetic manipulation will allow in the future to avoid many life and health-threatening diseases. This can raise ethical problems if such activities penetrate into public life.

Technological doping

For 2020, the most controversial form of doping in sport is technological doping. The spectrum of technological doping is limited, as it relates mainly to sports in which the technological aspect is of key importance, e.g. cycling or motor sports.

In 2017, Nike launched the first model of experimental Nike Vapor Fly 4% shoes. The equipment was intended for the competitors who participated in the Breaking 2 project, which involved trying to break 2 hours in a marathon under controlled conditions. The project ended in a sports failure as the final score was 2:00:25. The Nike company, however, was successful in terms of media and soon made shoes for mass use available (Nożyński 2017). The shoe differs from the standard ones mainly in the construction of the upper and sole, which is additionally covered along the entire length with thick foam. According to research by scientists from Nike Company, such a shoe structure ensures energy return during the run, which translates into 4% better results in a marathon compared to normal shoes (Nike Vaporfly 4% Flyknit 2019). A year later, Nike created another model of the Vaporfly shoe. The Nike Zoom X Next% shoes were characterized by a low weight of 174g and additional aerodynamic elements that made it easier to roll the foot during muscle fatigue. The foam also has a carbon fiber plate, which, according to the manufacturers, provides greater elasticity on hard ground, which translates into increased speed during long runs, without additional strain on the locomotor system (Nike Zoom X Next% 2019). The general availability of Nike shoes meant that in 2019 they became the most frequently chosen sports footwear used by professional and amateur athletes: facilitating shifting the foot in the event of muscle fatigue. The foam also has a carbon fiber plate, which, according to the manufacturers, provides greater elasticity on hard ground, which translates into increased speed during long runs, without additional strain on the locomotor system (Nike Zoom X Next% 2019). The general availability of Nike shoes meant that in 2019 they became the most popular sports footwear used by professional and amateur athletes: facilitating shifting the foot in the event of muscle fatigue. The foam also has a carbon fiber plate, which, according to the manufacturers, provides greater elasticity on hard ground, which translates into increased speed during long runs, without additional strain on the locomotor system (Nike Zoom X Next% 2019). The general availability of Nike shoes meant that in 2019 they became the most popular sports footwear used by professional and amateur athletes:

Fig. 2: Shoes worn by the winners of the top marathons in 2019
Source: World Marathon Majors Top 3 Shoes 2019, twitter.com/rolows_13

Fearing the problem would worsen, the IAAF2 changed its rules on competition clothing and footwear. The regulations state that competitors should use only generally available equipment, the design of which does not give an additional advantage (*Technologiczny doping? IAAF przyjrzy się butom maratończyków - rekordzistów*/Technological doping? IAAF will look at the shoes of the 2019 marathon runners). At the beginning of 2020, the IAAF presented a report in which it specified the requirements that a shoe must meet in order to be used in sports competition. The report stated that the sole must not be thicker than 40mm, the shoe may only contain one carbon fiber plate in the sole. For spiked shoes, the thickness has been limited to 30mm (*World Athletics modifies rules governing competition shoes for eliteathletes 2020).*

Purpose, problem and research hypotheses

The main aim of the research was to verify the occurrence of the doping problem in amateur sport. The research was conducted on the basis of mass running events, due to their popularity and universality. A research problem was formulated for the project: How large is the scale of doping and is doping a significant problem in amateur sport? In order to verify or falsify the overriding problem, the following main hypothesis was established: doping is commonly used during amateur running events.

In order to achieve the aim of the research, detailed questions were asked to facilitate the determination of the doping scale in amateur sport. The following research hypotheses were established for them:

1. Doping is defined as the occurrence of one or more violations of the regulations specified by the World Anti-Doping Agency.
2. Doping is not a universally accepted phenomenon.
3. In the opinion of the respondents, athletes most often use doping in order to improve their sports results.
4. Men use doping substances more often than women.
5. Competitors taking part in running events face the phenomenon of doping.
6. According to the respondents, anti-doping protection during amateur running competitions is insufficient.
7. According to the respondents, technological doping in its present form is not more dangerous than pharmacological doping.

Research method

The basic research method used in the research process was the diagnostic survey method. An additional research method was also participant observation, which consisted in entering a given environment and observing people participating in the competitions, while competing in them. An anonymous online questionnaire was used for research purposes, due to the possibility of filling in the questionnaire independently without the presence of the interviewer. The research tool is an online survey questionnaire created using a Google form.

Surveys on doping in amateur sport were conducted online using the Google survey form in February-April 2020. The problem of doping in amateur sport was determined based on the participation of competitors in running events in our country, therefore only people actively participating in such events were invited to the research

(targeted selection). The total number of respondents was 75, of which 50 were men and 25 were women. The subjects were invited to research using the Facebook platform and other social networking tools. The survey questionnaire was divided into two main parts: the data sheet characterizing the respondents and the main part of the research. The main part of the research has been divided into a section covering various doping issues:

- the general term of doping and its scale;
- doping substances, the reasons for their use and their health effects;
- anti-doping protection during mass runs;
- technological doping.

The study was completely anonymous.

Own research results - analysis of opinions and the use of doping in amateur running events

Here are the results of research on doping in amateur sport, which were developed on the basis of a comprehensive project (Zięba 2020). The analysis of the results was divided into parts, the first two of which refer to the characteristics of the respondents, and the remaining ones refer to the research problems formulated in the methodological section.

Characteristics of the respondents - runners

Most of the respondents (58.7%) have a moderate running experience, ranging from 2 to 6 years. The more experienced people with 6 to 10 years of experience (21.3%) came next. Among the respondents there were also running veterans with over 10 years of experience. They constituted 12% of all participants. The least numerous group were people who run for less than 2 years (8%). For research purposes, an attempt was made to determine how many running competitions the respondents took part in during the last year. In order to standardize the results, 4 appropriate ranges were created: 0-4 professions a year, 5-10, 11-15, 15 professions and more a year. A significant proportion of the respondents (40%) competed more often than once a month in the last year. 11-15 professions chose 24%. The next group consisted of people participating rarely, up to 4 times a year (18.7%).

The definition and scale of doping in amateur competitions

The project proved how respondents perceive the concept of doping in a general scale and what issue in their opinion describes it most accurately. For this purpose, 4 definitions of doping were used:

1. Increasing the psychophysical capacity of a competitor by means of forbidden methods and substances.
2. The occurrence of one or more violations of the regulations specified by the World Anti-Doping Agency.
3. Increasing the efficiency of the body with the help of pharmacological agents, beyond sports training.
4. The presence of forbidden substances in the athlete's physiological sample.

