

Full Length Research Paper

Anabolic steroids impact in self-efficacy of basketball and football adolescents players

Antonio J. Monroy Antón^{1*} and Gema Sáez Rodríguez²¹Universidad Autónoma de Madrid, Av. Filipinas, 16, Bajo B, 28003, Madrid, Spain.²Universidad de Alcalá, Madrid, C/Bellver, 1, Bajo B, 28039, Madrid, Spain.

Accepted 28 January, 2016

The objective of this paper is to determine the impact of anabolic steroids on the self-efficacy of basketball and football adolescent players. In order to discover that, a survey has been conducted in Madrid, Spain, with a sample of 216 football and basketball players (60.19% males and 39.81% females) with a mean age of 16.2. The questionnaire had five simple questions, and the results show that even without having used steroids, the players rated very high the possible impact they would have on their performance (confidence to play better against the opposite team 7.3, confidence to contribute positively to the team victory 7.0), even higher than an appropriate technical or physical training. These results suggest that, anabolic steroids are an important problem among adolescents, and educational programs to increase the knowledge of anabolic steroids are needed for this age group that is in clear risk. Information should come not only from the government and media, but also from coaches, teachers, trainers and parents.

Key words: Anabolic steroids, football, basketball, self-confidence, adolescent.

INTRODUCTION

Anabolic steroid usage by sportsmen is a serious health and ethical problem. However, rule violations are only highly publicized when international athletes are involved, while recreational athletes also using steroids to improve performance do not get in fact any attention from the media. Numerous studies indicate that steroid usage often starts in adolescence (Anderson et al., 1988; DuMitru and Windsor, 1989; Chillag et al., 1992; DuMitru et al., 1992; Bahrke et al., 1993; Alongi et al., 1995; DuRaunt et al., 1995; Escobedo et al., 1995), so this group of population is at risk. Two-thirds of the users of steroids normally start around the age of 17 (Johnson, 1990; Broderick et al., 1993). A person without the correct information can consume these substances seeking higher performance without worrying or even knowing about their negative effects. This risk is even higher when talking about adolescents that normally do not have complete information on this issue. It is therefore important to know the attitudes that young people

practicing sport have in relation to anabolic steroids. Since consumption in this sector of the population is not very high, between 1 and 12% (Anderson et al., 1988; DuMitru and Windsor, 1989; Dumitru et al., 1992; Chillag et al., 1992; Bahrke et al., 1993; Broderick et al., 1993; Escobedo et al., 1995; Alongi et al., 1995; DuRaunt et al., 1995; Wroble et al., 2002), and would not be ethical to check the actual physiological effects, that would occur with this consumption, this paper examines the potential effect that adolescents playing football and basketball believe that steroids would have on their levels of self-efficacy, that is, in a strictly psychological level. Previous studies (Dumitru et al., 1992) reported that, when adolescent users were questioned as to why they were using anabolic steroids, 64% stated to increase their strength; 48% to increase their size; 44% to improve their physical appearance; and 17% because their peers were users. Gray (1990) indicates that, in general, they might use steroids to enhance performance.

However, no survey has been conducted in which the users are asked about one of the potential effects of anabolic steroids, which is to increase the levels of perceived self efficacy. Generally, when speaking of self efficacy, it is done in a concrete sense, referring to a person's

*Corresponding author. E-mail: antonio.monroy@uam.es. Tel: +34609588782. Fax: +34915341035.

confidence in their ability to perform a specific task, either pass a test, to solve a problem or get a good performance on a sports test. However, some authors consider self-efficacy in a broad sense, understanding the general self-efficacy as a global concept that refers to a stable belief that an individual has on their ability to properly handle a wide range of stressful situations of everyday life. Within this last line of research, the General Self-Efficacy Scale (Baessler and Schwarzer, 1996) assesses the stable sense of personal competence to effectively manage a variety of stressful situations. Taking self-efficacy in the specific sense referred to, it seems clear that the expectations of the individual can influence its performance, since they determine the motivation, the energy expected to employ in the task, and so on. Individuals with low self-efficacy expectations also tend to have low self-esteem and a negative assessment of their capabilities (Bandura, 1977; Bandura, 1992; Sáez, 2008). Perception of self-efficacy makes easier cognitions regarding one's abilities, acting these thoughts as motivators of action to be taken. Regarding the latter, people with high self-efficacy perception choose challenging tasks, put higher goals and persist more in their purposes (Sanjuán et al., 2000). By contrast, if a person does not feel that he is able to face a particular task, he will not do it, even when having the necessary skills (Rueda et al., 2005; Casis and Zumalabe, 2008).

