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ATTITUDES TOWARDS DOPING AS A PREDICTOR OF DOPING USAGE IN PROFESSIONAL AND NON-PROFESSIONAL ATHLETES

Abstract

Doping and the use of performance-enhancing drugs in athletes have become hot topics in recent years. There seem to be many factors that will influence whether one will opt to use a banned substance, and an athlete's attitudes toward doping is one of them. This study aimed to investigate the prevalence of doping usage in the athlete population of the city of Osijek and to evaluate the interconnection between athletes' attitudes toward doping and doping usage. A cross-sectional study with a specially designed questionnaire was done during the period from August to October 2019 among a convenient sample of athletes from the city of Osijek. The study showed that there were 3.7% of participants who said that they had been using doping in the past but only for the purpose of treatment. The study also showed that there is a positive interconnection between attitudes toward doping and doping usage. Furthermore, the study had revealed that competitiveness affects the doping attitude. It can be concluded that it is necessary to put more emphasis on changing attitudes toward doping and implementing additional educational programs in order to decrease doping usage in the athletes' population.

Keywords: attitudes, athletes, doping, questionnaire study, Osijek

Introduction

Doping in sport has been a focus of medical, physiology, and social science research in recent years, although the usage of doping in sport has a long history. Since the ancient Greco-Roman times, ergogenic aids in the form of natural products, bland chemicals, and animal extracts have been commonplace in the attempt to push human performances to the limit (Lippi, Franchini and Guidi, 2008: 95-107).

According to the definition of the World Anti-Doping Agency (WADA), doping should be regarded as any 'anti-doping rule violation,' which include one or more of the following: presence of a prohibited substance or its metabolites or markers in an athlete's bodily specimen; use or attempted use of a prohibited substance or a prohibited method; refusing, or failing without compelling justification, to submit to sample collection after notification, as authorized in applicable anti-doping rules or otherwise evading sample collection; violation of applicable requirements regarding athlete availability for out-of-competition testing, including failure to provide whereabouts information and missed tests that are declared based on reasonable rules; tampering, or attempting to tamper, with any part of doping control; possession of prohibited substances and methods; trafficking in any prohibited substance or prohibited method and administration or attempted administration of a prohibited substance or prohibited method to any athlete, or assisting, encouraging, aiding, abetting, covering up or any other type of complicity involving an anti-doping rule violation or any attempted violation (2015: 18-24).

The mission of the WADA is to lead a collaborative worldwide movement for doping-free sport, and its activities focus on the responsibilities given by the World Anti-Doping Code. One of these responsibilities is to publish an annual Prohibited List, which identifies the substances and methods prohibited in-competition and out-of-competition, as well as in particular sports. A substance or method shall be considered to be placed on the Prohibited List if the substance or method meets any two of the following three criteria: (1) medical or other scientific evidence, pharmacological effect or experience that the substance or method, alone or in combination with other substances or methods, has the potential to enhance, or enhances, sport performance; (2) medical or other scientific evidence, pharmacological effect or experience that the use of the substance or method represents an actual or potential health risk to the athlete; (3) WADA's determination that the use of the substance or method violates the

spirit of sport, described in the introduction to the World Anti-Doping Code (Heuberger and Cohen, 2019: 525-539).

Although the current estimations on the prevalence of doping in sports are elusive, as most investigative tools (e.g. results of anti-doping tests and anonymous surveys) do not possess unquestionable statistical power, the emerging scenario reflects large numbers still biased by a concerning underestimation. Regardless of the athletes involved in professional sports, who obviously represent the tip of the iceberg, it follows that the use of performance-enhancing drugs in the general population may be, in absolute terms, a sizeable problem as it is among the professional athletes, reflecting the ratio between the physically active young individuals in the population and the small number of professional athletes (Baron, Martin and Abol Magd, 2007: 54-59).