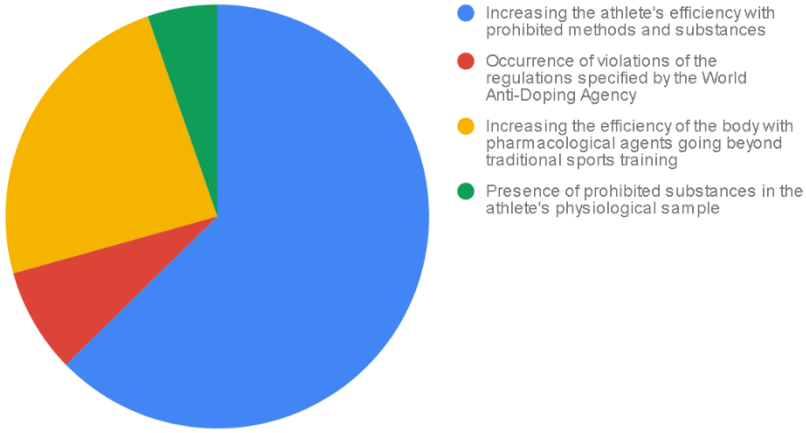

Fig. 3: The definition of doping according to the respondents
Source: Own research

The overwhelming number of respondents (62.7%) defined the term doping as increasing the psychophysical capacity of a competitor using prohibited methods and substances. On average, one in four respondents (24%) described this phenomenon as increasing the body's efficiency with pharmacological agents, going beyond sports training. Definition number 2, which says that this term is related to a violation of the WADA regulations was chosen by 8% of respondents. The concept number 4, i.e. the presence of prohibited agents in the tested sample, was chosen by four people (5.3%).

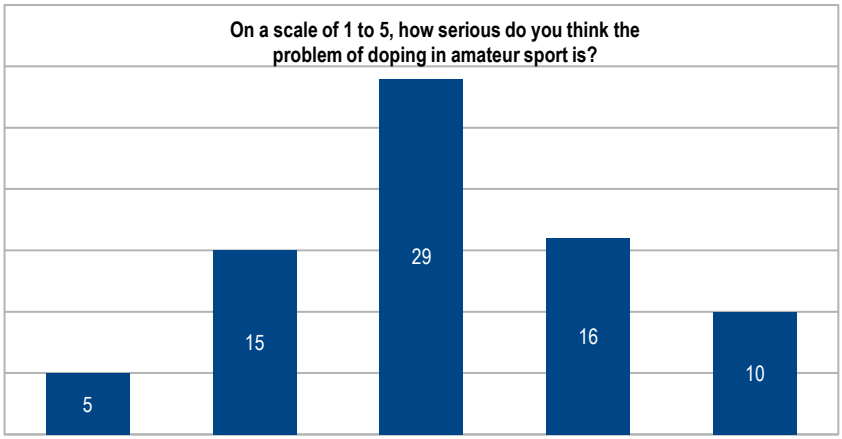

Fig. 4: The scale of the doping problem in amateur sport according to the respondents
Source: Own research

The respondents also stated how serious the problem of doping in amateur sport is. A large group of respondents (38.7%) describe this problem at the medium level (3 units on a 5-point scale). 26 people describe the problem as at least greater than average, respectively for 4 points (16 people - 21.3%) and 5 points (10 people - 13.3%). Few of the

respondents (6.7%) consider the problem to be non-existent (1 point). The remaining group of 15 people (20%) define it at a moderate level of 2 units on a 5-point scale.

Doping substances and their influence on health in amateur sport

The further part of the research concerns the legality of doping during amateur events and its impact on the health of amateur athletes:

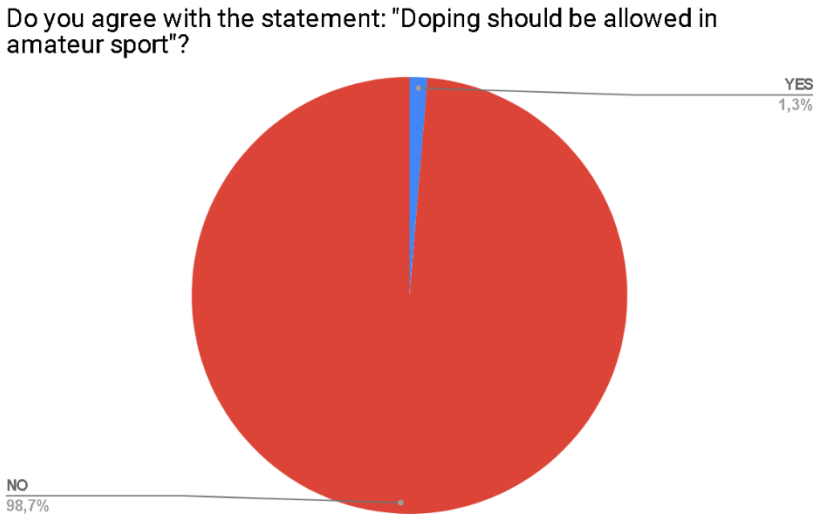

Fig. 5: Consent to the legality of doping according to the respondents
Source: Own research

To the question whether doping should be allowed in amateur sport, the vast majority of respondents (98.7%) responded negatively. The only positive answer to this statement was indicated by a middle-aged woman (35-44 age group) with moderate running experience at the level of 2 to 6 years, who does not often participate in mass runs (once every 3 months or less).To help the respondents determine what doping agents are, they were divided into several groups:

1. Substances recognized as doping by WADA (anabolic agents and hormones, diuretics and masking substances, inhalants, drugs).
2. Substances considered banned by WADA, but only in certain doses or sports (stimulants, alcohol).
3. Methods prohibited by WADA (blood transfusions).
4. Technical parts of footwear or equipment that may have a supporting effect.
5. Everyday use in the event of illness or malaise (non-steroidal anti-inflammatory drugs, painkillers):

