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Short Communication

Knowledge, attitudes and behaviours on doping and supplements in young football players in Italy

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Introduction

The use of methods among players to improve physical performance is as old as the history of sports itself and has been a feature of human competition ever since.¹ Although the problem of doping in sports is mainly associated with players who compete at high levels, the problem seems to be spreading to lower levels.² Since 2004, the World Anti-Doping Agency (WADA) has produced an annually updated code and related documents that outline official international anti-doping standards. Two of the following three criteria must be met for a substance or method to be included on the prohibited list: i) the substance must have been shown to have, or have the potential to, enhance sport performance; ii) it represents an actual or potential health risk to the athlete; and iii) it violates the spirit of sport described in the introduction to the code.³

Studies concerning children and adolescents report a doping prevalence between 3 and 5%; in adult athletes, doping

prevalence has been estimated to be 5–15%.⁴ In addition, most studies reported that over half of amateur, emerging and elite players use nutritional supplements.⁵ Surveys found in the literature do not report differences between age and gender in relation to the assumption of these substances. Therefore, this study sought to investigate knowledge, attitudes and behaviours of young amateur players about doping and nutritional supplements in sport.

Amateur football players, residing in three Italian regions (Campania, Lazio, Sardegna), were interviewed in terms of knowledge, attitudes and behaviour towards doping (growth hormone, anabolic steroids) and the use of dietary supplements (amino acids, creatine). The players were recruited in football schools randomly selected from the list of qualified schools of the FIGC (Italian Football Federation), and their participation was on voluntary basis. The research was approved by the Ethical Committee of the Sapienza University of Rome; each participant provided informed consent, and research participation permission was additionally obtained from each participant's parent or legal guardian for players of less than 18 years.

The survey was carried out through the administration of questionnaires by the authors of the present study. The questionnaire, previously validated in pilot studies,^{6,7} includes i) sociodemographic information (age, gender, educational level, place of residence, types of sport practiced and team roles, amount of time dedicated to sport activities/week, health issues during sport practice); ii) attitudes and opinions influencing sport participation (importance of winning in sport, reasons for winning, use of drugs to improve performance and opinions about self-image); iii) views, knowledge and behaviour regarding doping (growth hormone, anabolic

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steroids), the use of supplements (amino acids, creatine) and medical visits for athletes.

Sociodemographic characteristics

A total of 550 questionnaires were distributed and 423 amateur soccer players answered (76.91% response rate). They are ≤ 15 and 16–18 years old (53% and 47% respectively), and the male gender prevails (94.3%). The majority resides in Lazio Region (54.1%), attends senior high school (61.5%) and affirms coaching for ≥ 8 h/week (43%). Most of the players practiced other sport (55.8%) and dedicated more than eight hours a week to the physical activity (43%).

There are significant gender and age differences: 187 (46.9%) of males practiced exclusively soccer, contrarily for all the 24 females in the sample who were engaged in other sports ($P \leq 0.001$). Football was the main sport especially for boys ≤ 15 years old (49.6%) compared to the 16–18s (38.2%; $P = 0.02$).

Hours dedicated to sport differed by gender: all girls (100%) declared less than 8 h/week, while 45.6% of boys affirmed playing for ≥ 8 h/week ($P \leq 0.001$).

Opinions and attitudes

Amateur footballers who admitted using amino acids or creatine during sport activities were 50 (12.5%) males, mostly 16–18s (16.6%; $P = 0.004$) and 30% of them followed their coach's advice ($P = 0.04$). Before assumption, information on side-effects of nutritional supplements will be gathered only by male gender (31.3%; $P = 0.001$) and players aged 16–18 years (35.7%; $P = 0.01$). Those who won't take supplements anyway are above all females (100%) and also 237 (59.4%) males ($P \leq 0.001$); the majority were aged ≤ 15 years (68.3%; $P = 0.003$). Up to 87.9% of the ≤ 15 year olds and 80.9% of the senior players consider coaching more hours per week important for muscle strength and mass increment ($P = 0.05$). Yet, the inclusion of nutritional supplements in a dietary regimen is still necessary according to 16.6% of the 16–18s and 7.1% of the younger players ($P = 0.002$).

Psychological aspects influencing participation in sport

Winning in sport is important for 83.5% of males and 54.2% of females ($P \leq 0.001$). For 41.4% of boys winning at all cost is crucial, whilst 62.5% of girls disagreed ($P = 0.004$). According to 42.4% of boys and only one girl, winning is also important to satisfy their coach, friends or family ($P \leq 0.001$).

The amateur players' self-image is particularly high for all girls in the study and for 95.5% of those 16–18 years old ($P = 0.02$). In addition, more females declared to be highly reputed by their coach compared to males (62.5% vs 57.9% respectively; $P = 0.05$).