Drug misuse and abuse of medicaments have reached the proportion of a public health problem, not only for sportsmen but also for many young people and their health. Although most adults who use banned substances are collegiate or professional athletes, a wider range of younger individuals are using them, from casual sports and fitness participants to serious athletes who attend training camps and jockey for positions on competitive sports teams (Hampton, 2006: 607-608).

The significance of attitudes towards doping in the context of doping usage

According to Petroczi and Aidman (2009: 390-396), in the absence of objective information on the use of performance-enhancing drugs (PED), attitudes are often used as a proxy for doping behavior, assuming that those who use banned substances show greater leniency towards doping than those who stay clear of doping. Attitudes were also clear foci in behavioral models of doping that were developed to identify possible risk factors for this behavior (Morente-Sánchez and Zabala, 2013: 395-411). The significance of attitudes towards doping in the context of doping usage and anti-doping programs is confirmed by the statement of WADA that, in addition to the medical, analytical, and physiological investigation, anti-doping research should also include sociological, behavioral, and ethical studies of athletes' attitudes and beliefs towards the use of banned substances in sport (Morente-Sánchez and Zabala, 2013: 395-411). The interconnection between attitudes and behavior is very clearly explained by the "theory of planned behavior" which suggests that behaviors depend on the

individual's plan of actions towards a specific behavior (i.e. intentions), which is regulated by the individual's perceived behavioral control, subjective norms and attitudes (Ajzen, 1991: 179-211). Following this, Lucidi et al. reported that attitudes were the strongest predictors for the intention to use doping substances (2004: 133-148).

Taking into account all previously mentioned facts and the fact that the prevalence of doping usage among Croatian athletes is still not known, the aim of this study was to investigate the doping usage in the athlete population of the city of Osijek and to evaluate the interconnection between athlete's attitudes toward doping and doping usage.

Methodology

This cross-sectional study was conducted from August to October 2019 in a convenient sample of professional and non-professional athletes from the city of Osijek, Eastern Croatia. The study took place at the Occupational and Sports Medicine Office in Osijek and potential participants were recruited during their regular check-up exams by the specialist of occupational and sports medicine. The potential study participants received a written explanation about this study telling them about the study protocol and aims and were asked to participate in it on a voluntary basis, by filling out an anonymous questionnaire. The Ethical Committee of the Health Center Osijek approved the study (Ethical approval code: 03-530-20) and each participant filled out an informed consent before he/she filled-out an unidentified questionnaire. Altogether, 180 potential study participants were asked to participate in the study, and the overall response rate was 83.3% (150/180) since 30 participants refused to participate. Statistical analysis was performed on 135 questionnaires that were fulfilled in full, while 15 were discarded because they were incomplete.

The study was performed using an anonymous questionnaire that contained 49 questions: 5 questions on demographics (sex, age, the name of sport that participant plays, the level of professionalism in played sports – professional, semi-professional, non-professional, and the length of playing sports in years); 17 questions regarding the general attitudes towards doping; 2 questions regarding participants doping behavior in the past and currently and 25 questions regarding the orientation of athletes to sports achievements.

Attitude towards doping was defined as an individual's predisposition toward the use of banned performance-enhancing substances and methods

and was quantitatively measured by the Performance Enhancement Attitude Scale (PEAS) which was proposed by Petróczi (2007: 34). The PEAS consisted of 17 items on a six-point Likert-type scale (strongly disagree (1), strongly agree (6), and no neutral, middle point), and all 17 items were scored in the same direction. The total score ranged from 17 to 102 (Kim and Kim, 2017: 7). A high score means a permissive attitude toward doping, while a low score denotes an intolerant attitude (Petróczi, 2007: 34).

The doping behavior of study participants was assessed with 2 questions regarding the current use of and past experience with performance-enhancing substances as proposed by Petróczi (2007: 34). Each question had four possible answers scored as follows: “yes”-3 points; “yes-but only for the purpose of treatment”-2 points; “no”-0 points and “I don’t want to answer”-1 point.