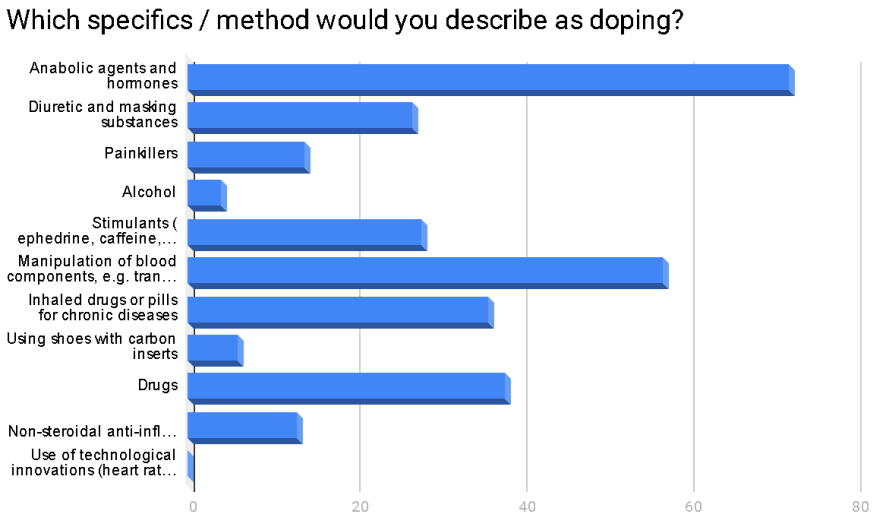

Fig. 6: Measures prohibited according to the respondents
Source: Own research

The choices most frequently selected by the respondents were anabolic agents and hormones. 96% of respondents selected this option. A significant part of the respondents (76%) considered blood transfusion methods illegal. Half of the respondents (50.7%) indicated drugs. Slightly less, 48% considered it appropriate to select asthma drugs. The next places are, respectively, with: stimulants (37.3%) and diuretic and masking substances (36%). Medicines from the group of daily use was indicated by a total of 36% of respondents (painkillers - 18.7%, NSAIDs - 17.3%). Alcohol has been selected a small number of times. Only a small group of respondents (5.3%) decided to define it as a doping agent. Technically doping points were also rarely marked. Carbon insoles for shoes were selected by six respondents (8%).

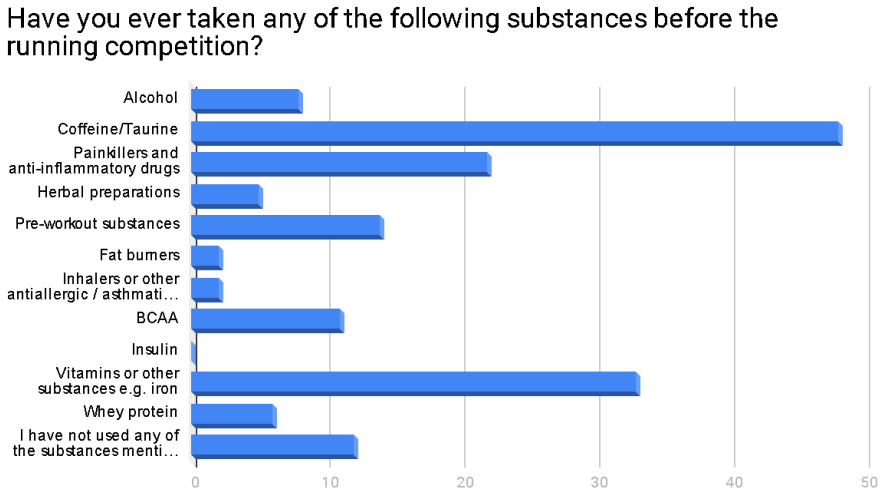

Fig. 7: Substances used by the respondents
Source: Own research

Most of the agents that were included in the survey are generally available agents, which, depending on the dose or composition, are either allowed or banned by the World Anti-Doping Agency. Others, such as insulin or inhalants, are allowed only after obtaining permission from a doctor and when the patient requires their use, e.g. for the treatment of chronic diseases. The survey also included measures and methods that are completely forbidden in sports competition. The most frequently indicated measure among the respondents was the so-called stimulants, i.e. agents containing stimulants such as caffeine or taurine. This choice was made by 64% of the respondents. Further positions (44%) included vitamins and their derivatives. Among the drugs taken there were also painkillers and anti-inflammatory drugs, which were indicated by 29.3% of people. Fourteen people (18.7%) indicated the so-called "pre-workout", that is, specially prepared stimulants containing a large range of substances in their composition, often in undefined doses. 16% of the respondents stated that they had never taken any of the substances mentioned. The BCAA branched amino acids (14.7%), alcohol (10.7%), whey protein (8%) and herbal preparations (6.7%) were followed. Two people each selected fat burners and inhaled drugs, which constitute 2.7% of the study group. Nobody decided to mark the use of insulin. The BCAA branched amino acids (14.7%), alcohol (10.7%), whey protein (8%) and herbal preparations (6.7%) were followed. Two people each selected fat burners and inhaled drugs, which constitute 2.7% of the study group. Nobody decided to mark the use of insulin. The BCAA branched amino acids (14.7%), alcohol (10.7%), whey protein (8%) and herbal preparations (6.7%) were followed. Two people each selected fat burners and inhaled drugs, which constitute 2.7% of the study group. Nobody decided to mark the use of insulin.

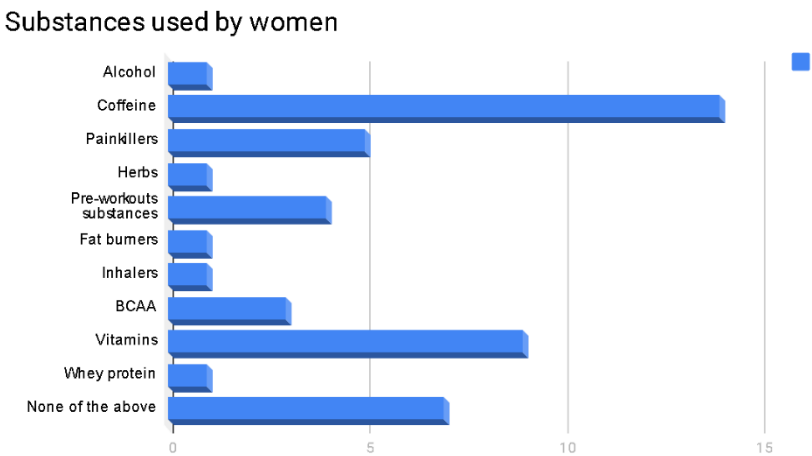

Fig. 8: Substances used by the respondents - women
Source: Own research

Slightly different results can be seen in terms of gender. Among women, the most commonly used agent is caffeine and its derivatives (56%). Vitamins were chosen in second place by 9 women (36%). About 1 in 4 respondents (28%) said they had never used the agents mentioned. Painkillers were indicated by 20% of respondents. Pre-training agents and BCAA amino acids were indicated by 16% and 12% of the respondents, respectively. 4% of respondents indicated consecutively using drugs such as: herbal preparations, fat burners, inhalers, whey protein and alcohol.