Although Bandura's theory was initially proposed for the field of clinical psychology and in particular, of treating anxiety, it soon expanded and was applied to other fields among which is the physical activity and sport. Precisely in the field of sport, some authors have demonstrated the positive correlation between self-efficacy and athletic performance (Weinberg et al., 1981; Feltz, 1982; Weiss et al., 1989; Miller, 1993; George, 1994). Others, however, deny it (Vancouver et al., 2002). Among the sports in which a positive correlation has been obtained, mainly individual sports such as swimming (Miller, 1993), weightlifting (Ness and Patton, 1979) or fighting (Gould et al., 1983) can be found. Among team sports, this correlation has been appreciated, for example, in volleyball (Alexander and Krane, 1996). Similarly, there have been studies attempting to correlate the perceived self-efficacy to motivation for practicing sport, obtaining results that deny this relationship (Joloy, 2006) and others that defend its existence (Balaguer et al., 1995; Reigal and Videre, 2010).

Bandura (1977) states that self-efficacy is influenced through four principal sources of information: performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal. Subsequently, other authors have added different factors such as emotional state (Maddux and Meier, 1995; Treasure et al., 1996) and imaginal experiences (Maddux, 1995), of which Bandura (1997) refers to as cognitive self-modelling. Among all these factors, the usage of anabolic steroids can clearly influence the level of emotional arousal, not

only for its direct effects but also because of the placebo effect it may have in the player, who is likely to feel greater levels of efficacy by the mere fact of consuming them. This placebo effect is the one this paper tries to find out, without the need for a real test but simply through the answers of adolescent players that, without consuming steroids, express their beliefs about them. The work focuses on adolescents playing basketball and football.

MATERIALS AND METHODS

One of the difficulties of this kind of survey with adolescents under 18 years is the achievement of parental permission to perform it. This is the reason why it was decided to deliver the questionnaire during the weekend matches due to a higher rate of parents' attendance, and only to those players whose parents were attending the match and once both they and the adolescent agreed to sign the consent form. It was guaranteed in writing to the respondents confidentiality of their answers and their personal data. They were also informed about the object of the study and the fact that, when filling out the questionnaires, they voluntarily agreed to participate in the survey.

The second problem of these surveys is the possibility of biasing the results due to an inadequate understanding of some concepts of the questionnaire. Because of this reason, the items were written in a very simple language so that there were no understanding problems. The questionnaire was distributed in November and December 2010, in a total of 36 matches (50% football and 50% basketball). A pilot study was done in October 2010 among high school students of two schools in Madrid, to check that the questions were understood properly and that the time required to fill in the questionnaire was no longer than 3 min. The sample was 216 people.

Questionnaire

The questionnaire was developed by a group of experts during the month of September 2010, and the final version had only an initial general identification part and five main questions. The initial part consisted only in the basic demographic information (age, sex, etc.). The second part included the following questions:

Question 1: In case you used anabolic steroids, would you be more confident than now, that you can play well against the opposite teams?

Question 2: In case you used anabolic steroids, would you be more confident than now, that you can play at your best level?

Question 3: In case you used anabolic steroids, would you be more confident than now that you can contribute positively to your team victory?

Question 4: How do you rate the physical training received in the last three months?

Question 5: How do you rate the technical training received in the last three months?

The questionnaire was completed by the players after the match ended. Even with that, developed questionnaires were brief and simple to interfere, as little as possible in the work of the trainer at the end of the game. To evaluate the feelings of the adolescents in relation to self-efficacy, they were asked to answer these five questions with a probability scale of 11 points from 0 (not confident) to 10 (completely confident). The hypothesis aims to analyze how

steroids consumption can influence their level of self-confidence.