The orientation of athletes to sports achievements was assessed by the Sport Orientation Questionnaire (SOQ) developed by Gill and Deeter (1988: 191-202). The SOQ is a multidimensional, sport-specific measure of individual differences in sport achievement orientation. The questionnaire contains 25 items that uniquely relate to one of three independent factors: (a) competitiveness, (b) winning, and (c) goals. Competitiveness is defined as “the desire to enter and strive for success in sport competition”. The desire to win in a sport situation is a sport-specific measure and not related to general individual achievement orientation. Goal orientation reflects an orientation to personal standards, regardless of the situation. Of the total 25 items, the competitiveness subscale consists of 13 items, whereas the winning orientation and goal orientation subscales contain 6 items each. Participants are asked to indicate how they usually feel about sport and competition on a five-point Likert scale that ranges from strongly agree to strongly disagree (1988: 191-202).

It took about 15 minutes to fill out the entire questionnaire and then participants were instructed to put these filled out forms in a specially designed box that was positioned in the waiting room area and could not be opened or seen through.

The Kolmogorov–Smirnov test was used to assess the data distribution normality; thereafter descriptive statistics were applied. Median and interquartile range were used for describing numerical data. Absolute and relative frequencies were used for describing categorical data. The Mann-Whitney U test and Kruskal-Wallis test were applied for the comparison of numerical variables. Fisher’s exact test was applied for the comparison of categorical variables. Spearman’s

correlation was applied to test the correlation between the numerical variables. Statistical significance level was set at $P < 0.05$. Statistical package Statistica for Windows 2010 (version 10.0, StatSoft Inc., Tulsa, OK, USA) was used.

Results

Characteristics of the study participants

The study included 135 participants whose questionnaires were fulfilled in full, 37.8% of males and 62.2% of females. Median age of all study participants was 24 years (interquartile range from 22 to 26 years). According to the sport that they were playing there was 29.6% of participants who played handball, 25.2% of participants who played volleyball, 17.8% of participants who played football; 15.6% of participants who played table tennis, 5.2% of participants who did kickboxing, 3.0% of participants who played basketball and 3.6% of participants who played other sports. Median length of playing sport among all participants was 7 years (interquartile range from 4 to 11 years). According to the level of professionalism in played sport, there were 8.9% of professional athletes, 43.7% of semi-professional athletes and 47.4% of non-professional athletes.

Prevalence of doping usage

According to the current doping usage, there was 99.3% of participants who stated that they currently are not using doping and 0.7% of participants who did not want to answer this question. According to past experience with doping usage, there was 90.4% of participants who stated that they never had personal experience with doping usage, 3.7% of participants who said that they had been using doping in the past but only for the purpose of treatment and 5.9% of participants who did not want to answer this question.

The study revealed that male athletes more frequently had past personal experience with doping usage (Fisher's exact test; $P = 0.001$) (Table 1).

Table 1. Athletes' past personal experience with doping usage according to sex

Sex	Past personal experience with doping usage N (%)			P*
	No	Yes, but only for treatment purposes	I don't want to answer this question	
Male	40 (78.5)	4 (7.8)	7 (13.7)	0.001
Female	82 (97.6)	1 (1.2)	1 (1.2)	

*Fisher's exact test

The study did not find a statistically significant difference in past personal experience with doping usage between professional, semi-professional, and non-professional groups of athletes (Fisher's exact test; $P=0.245$).

Athletes' general attitudes towards doping measured by the PEAS scale

Median value of all athletes' general attitudes towards doping according to the PEAS scale was 31.00 (interquartile range from 23.00 to 42.00). There was a statistically significant difference between male and female athletes according to their general attitudes towards doping measured by the PEAS scale (Mann-Whitney U test; $P<0.001$) (Table 2).