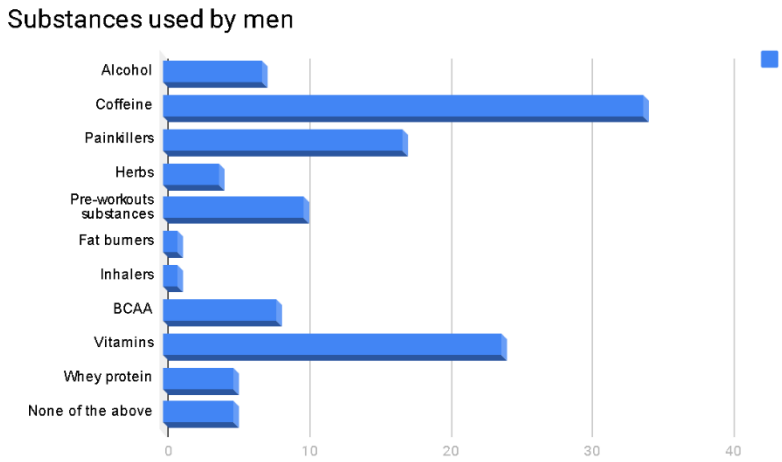

Fig. 9: Substances used by the respondents - men
Source: Own research

In men, caffeine-containing agents were also the most frequently indicated (68%). Vitamin intake is also popular, which was indicated by almost half of men (48%). Painkillers were used much more often than in women (34%). Then "pre-workouts" (20%) and BCAA (16%). Alcohol was indicated by 14% of the respondents, and whey protein by 10% of the respondents. 10% of the surveyed men had never used such agents. The respondents least frequently indicated fat burners (2%) and inhalers (2%). The next stage of the research was to determine the reasons for using the measures that the respondents indicated in the previous question and to determine the general reasons for doping by athletes.

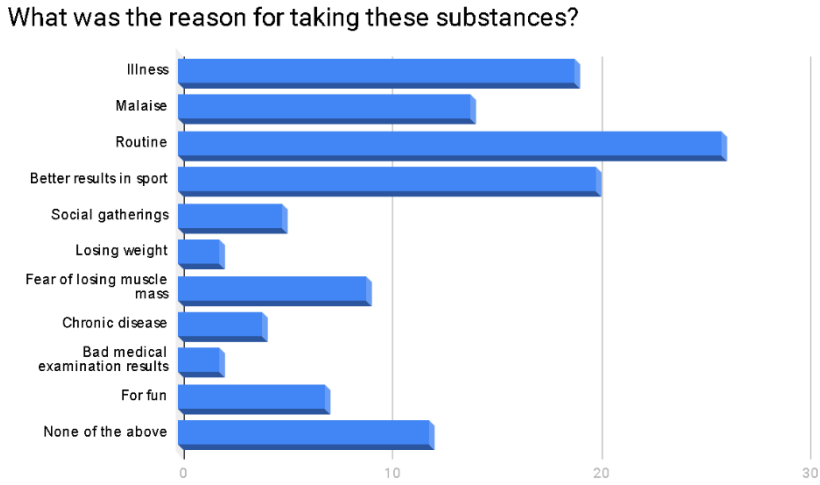

Fig. 10: Reasons for using the selected substances according to the respondents
Source: Own research

The main reason among the respondents was a routine activity (34.7%) related to certain habits of everyday life. Slightly over 26% of the respondents admitted that they used the above-mentioned measures to improve their performance at competitions. For the respondents (25.3%), the disease was the main reason. 14 people (18.7%) indicated malaise. Several people said it was medical reasons that forced them to seek external support (12%). The following places were taken by: fun (9.3%) and social meetings (6.7%). Four people indicated the desire to lose kilos as the main reason (5.3%). Two people indicated chronic diseases (2.7%) and fear of losing muscle mass (2.7%). 16% of the respondents indicated that they did not take any of the substances mentioned.

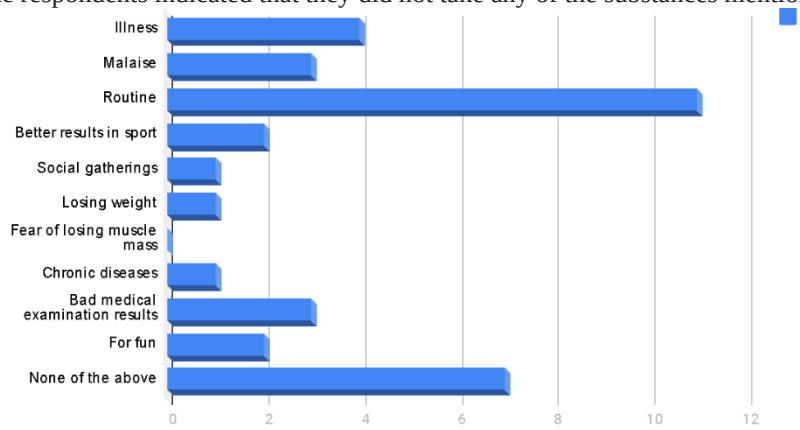

Fig. 11: Reasons for using the above-mentioned substances among surveyed women
Source: Own research

However, there were again gender differences. For women, routine was the decisive reason to use the above-mentioned drugs. This choice was confirmed by 44% of respondents. 28% of women did not take any of these substances. The disease was indicated by 16% of the respondents, malaise was indicated by 12%, and the research results by 8% of women. Next, there was a sporting reason relating to the result at competitions (8%). 4% of surveyed women indicated: social meetings, willingness to lose weight and chronic diseases. None of the women indicated the fear of losing muscle mass as a reason for using the substances selected.

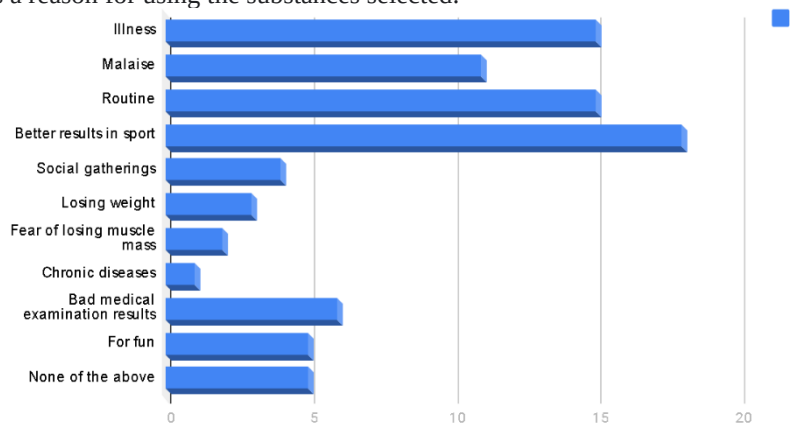

Fig. 12: Reasons for using the above substances among the surveyed men
Source: Own research

In men, the results were different. The main reason was the desire to improve sports results (36%). Then illness (30%), routine (30%) and malaise (22%). Bad test results were indicated 6 times (12%). Fun and social meetings were indicated as reasons by 10% and 8% of the male respondents, respectively. Two people indicated a fear of losing muscle mass (4%) and one person a chronic disease (2%). 10% of men did not take any of the selected substances.