Knowledge about doping

Doping is considered a risky practice for athletes mostly by males (32.8% vs 12.5% females; $P = 0.04$) and the majority knew that medical examinations are mandatory for

agonistic players (95.5% males vs 75% females; $P \leq 0.001$). Most amateur footballers couldn't define anabolic steroids, especially 56.4% of males and 61.2% of players ≤ 15 years ($P \leq 0.001$). Consequently, over 50% of the sample was not aware of their side-effects. Creatine intake is considered as doping mostly by males (28.1% vs 4.2% females; $P = 0.01$). Protein intake is defined as doping by players of ≤ 15 years compared to the seniors (5.4% vs 1%; $P = 0.01$); the use of growth hormone is doping for the 16–18 age group compared to younger players (44.2% vs 29%; $P = 0.001$).

Regression analyses

Winning resulted particularly important for male gender [OR = 4.27 (95% CI 1.83–9.94); adjusted OR = 2.56 (95% CI 1.07–6.14)] (Table 1) and for those who spend ≥ 8 h/week in sport activities [OR = 3.52 (95% CI 1.95–6.34); adjusted OR = 3.29 (95% CI 1.79–6.04)]. Besides, amateur players 16–18 years old seem to be less competitive in sport [OR = 0.57 (95% CI 0.35–0.94); adjusted OR = 0.55 (95% CI 0.33–0.92)] compared to the ≤ 15 age group as reference. Players with high self-esteem [OR = 0.89 (95% CI 0.36–2.22); adjusted OR = 1.03 (95% CI 0.39–2.71)] and highly reputed by their coach [OR = 0.81 (95% CI 0.49–1.34); adjusted OR = 1 (95% CI 0.54–1.84)] are less inclined to win in sport compared to those with low self-image. Finally, footballers highly regarded by friends are definitely less inclined to consider winning as an important matter in sport [OR = 0.74 (95% CI 0.42–1.31); adjusted OR = 0.73 (95% CI 0.40–1.32)].

The results for the score of knowledge showed an OR of 2.16 (95% CI 1.26–3.71; $P = 0.005$) for the footballers 16–18 years old and a worse knowledge for the players of the South Italy with an OR of 0.09 (95% CI 0.04–0.21; $P < 0.001$).

Table 1 – Results of the binary regression analyses. Dependent variable: winning in sport is important.

Covariates	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender		
Female (reference)	1	1
Male	4.27 (1.83–9.94)	2.56 (1.07–6.14)
Age		
≤ 15 years (reference)	1	1
16–18 years	0.57 (0.35–0.94)	0.55 (0.33–0.92)
Hours dedicated to sport/week		
<8 h (reference)	1	1
≥ 8 h	3.52 (1.95–6.34)	3.29 (1.79–6.04)
Self-image		
Low self-esteem (reference)	1	1
High self-esteem	0.89 (0.36–2.22)	1.03 (0.39–2.71)
Low regard by coach (reference)	1	1
Highly regarded by coach	0.81 (0.49–1.34)	1 (0.54–1.84)
Low regard by friends (reference)	1	1
Highly regarded by friends	0.74 (0.42–1.31)	0.73 (0.40–1.32)
Hosmer and Lemeshow Test = 0.947		

Conclusion

The use of drugs to enhance physical performance has been observed for thousands of years. Today individuals, including adolescents, continue to employ a wide variety of drugs in the hope of improving their athletic performance. In our study, we found that 6.5% of the males, but none of the females, consider personal use of substances to enhance sport performance.

A previous paper on players aged 15–19 years, showed links between prohibited substance use, gender and number of hours of practice a week.⁸ The present study not only confirms these results, but also provides additional information regarding the importance of the intention to use doping agents.

Several factors impact on players' decision to take substances to provide a performance advantage. Some of these factors are well articulated by players themselves, such as low self-image and winning in sport to satisfy their coach, friends or family expectations. The females in our study have higher self-image, less hours of practice/week and, therefore, were less inclined to consider winning in sport as a means to be accepted and respected in the society.

We found a gap in knowledge about side-effects, especially of anabolic steroids. The study by Laure et al.⁸ showed comparable results, illustrating that 27% of 18-year-old male athletes are convinced that doping substances can be consumed without potential health risks if observed by physicians.

Several professional figures, besides the sport physician, may be of crucial importance in the fight against doping: the coach and the team manager should be a referential figure for young athletes in general. Moreover, in this context, general practitioners should have a preminent role considering that in many cases they are the first support for non-professional athletes.

Data of the present study are self-declared and although this is a common method, the investigators are not able to verify the answers. However, studies exploring the validity of answers to questions about personal consumption of illicit substances have concluded that the self-completed questionnaire is a reliable tool.⁹

A very important factor within the development of efficient and sustainable prevention strategies is the determination of relevant target groups as well as the evaluation of the state of knowledge and attitudes in regard to doping in sports. With respect to athletes, this evaluation should already take place within the early stages of childhood.¹⁰

Author statements

Ethical approval

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Competing interests

None declared.

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