Table 2. Athletes' general attitudes towards doping measured by the PEAS scale according to sex

Athletes' general attitudes towards doping	Sex		P*
	Male	Female	
Median (Q1-Q3)	41.00 (25.00-55.00)	27.00 (22.00-37.00)	<0.001

*Mann-Whitney U test

The study did not show the statistically significant difference in general attitudes towards doping measured by the PEAS scale between professional, semi-professional, and non-professional groups of athletes (Kruskal-Wallis test; $P=0.797$).

The orientation of athletes to sports achievements assessed by the SOQ questionnaire

Table 3. shows the orientation of all athletes to sports achievements according to the SOQ questionnaire with its three subscales: competitiveness, win orientation, and goals orientation.

Table 3. The orientation of all athletes to sports achievements according to the SOQ questionnaire

Median (Q1-Q3)	Dimensions of the athlete's orientation towards sports achievements		
	Competitiveness	Win orientation	Goals orientation
	55.00 (45.00-60.00)	21.00 (18.00-25.00)	26.00 (22.00-29.00)

The study revealed that there was a statistically significant difference in the win orientation component of athletes' orientation towards sports achievements according to sex (Mann-Whitney U test; P=0.015) (Table 4).

Table 4. Athletes' orientation towards sports achievements according to sex of the athletes

Dimensions of the athlete's orientation towards sports achievements	Sex Median (Q1-Q3)		P*
	Male	Female	
Competitiveness	57.00 (40.00-61.00)	55.00 (50.00-60.00)	0.080
Win orientation	20.00 (14.00-23.00)	18.00 (22.00-25.75)	0.015
Goals orientation	28.00 (20.00-29.00)	26.00 (23.00-29.00)	0.250

*Mann-Whitney U test

The study also showed that there were statistically significant differences in all three dimensions of athletes' orientation towards sport achievements between professional, semi-professional, and non-professional groups of athletes (Table 5).

Table 5. Athletes' orientation towards sport achievements in professional, semi-professional, and non-professional group of athletes

Dimensions of athletes' orientation towards sport achievements	Group of athletes Median (Q1-Q3)			P*
	Professional athletes	Semi-professional athletes	Non-professional athletes	
Competitiveness	62.00 (55.25-65.00)	51.00 (40.00-57.00)	57.00 (50.25-61.00)	<0.001
Win orientation	25.00 (16.50-28.00)	18.00 (15.00-23.00)	23.00 (20.25-26.00)	<0.001
Goals orientation	28.00 (23.75-30.00)	24.00 (20.00-28.00)	28.00 (24.00-29.00)	0.001

*Kruskal-Wallis test

Interconnection between past personal experience with doping usage and athletes' general attitudes towards doping measured by the PEAS scale

The study showed that there was a statistically significant positive correlation between past personal experience with doping usage and athletes' general attitudes towards doping measured by the PEAS scale ($\rho=0.430$; $P<0.001$).

Interconnection between past personal experience with doping usage and athletes' orientation to sports achievements assessed by the SOQ questionnaire

The study showed that there was a statistically significant positive correlation between past personal experience with doping usage and athletes' competitiveness measured by the SOQ questionnaire ($\rho=0.233$; $P=0.007$).

The study did not find a statistically significant correlation between past personal experience with doping usage and athletes' win orientation measured by the SOQ questionnaire ($\rho=0.143$; $P=0.098$).

Finally, the study revealed that there was a statistically significant positive correlation between past personal experience with doping usage and athletes' goals orientation measured by the SOQ questionnaire ($\rho=0.237$; $P=0.006$).