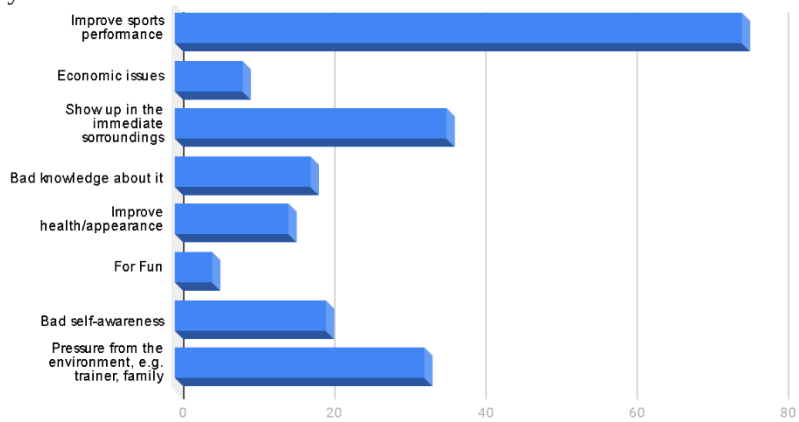

Fig. 13: Reasons for using prohibited substances by athletes according to the respondents
Source: Own research

All respondents claim that it is the desire to improve results at competitions that is the main reason for the doping phenomenon. Almost half of the respondents (48%) are inclined to show themselves to their loved ones. Many people (44%) also indicate the phenomenon of pressure from society, which may have a significant impact, especially on younger people. More than half of the respondents believe that doping preventive measures are insufficient, which translates into low awareness (26.7%) and little knowledge about this phenomenon (24%). 20% of respondents believe that the desire to improve health and appearance is a significant reason. Only 12% of people indicate economic issues, and 6.7% of respondents believe that play is the main motivator.

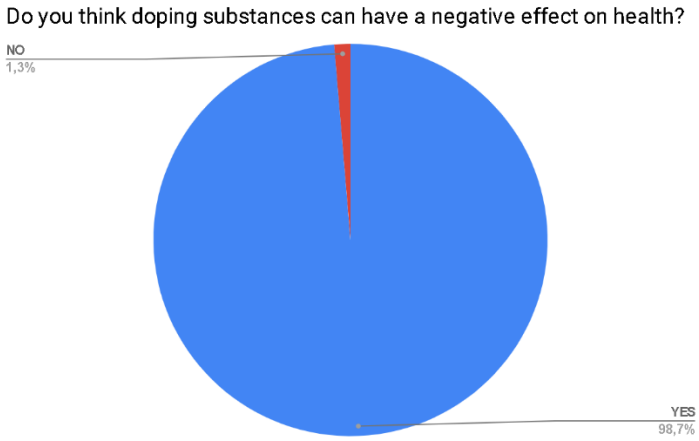

Fig. 14: Effect of doping on health
Source: Own research

To the question whether doping can negatively affect health, almost all respondents (98.7%) answered in the affirmative. Only in one case was the answer negative. The negative one was a male under the age of 18 with training experience ranging between 2 and 6 years. He also regularly takes part in various sports events (over 15 a year). At the same time, he disagrees with the statement that doping should be legal and believes that it is a serious problem in both professional and amateur sport. He also takes stimulants (coffee, energy drinks) and vitamins, but only during the period of malaise.

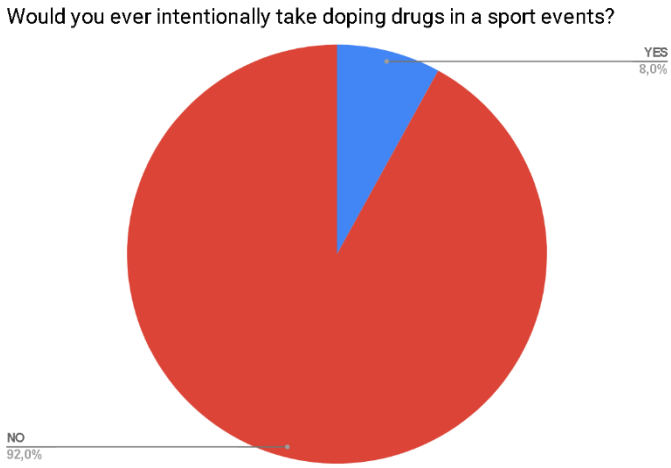

Fig. 15: Conscious use of doping
Source: Own research

Most of the respondents (92%) indicated that they would never consciously use doping. Six people (8%) said that this might happen in their case in the future. These responses were marked by men at the young age of 19 to 24 (3 responses) and the mean age of 25 to 34 (3 responses). The rest of the research concerns the answer to the problem of whether runners would choose to consciously use doping agents. The aim of the study was to determine in which case the respondents would consider the use of doping agents as justified.

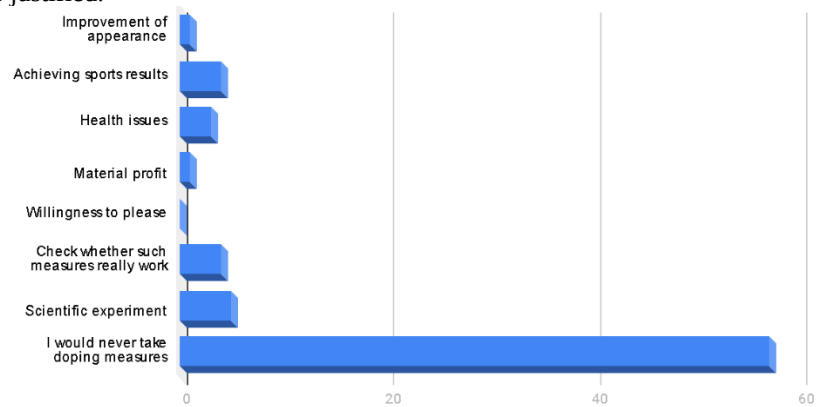

Fig. 16: According to the respondents, the situation is justified for adopting doping
Source: Own research

5 respondents (7.5%) said they would consider doping if they participated in a scientific experiment on the topic. Four people decided that in the event of an improvement in sports results, they would opt for such a solution. The same number of respondents said that they would adopt doping just to see if it actually works. Half of the respondents assured that they would use supportive measures if they had health problems. One person expressed a willingness to do so, if material issues and improving appearance were involved.