The first three questions were adapted from the previous study by Vargas-Tonsing (2009) who studied the effect in self-efficacy of pre-game football coaches speeches, and the one designed and used by Gray (1990) in relation with anabolic steroids knowledge and attitudes. The last two were made as control questions to evaluate the possible improvement in perceived self-efficacy due to other different factors. Other studies (Weiss et al., 1989; George, 1994; Martin and Mushett, 1996; Geisler and Leith, 1997) had used similar methods to measure self-efficacy scales from one to four objects, and completing the survey twice. Chi-squared tests were used to determine statistical significance where appropriate.

RESULTS

The characteristics of the 216 participants who completed the questionnaire were the following. The ages varied between 14.1 and 17.7 years old. The average age was 16.2 and SD=0.7. By gender, a total of 130 males (60.19%) completed the questionnaire, while 86 females (39.81%) did it. Questions 1 and 3 had a more than average mean, while question 5 is the one with the lowest average value. In fact, questions 4 and 5 had been incorporated to determine whether the origin of the improvement in the overall indicator of confidence comes from the potential use of steroids or from other factors, such as the physical or psychological improvement and the study reports negative results in this test. The variability represented by the standard deviation of the data is 1.3, and the overall mean is 6.7. The survey was completed by 100 basketball players and 116 football players. There were no significant differences found, depending on the sport they practised. The only significant gender difference was that, males showed slightly higher values in question 1 (7.6 vs. 7) (Table 1).

DISCUSSION

This study was undertaken to examine the view of 14 to 18 year-old youth sports participants toward anabolic steroids and self-efficacy. Very little attention has been paid to this matter in comparison to other aspects of the consumption of steroids, and this is possibly the first study to examine this. Significantly, males (7.6) believed more than females (7), that steroids would enhance their capacity to face the rivals, while both groups thought that steroids would make them play nearer their best level and contribute positively to the team performance. This is consistent with previous studies analysing the beliefs of other groups as pre-adolescents (Wroble et al., 2002), and appears to show a tendency toward greater risk-taking behaviors in the males in this population.

The high values obtained for the three main questions reveal that, Spanish adolescents have a clear belief that steroids would improve their performance and show the necessity to start a policy of prevention and information only for its direct effects but also because of the placebo

Table 1. Results in a 0 to 10 scale.

	Mean	SD	Min	Max	n
Q. 1	7.3	1.2	2	10	216
Q. 2	6.5	1.1	2	9	216
Q. 3	7.0	1.2	3	10	216
Q. 4	6.5	1.4	1	9	216
Q. 5	6.1	1.3	1	9	216
Total	6.7	1.3	1	10	216

for this age group. Educational resources should be available to them and reach a larger number of players than now. Their belief that steroids will improve their capacity to play better increases not only the level of self-efficacy but also the risk of consumption.

In 1989, only 50% of pre-adolescents have had steroid side effects explained to them, and this percentage increased to 64% a few years later (Wroble et al., 2002). It is not acceptable that a decade after the situation in a developed country remains with almost no changes or perhaps, is even worse. This could be a sign that both the government and the media are not putting in practice the campaigns needed to avoid the increase in consumption and not only the government, but also parents, coaches, teachers and any other professionals in touch with adolescents need to take a more active role in this education about the effects of anabolic steroids (Cordente et al., 2008). Nowadays, inappropriate sources of information on anabolic steroids are available to them, and so they might not fully understand the negative effects associated with steroids. Among these effects, it is not only the side effects, but also other high-risk behaviors such as illicit drug use, unprotected sex and illegal behaviors (Ashworth et al., 1993; DuRaunt et al., 1995). In his age, the possibility to experiment with something they do not understand is even higher than when they end adolescence, so it is crucial that they have sufficient knowledge in order to avoid this problem.

One of the limitations of this study is that, it only involved football and basketball players. Prevalence of anabolic steroid use has historically been higher in athletes than non-athletes (Tanner et al., 1995), and it has also been higher in other sports like weightlifting, cycling or track and field. A study including both athletes and non-athletes, or focused in different sports, may show different results than described here. Another limitation is that the survey was conducted only in Madrid, Spain. Each country has a different policy regarding steroids, being more or less flexible, so results could be different if it was conducted in a different country.