Discussion

The present study revealed that doping usage exists among Croatian athletes although it is not highly prevalent. The prevalence of potential current and past experience with doping usage found in this study is similar to prevalence of such practice among Korean athletes (Kim and Kim, 2017: 7) and Ugandan athletes (Muwonge, Zavuga, and Kabenge, 2015: 37). On the other hand, some previous studies such as the study of Petróczi (2007: 34), the study of Moran et al. (2008), and the study of Uvacsek et al. (2011: 224-234) showed a higher prevalence of doping usage practice ranging from 7.5% to 14.6%. Doping usage was statistically more frequent among male athletes, which is in concordance with the results of other studies, such as the study of Wintermantel, Wachsmuth, and Schmidt (2016: 263-269) and the study of Elbe and Pitsch (2018: 28-32). This study did not find a difference in past personal experience with doping usage between professional, semi-professional, and non-professional groups of athletes, confirming that doping exists not only in professional sport, but also affects amateur athletes who are making increasing use of performance-enhancing drugs (Mazzeo et al., 2018: 1669-1677).

Median value of all athletes' general attitudes towards doping according to the PEAS scale in this study was 31.00, which is lower than values found in the study done by Kim and Kim (2017: 7) where these values in groups of Korean athletes ranged between 37.66 and 40.22. Following this result, it can be concluded that Croatian athletes have more intolerant attitudes towards doping in comparison to Korean athletes. Generally, it could be argued that athletes are aware of the fact that the use of doping constitutes cheating, but despite that, some of them still use banned substances. Considering the sex, this study showed that male athletes had been more permissive to doping in comparison to female athletes. This finding is in compliance with the results of a study done by Sas-Nowosielski and Budzisz (2018: 10-13) but is opposite to the results of a study done by Morente-Sánchez, Femia-Marzo, and Zabala (2014: 430-438), and a study done by Muwonge, Zavuga, and Kabenge (2015: 37) that did not find differences between male and female athletes' attitudes towards doping measured by the PEAS scale. This study did not show a statistically significant difference in general attitudes towards doping measured by the PEAS scale between professional, semi-professional, and non-professional groups of athletes, which reaffirms the fact that the phenomenon of doping in sport is not restricted to a small number of elite performers, but that it has expanded into

the amateur and recreational levels of sport where those athletes also sometimes show tolerant attitudes towards doping usage (Codella et al., 2019: 534).

The Sport Orientation Questionnaire (SOQ) (Gill and Deeter, 1988: 191-202) measures the different processes that people use to judge competence and evaluate success within a sport context. This instrument distinguishes between win, goal, and competitive sport orientations. Win and goal orientations reflect individuals' choices and responses during exercise and sport activities. Athletes who have the win orientation desire to win and avoid losing in sport; they evaluate success in comparison with the others. Those with a goal orientation focus on achieving personal goals in sport and evaluate success in comparison with themselves. Individuals holding either a win or a goal orientation are interested in performing well; however, these two orientations indicate different bases for evaluating one's performance. In contrast to win and goal orientations, competitive orientation strongly influences one's selection to participate in competitive sports. Individuals who are strongly oriented toward competition are motivated to join and seek achievement in competitive sport. The SOQ discriminates competitiveness, which is a component of any sport activity, from win and goal orientations (Jamshidi et al., 2011: 1161-1165). This study revealed that the median value of competitiveness in the study population was 55.00, while median values of win and goal orientations are 21.00 and 26.00, respectively. These results are comparable with the results of Jamshidi et al. (2011: 1161-1165) obtained for male athletes. This study further showed that there is a statistically significant difference in the win orientation component of an athlete's orientation towards sports achievements according to the sex, where male athletes had more expressed this component. The latter finding is in concordance with the study done by Jamshidi et al. (2011: 1161-1165), who also found that male athletes are more win oriented than female athletes. The present study also showed that there were statistically significant differences in all three dimensions of athletes' orientation toward sport achievements between professional, semi-professional, and non-professional groups of athletes where professional athletes had higher competitiveness and win orientation in comparison to non-professional and semi-professional athletes, and where goals orientation was lower in semi-professional athletes in comparison to professional and non-professional athletes. Latter findings can be explained by the fact that professional sport predominantly focuses on winning and financial rewards associated with victories and much less on the achievement on personal goals (Sarmiento et al., 2018: 1).