State of anti-doping protection in amateur sport

The next section of questions concerned anti-doping protection during mass runs. The respondents were asked to indicate the security features that they encountered during their starts:

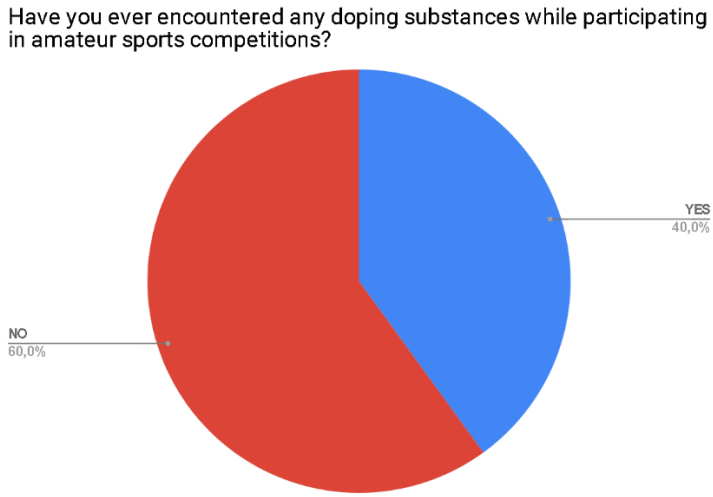

Fig. 17: Doping at running mass events
Source: Own research

More than half of the respondents replied that they had never personally experienced doping while participating in a competition. They constituted 60% of the respondents. A smaller group of 30 respondents (40%) replied that they had participated in such events. A large proportion of the surveyed women answered the question negatively. 64% of the surveyed women disagreed with this statement. On the other hand, 9 women (36%) stated that they had encountered this phenomenon. The situation was similar for men. On average, 3 out of 5 respondents answered negatively (58%). 42% of the respondents answered affirmatively.

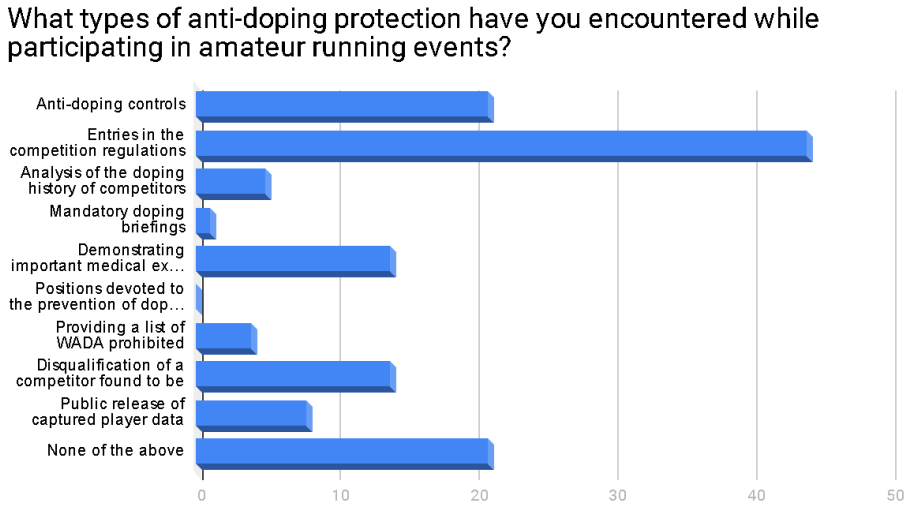

Fig. 18: Types of anti-doping protection
Source: Own research

Most of the respondents (58.7%) indicated that when reading the competition regulations, they found a point in it prohibiting the use of doping during competition. Compulsory anti-doping controls were indicated by 21 people (28%). The same number of people (28%) suggested that they had not encountered any type of collateral from the list. Then, points were marked regarding the disqualification of a competitor previously recorded for doping (18.7%) and those relating to showing medical examinations while being present at the professional office (18.7%). A few respondents (10.7%) said they found themselves in a situation where the data of a captured scammer had been made publicly available. The obligatory analysis of the competitor's past by the organizer before being allowed to start was met by 6.7% of the respondents. Four people (5,

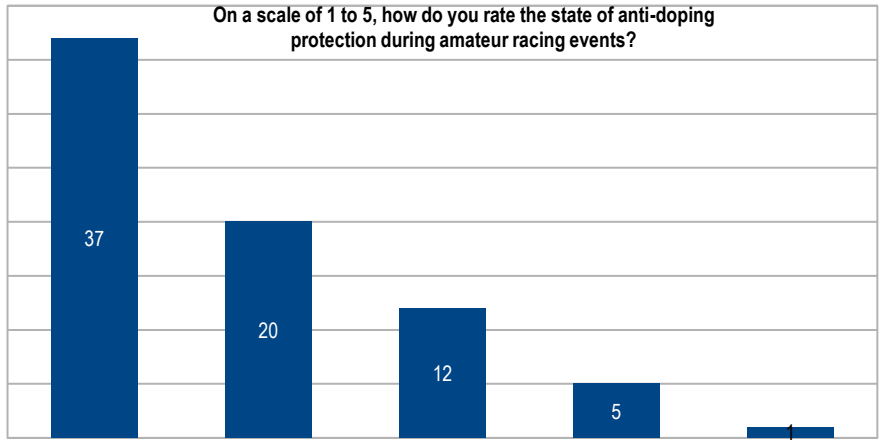

Fig. 19: State of anti-doping protection according to the respondents
Source: Own research

In order to determine the level of anti-doping protection during mass street runs, a 5-point rating scale was formulated, where 1 means a poor state of protection, and 5 - very good. Almost half of the respondents (49.3%) believed that doping prevention at competitions is definitely insufficient. They rated her condition at 1 point on a five-point scale. This phenomenon was rated 2 points by 20 respondents (26.7%). 16% of the respondents stated that doping prevention is sufficient (3 points). Five people assessed the state of anti-doping protection as 4 points (6.7%), and 1 person - 5 points (1.3%).