Conclusion

Even though steroid consumption is very low among

adolescents, their belief that it would increase their levels of self-efficacy is quite dangerous and a serious problem. It has been demonstrated that football and basketball players rate very high the “good” effects of steroids in relation with their performance, even without having used them, and perhaps this is the main problem: the lack of real and complete information about the negative effects which creates inappropriate attitudes towards the use of anabolic steroids.

ACKNOWLEDGEMENT

This study was funded in part by the Centro de Evaluación y Valoración de la Actividad Física in Madrid, Spain.

REFERENCES

- Alexander V, Krane V (1996). Relationships among performance expectations, anxiety, and performance in collegiate volleyball players. *J. Sport Behav.*, 19: 246-266.
- Alongi C, Miller DW, Tanner SM (1995). Anabolic steroid use by adolescents: prevalence, motives, and knowledge of risks. *Cl. J. Sports Med.*, 5: 108-115.
- Anderson WA, Buckley WE, Friedl KE, Streit AL, Wright JE, Yesalis CE (1988). Estimated prevalence of anabolic steroid use among high school seniors. *J. Am. Med. Assoc.*, 260: 3441-3445.
- Ashworth CS; DuRaunt RH, Newman C, Rickert VI, Slavens G (1993). Use of multiple drugs among adolescents who use anabolic steroids. *N. Engl. J. Med.*, 328(13): 922-926.
- Baessler J, Schwarzer R (1996). Evaluación de la autoeficiencia: adaptación española de la escala de autoeficacia general. *Ansiedad y Estrés*, 2: 1-8.
- Bahrke MS, Kennedy NJ, Kopstein AN, Yesalis CE (1993). Anabolic-androgenic steroid use in the United States. *J. Am. Med. Assoc.*, 270: 1217-1221.
- Balaguer I, Escartí A, Villamarín F (1995). Autoeficacia en el deporte y en la actividad física: estado actual de la investigación. *Rev. Psic. Gen. Appl.*, 48: 139-159.
- Bandura A (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychol. Rev.*, 84: 191-215.
- Bandura A (1992). Exercise of personal agency through the self-efficacy mechanism. In Schwarzer R (Ed) *Self-efficacy: Thought control of action*, Hemisphere, Washington, pp. 3-38.
- Bandura A (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Broderick P, Pickell G, Radakovich J (1993). Rate of anabolic-androgenic steroid use among students in junior high school. *J. Am. Board Fam. Pract.*, 6(4): 341-345.
- Casis L, Zumalabe JM (2008). *Fisiología y psicología de la actividad física y el deporte*. Barcelona: Elsevier.
- Chillag S, Elliot D, Whitehead R (1992). Anabolic steroid use among adolescents in a rural state. *J. Fam. Pract.*, 35(4): 401-405.
- Cordente CA, García Soidán P, Sillero M (2008). ¿Tienes los padres responsabilidad en la salud presente y futura de sus hijos adolescentes? *Revista Internacional de Derecho y Gestión del Deporte*, 1:36-48.
- Dumitru D, Komoroski EM, Rickert VI, Windsor R (1992). Adolescent body image and attitudes to anabolic steroid use. *Am. J. Dis. Child.*, 146: 823-828.
- Dumitru D, Windsor R (1989). Prevalence of anabolic steroid use by male and female adolescents. *Med. Sci. Sports Exerc.*, 270: 494-497.
- DuRaunt RH, Emans SJ, Faulkner AH, Middleman AB, Woods ER (1995). High-risk behaviors among high school students in Massachusetts who use anabolic steroids. *Pediatrics*, 96: 268-272.
- DuRaunt RH, Escobedo LG, Heath GW (1995). Anabolic-steroid use, strength training, and multiple drug use among adolescents in the United States. *Pediatrics*, 96: 23-28.
- Feltz DL (1982). Path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behaviour. *J. Pers. Soc. Psychol.*, 42: 764-781.