Athletes' doping attitudes are often used as a proxy for doping behaviors because those who use banned drugs have more permissive attitudes towards doping than those who never do (Bae et al., 2017: 52). This study also confirmed that more permissive attitudes towards doping usage are a good indicator of real doping usage in the past and this finding is in concordance with other similar studies summarized within the review done by Morente-Sánchez and Zabala (2013: 395-411).

The use of performance enhancements has been a problem in competitive sport for decades (Morente-Sánchez, Mateo-March and Zabala, 2013: e70999). Following that, this study had confirmed that past experience with doping usage is connected with higher PEAS scores, especially in the competitiveness domain, which had also been shown in a study done by Campian et al. (2018: 330-337).

There are several limitations in this study. The participants of this study have participated in the study on a voluntary basis and, thus, there is a possibility that some athletes who had used doping did not want to participate. Also, the sample size is relatively small.

Despite the mentioned limitations, this study also has several important strengths. First of them arises from the fact that the study included not only professional athletes, but also groups of semi-professional and non-professional athletes and this is very important, bearing in mind that doping usage is increasing in these groups of mainly young individuals. Besides that, the present study used validated and widely used research instruments such as the PEAS scale and SOQ questionnaire that enabled quality comparison with similar studies which had been done elsewhere.

Conclusion

This cross-sectional study with a specially designed questionnaire aimed to investigate the prevalence of doping usage in the athlete population of the city of Osijek and to evaluate the interconnection between athlete's attitudes toward doping and doping usage. The study was done during the period from August to October 2019 on a sample of athletes from the city of Osijek and showed that there were 3.7% of participants who said that they had been using doping in the past but only for the purpose of treatment. The study also showed that there is a positive interconnection between attitudes toward doping and doping usage. Furthermore, the study had revealed that competitiveness affects the attitude toward doping. In conclusion, it has been confirmed that doping exists not only

in professional sport, but that it also affects amateur athletes who are making increasing use of performance-enhancing drugs and because of all that doping is an important public health issue that concerns the whole society. Although actual doping behaviors are probably related to many factors, the attitudes towards doping usage of various groups of athletes may have implications for anti-doping education. Following all that, it is necessary to put more emphasis on changing attitudes toward doping and implementing additional educational programs in order to decrease doping usage in the athletes' population.

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STAVOVI PREMA DOPINGU KAO PREDSKAZATELJI UPORABE DOPINGA KOD PROFESIONALNIH SPORTAŠA I SPORTAŠA AMATERA

Sažetak

Doping i upotreba tvari za postizanje boljih rezultata kod sportaša postali su posljednjih godina jedna od gorućih tema. Čini se kako postoji mnogo čimbenika koji utječu na to hoće li se netko odlučiti konzumirati zabranjenu supstancu, a stav sportaša prema doping u jedan je od njih. Ciljevi ovog istraživanja bili su ispitati prevalenciju uporabe dopinga u populaciji sportaša grada Osijeka te ocijeniti povezanost između stavova sportaša prema doping u i uporabe dopinga. Ovo presječno istraživanje provedeno je pomoću posebno osmišljenog upitnika u razdoblju od kolovoza do listopada 2019. godine na prigodnom uzorku sportaša iz grada Osijeka. Istraživanje je pokazalo kako je u uzorku bilo 3,7% sportaša koji su prijavili korištenje zabranjenih supstanci u prošlosti no isključivo zbog liječenja. Istraživanje je također pokazalo kako postoji pozitivna povezanost između stavova prema doping u i uporabe dopinga. Nadalje, istraživanje je otkrilo kako naglašen natjecateljski duh kod nekog sportaša utječe na njegovu uporabu dopinga. Može se zaključiti kako je potrebno staviti veći naglasak na promjenu stavova prema doping u i provođenje dodatne edukacije kako bi se smanjila uporaba dopinga u populaciji sportaša.

Ključne riječi: stavovi, sportaši, doping, anketno ispitivanje, Osijek