The problem of technological doping in amateur sport

The rest of the research concerned technological doping. It was examined what the respondents understood by this term and whether they believe that such an issue exists or will occur in the future:

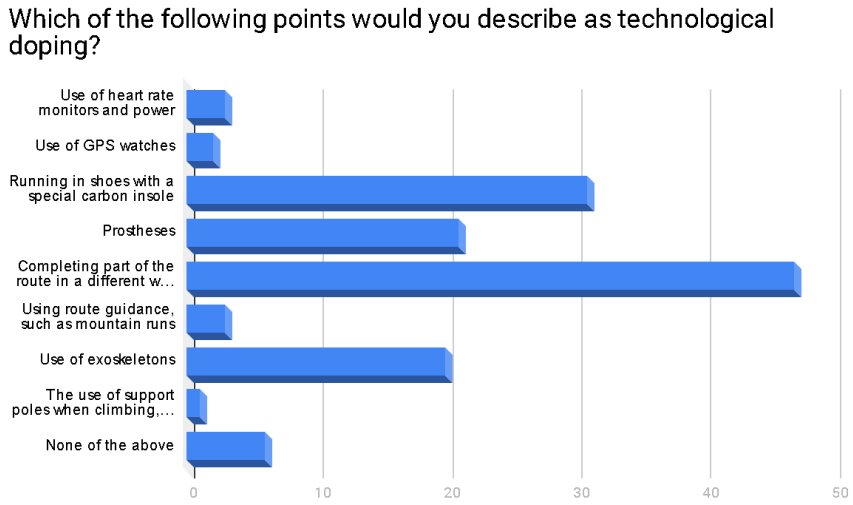

Fig. 20: Defining the concept of technological doping according to the respondents
Source: Own research

Most of the respondents (62.7%) considered covering part of the running route using another means of transport as technological doping. Running in shoes with carbon inserts such as Nike Vaporfly or Alphafly was indicated by 41.3% of respondents. Another group (28% of respondents) said that using prostheses could provide an unfair advantage. 16.7% of respondents agreed with the statement that exoskeletons can be used to ensure an advantage in sports competition. 4% of respondents indicated that the use of heart rate monitors and power measurements is a technological doping, and 2.7% of respondents chose this term for watches with GPS measurement. One respondent (1.3%) was reluctant to use climbing poles during mountain runs. 8% of people said.

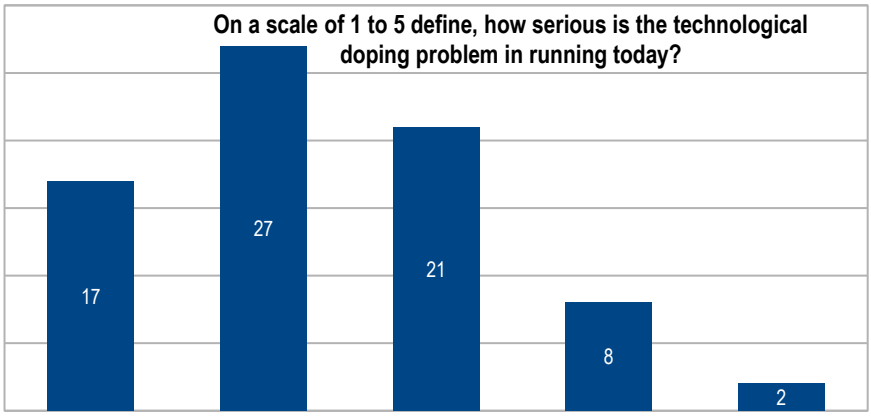

Fig. 21: The level of the problem of technological support according to the respondents
Source: Own research

For further research purposes, an assessment of the current occurrence of technological doping in amateur sport was formulated. Marking 1 point on the scale means that technological doping is currently not a threat, and 5 points means that such a phenomenon occurs and is a serious problem. More than half of the respondents do not consider technological doping a serious problem these days. 22.7% of the respondents decided to mark 1 point. 36% of the respondents voted for 2 points, and 26% of the respondents specified this problem as 3 points. Eight people (10.7%) rated the problem as significant, and two people (2.7%) rated the problem very serious (5 points on the rating scale).

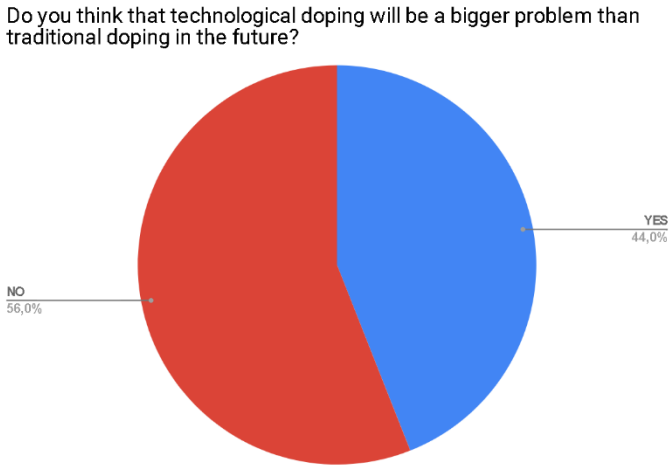

Fig. 22: The problem of technological support in the future according to the respondents
Source: Own research

Most of the respondents (56%) decided that technological doping in the future will not be as serious a problem as traditional forms of support. Less than half of the

respondents (44%) stated that technological doping in the future may be more dangerous than pharmacological doping.

Comments and comments from respondents

The last part of the survey was the part where the respondents could share their observations or express their opinions openly. All answers provided by the respondents are of great importance, therefore they will be quoted in full in this part of the work. Here are the feedback from runners coming up:

1. „*I believe that the carbon element in the sole of the shoe is not an element of technological doping. The shoe does not add energy, but minimizes waste, resulting in a better end result*."
2. *„Technological" cheering was and will be: lowering the weight of the shoe by various foams, various inserts improving and correcting movement .. prostheses. Right now, one of the producers has come out ahead of the crowd, and this is probably the reason why people paid more attention to it. Of course, legislation on permitted equipment must be introduced, but the development of technology must not be stopped either."*
3. *„Apart from the fact that doping in the amateur community is simply not mentioned and there are no obligatory tests as in the case of human resources, this problem is still there and as long as the organizers of mass runs do not want to pay attention to it, this problem will exist and a lot in we cannot do this."*
4. *„There is no sport without doping. The question is to what extent a given measure is permitted and to what extent is prohibited. Amateur sport is more and more popular so the appearance of doping in it is a natural consequence."*
5. *„Mass running for most runners is treated as fun, passion and recreation and they do not pay too much attention to these issues."*