- Geisler GWW, Leith LM (1997). The effects of self-esteem, self-efficacy, and audience presence on soccer penalty shot performance. *J. Sport Behav.*, 20: 322-337.
- George TR (1994). Self-confidence and baseball performance: A causal examination of self-efficacy theory. *J. Sport Exerc. Psychol.*, 16: 381-399.
- Gould D, Feltz D, Horn TS, Weiss MR (1982). Reasons for discontinuing involvement in competitive youth swimming. *J. Sport Behav.*, 5: 155-165.
- Gray M. (1990). Anabolic steroid survey: study group - 10 to 14 year-old youth sports participants. Dissertation at American College of Sports Medicine, Salt Lake City, Utah.
- Gould D, Horn TS, Spreeman J (1983). Competitive anxiety in junior elite wrestlers. *J. Sport Psychol.*, 5: 58-71.
- Johnson MD (1990). Anabolic steroid use in adolescent athletes. *Ped. Cl. North. Am.*, 37: 1111-1123.
- Joloy E (2006). Autoeficacia y motivación en el deporte en jóvenes universitarios. *Lecturas, Educación Física y Deportes*. Retrieved September 27, 2010, from <http://www.efdeportes.com/efd92/autoef.htm>.
- Maddux JE (1995). Self-efficacy theory: An introduction. In Maddux JE (Ed) *Self-efficacy, adaptation, and adjustment: Theory, research and application*, Plenum Press, New York, pp. 3-33.
- Maddux JE, Meier LJ (1995). Self-efficacy and depression. In Maddux JE (Ed) *Self-efficacy, adaptation, and adjustment: Theory, research and application*, Plenum Press, New York, pp. 143-172.
- Martin JJ, Mushett CA (1996). Social support mechanisms among athletes with disabilities. *Adapt. Phys. Activ. Quart.*, 13: 74-83.
- Miller M (1993). Efficacy strength and performance in competitive swimmers of different skill levels. *Int. J. Sport Psychol.*, 24: 284-296.
- Ness GR, Patton RW (1979). The effects of beliefs on maximum weight lifting performance. *Cogn. Ther. Res.*, 3: 205-211.
- Reigal R, Videra A (2010). La autoeficacia general y su relación con la intención de practicar actividad física en la adolescencia. *Lecturas, Educación Física y Deportes*, 143. Retrieved September 27, from <http://www.efdeportes.com/efd143/autoeficacia-general-y-actividad-fisica.htm>.
- Rueda B, Pérez-García AM, Bermúdez J (2005). Estudio de la competencia percibida a partir de sus dos componentes: expectativa de autoeficacia y expectativa de resultados. *Rev. Psicol. Gen. Appl.*, 58: 75-87.
- Sáez Rodríguez G (2008). La motivación en los distintos niveles y categorías en los deportes colectivos. *Revista Internacional de Deportes Colectivos*, 1: 19-29.
- Sanjuán Suárez P, Pérez García AM, Bermúdez Moreno J (2000). Escala de autoeficacia general: datos psicométricos de la adaptación para población española. *Psichotema*, 12: 509-513.
- Treasure DC, Monson J, Lox CL (1996). Relationship between self-efficacy, wrestling performance, and affect prior to competition. *Sport Psychol.*, 10: 73-83.
- Vancouver JB, Thompson CM, Tischner EC, Putka DJ (2002). Two studies examining the negative effect of self-efficacy on performance. *J. Appl. Psychol.*, 87: 506-516.
- Vargas-Tonsing TM (2009). An exploratory examination of the effects of coaches' pre-game speeches on athletes' perceptions of self-efficacy and emotion. *J. Sport Behav.* 69: 15-25.
- Weinberg RS, Gould D, Yukelson D, Jackson A (1981). The effect of pre-existing and manipulated self-efficacy on a competitive muscular endurance. *J. Sport Psychol.*, 4: 345-354.
- Weiss MR, Wiese DM, Klint KA (1989). Head over heels with success: The relationship between self-efficacy and performance in competitive youth gymnastics. *J. Sport Exer. Psychol.*, 11: 444-451.
- Wroble RR, Gray M, Rodrigo J (2002). Anabolic steroids and pre-adolescent athletes: prevalence, knowledge, and attitudes. *Sport J.*, 5(3):1-8