Conclusions and summary

This publication addresses the issue of doping in amateur sport and the related problems. The main aim of the research was to check whether the doping problem also occurs in amateur sport. As a research group, amateur runners competing in mass street runs were used. In the research part, the knowledge about doping agents was additionally verified among the respondents and it was checked whether doping is a socially acceptable phenomenon. When analysing the research results, it can be stated that the respondents unambiguously identify the term doping with the use of prohibited pharmacological substances. This is not a mistake, but it is not entirely true. According to the definition of WADA, doping is any violation of at least one of the points specified in the regulations created by this institution. These points are not just doping. You can be suspended just by failing to show up for inspection or an attempt to destroy the sample. Technological doping is also listed there, but at present it is a problem mainly in cycling. For such a characterization of the doping phenomenon defined above is broad definition, she decided relatively a small number of people, which allows the conclusion that the respondents do not have full knowledge and awareness in this topic, which may lead to drawing wrong conclusions and accusations. It is worth adding that although the respondents were able to accurately indicate prohibited substances and substances, they mostly omitted the points regarding technological doping and the use of popular stimulants.(e.g. alcohol or caffeine),

banned in certain sports. The opinion of the respondents on the prevalence of doping in amateur running was not also unambiguous. Most people described this problem as occurring but not particularly significant in a sporting context. Some even described mass running as typical fun and decided that using doping in this environment, although inadvisable, does not harm anyone except the user. This is a misconception, because nowadays street racing can boast great popularity among the masses, but also large prizes, often financial, which, combined with the poor background of anti-doping control, gives a field for competitors using external, unauthorized support. Despite the large diversity of the surveyed group, more than half of the people assured that they had never experienced doping personally while participating in a competition. Although the respondents are not able to fully correctly indicate what can be considered doping and what can not, they agree that this phenomenon is harmful to health and should not occur in any form of sport. The vast majority of respondents assured that they would never consciously resort to unlawful means and methods. This shows that doping is not and will probably never be a universally accepted phenomenon, and even if someone questions its harmfulness in a sporting context., it at the same time indicates that the negative impact on health itself is the most important premise for its prohibition. All the people who indicated in the survey that they would decide to consciously use doping were men, which allows us to conclude that this gender is more exposed to this precedent. When analysing the results of the research, it can be seen that the male part of the society is more willing to take part in competitions and has a much greater willingness to compete than the female sex. These statements are confirmed in scientific research that touched upon similar issues. One of them is a study called "Habits of runners in Poland" conducted by PKO Bank Polski, which tried to assess how deeply running is rooted in life Poles. One of the aspects that was an important pillar these research, there was just a desire to participate in mass runs depending on gender. The results showed that men more often expressed such a desire (60%) than women (40%) (*Polacy lubią biegać/Poles like to run* 2020). The competitive factor itself can have a dominant influence on the doping phenomenon, because the final stage of competition is always victory. If conventional drugs are unsuccessful, there is a risk that some athletes may use doping agents to improve their performance. So it should come as no surprise that all interviewees agreed it exists relationship between the use of doping and the desire to achieve high sports results. This factor seems to be the main determinant of doping in society. Pressure from the environment should also be seen as significant. A large percentage of the respondents also mentioned the issues of low self-awareness. While in the context of generally available substances such as stimulants and stimulants, it can be agreed that they could be taken unconsciously, it is hard to believe that little knowledge about doping causes unintended consumption of e.g. anabolic agents. Rather, it can be concluded that excusing oneself by not knowing is convenient from the point of view of doping. A certain percentage of people certainly use doping for economic reasons. It is hardly surprising here residents of third world countries for whom victory in prestigious competitions may be the only chance to improve their living conditions. On the other hand, in developed countries, where the life index is at a high level, someone can reach for cheering just because of its existence, for pleasure or fun. Another problem in the fight against doping is the fact that anti-doping protection practically does not exist in mass racing. For most of the respondents, the only protection they encountered during the competition was only the relevant provisions in the regulations. A few people, probably taking part in the higher level competitions, indicated obligatory doping tests after the completed races. It does happen that the organizer will provide such control, but due to their high cost, they are often limited to 2 or 3 players for the entire stake. With the current

system of rewards, e.g. in terms of age, such random testing of several competitors is completely ineffective and does not contribute in any way to the fight against doping. An additional problem is that WADA has not introduced appropriate provisions for mass runs, which means that they are in the dead zone and theoretically only the organizer can determine whether doping will be allowed at his competition. It is also worth emphasizing that a large percentage of respondents, despite frequent participation in running events, never encountered any security of such events, so how can you expect a competitor to know the above-mentioned issues, since he has never had contact with them. The issue of technological doping now seems to apply only to sports where there is a strong emphasis on technology, such as car racing and cycling. The respondents think similarly, who described this problem as not very useful in the context of running. It is a fact that carbon insoles are only being tested and are only on the market for the second season. The price of such shoes is high, What causes that such footwear is not popular and for now you can only guess whether it really helps or also it is merely a placebo effect. Reliable research on this subject will be possible only in a few years, currently such equipment is not banned by any sports federation, so everything indicates that the phenomenon of technological doping in running is not yet present. It is hard to say what will happen in the future. The respondents are divided on this issue and although they believe that this problem may appear someday, it will never become more serious than traditional forms of doping.

Scale doping in amateur sport is impossible to define in the current system, so the aim of the work was only partially achieved. Anti-doping protection during mass events is insufficient, and the lack of support from national institutions means that smaller gears completely give up anti-doping controls. The lack of regular checks creates a problem and causes the collected data on doping in amateur sport to be based only on the subjective opinions of the respondents. Nevertheless, it can be considered that doping substances are commonly used both in competitive sports and in amateur sports. The most important fact, however, is that there is no social permission to use doping, and knowledge about the most dangerous doping agents is sufficient to deter potential doping users. Although the research project does not clearly answer all the hypotheses, it can be helpful in the further development of doping prevention. It is a material for analysis for pharmacological and technological doping, which may become the main topic of further research in the future.

The above publication was created in cooperation with the Department of Sport Science Nicolaus Copernicus University in Toruń and the Institute for Sport and Education Development in Warsaw (IRSiE). Studies by the Ministry of Sport and IRSiE provide a reliable source of information and up-to-date research that was necessary throughout the entire course of creating a job, and its results may be useful for further studies of doping projects by these institutions.

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