

Research article

DOPING AND PERFORMANCE ENHANCING DRUG USE IN ATHLETES LIVING IN SIVAS, MID-ANATOLIA: A BRIEF REPORT

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ABSTRACT

The aim of this study was to determine the rate of doping and performance enhancing drug use in athletes in Sivas, Turkey, and to analyze the main reasons for the use. This was a cross-sectional study based on a self-report questionnaire. The subjects filled the questionnaires under the supervision of the investigators during interviews. This questionnaire included 24 items describing the population in terms of demographics, sport practice, doping in sport and substance use. Moreover, we assessed the frequency of doping drug use. The number of respondents was 883, of which 433 athletes and 450 healthy non-athletes (control group). The mean age of the total volunteers was 21.8 ± 3.7 yrs. The male and female ratios were 78.2% and 21.8% respectively. Doping and performance enhancing drug usage rate was 8.0% (71 cases in 883 subjects). Doping drug use among the athletes was significantly ($p < 0.05$) higher (14.5%) compared with the non-athletes (1.8%). The agents used were anabolic steroids in 60.5%, l-carnitine in 12.7%, erythropoietin in 5.4%, Na-bicarbonate in 11.3% and creatinine in 14.1% of 71 cases. The reasons for doping use were to have a better body condition in 34 cases (47.9%) and to solve weight (gaining or losing) problems in 8 (11.3%) cases. Since the potential side effects of doping drugs are not satisfactorily familiar to the most users, the education of athletes on the matter must be a top priority.

KEY WORDS: Drug abuse, sports.

INTRODUCTION

The use of drugs to enhance physical performance and muscular development has been observed for thousands of years. Today individuals continue to employ a wide variety of drugs in the hope of improving their athletic performance and physical appearance.

The demand for performance-enhancing drugs has been created by the fixation of society on winning races and for better physical looking

(Charles, 2000). Cireli et al. (1992) reported that doping usage rate is 60% among the athletes. Kindlundh et al. (1998) described that 2.7% of the men and 0.4% of the women adolescents had taken doping drugs at least once in their lifetime. Laure (1997) reported that 3-5% of the children/sports teenagers (this value increases with the age) and 5-15% of adult sportsmen use doping drugs. These percentages are higher in the men aged 20-25 years, in the competitors, and the ratios increase with the level of competitions (especially in

high-level ones) (Laure, 2001).

Unfortunately, very little is known regarding the use, safety, and efficacy of doping drugs, performance-enhancing drugs and nutritional supplements among adolescents and adults in Turkey. Therefore, this study was designed to analyze the doping using frequency in Sivas, Turkey. In addition, we also aimed to determine the rationale behind this behaviour.

METHODS

This was a cross-sectional study based on a questionnaire. The total number of habitants in city of Sivas is 707.645. The city is located in central Anatolia. In terms of surface area it is the second biggest city in Turkey. The most popular sports are wrestling, weight-lifting, boxing, long-distance and/or cross-country running.

The subjects were informed about the aim of the study and the confidentiality of the personal data. The subjects filled the questionnaires under supervision during interviews with the investigators. The confidence of the questionnaire forms was tested and revisions were made if needed. The questionnaire included 24 items characterizing the population in terms of demographics, sport practice, doping in sport and substance use.

Total number of licensed athletes was 2.280 in Sivas. The number of athlete sample for the study was 433 and they all were actively engaged in an exercise program. Eighty-nine (20.6%) out of 433 subjects were competitors on national level. The non-athletes (n = 450) with similar age and gender characteristics were included in the study as the control group. Simple randomized sampling method was used for the selection of sportsmen and the non-athletes. For classification of the doping substances, "The 2005 Prohibited List of World Anti-Doping Agency" (WADA, 2005) was applied. In the

questionnaire, drug use, the name of the drug and the route they had been applied, and their opinion about drug use were asked. The data were analyzed with a computer based program (SPSS, USA). Chi-Square test was used for the comparisons between the athletes and non-athletes. $P < 0.05$ was considered statistically significant.

RESULTS

The mean age of 883 subjects that were enrolled in the study was 21.8 ± 3.7 yrs (ranged 15-34 yrs). The men and women ratios were 78.2% and 21.8% respectively. In Table 1 the doping and performance enhancing drug use, age and gender distributions of the athletes and non-athletes are given. The majority of the participants were within the age group of 20-24 yrs (69.6%). There was no significant difference between the athletes and non-athletes in terms of age and gender. Doping and performance enhancing drug use was 71 (8.0%) in 883 subjects, and it was significantly ($p < 0.05$) higher (14.5%) in the athletes compared with the non-athletes (1.8%).

The prevalence of doping and performance enhancing drug use was 6.0% and 3.2% respectively in men; where it was 1.6% and 2.2% in women respectively. The usage was significantly ($\chi^2 = 5.74$, $p < 0.05$) higher in men compared with women.

In Table 2 the rate of doping and performance enhancing drug use according to the type of sport is given. A higher prevalence was observed ($\chi^2 = 127.98$, $p < 0.05$) in body builders compared with other sportsmen. Interestingly, seventeen (4.3%) non-body-building athletes out of 395 reported that they used doping and 19 (4.8%) of them performance enhancing drugs.

Forty-six (64.8%) subjects out of 71 stated using doping agents and 25 (35.2%) performance enhancing drugs. The mean age of the cases in the drug using group was 22.5 ± 3.2 yrs. The agents

Table 1. The doping drug use, age and sex distributions of the athletes and non-athletes.

| | Athletes (n = 433) | | Non-athletes (n = 450) | | Total (n = 883) | | |
|---------------|-----------------------|------|---------------------------|------|--------------------|------|-----------------|
| | n | % | n | % | n | % | |
| Age | | | | | | | |
| <20 | 92 | 21.2 | 111 | 24.7 | 203 | 23.7 | $\chi^2 = 1.6$ |
| 20-24 | 309 | 71.4 | 310 | 68.9 | 619 | 69.6 | $p > .05$ |
| >24 | 32 | 7.4 | 29 | 6.4 | 61 | 6.3 | |
| Gender | | | | | | | |
| Men | 351 | 81.1 | 347 | 77.1 | 698 | 78.2 | $\chi^2 = 1.6$ |
| Women | 82 | 18.9 | 103 | 22.9 | 185 | 21.8 | $p > .05$ |
| Drug | | | | | | | |
| Dp + PED | 63 | 14.5 | 8 | 1.8 | 71 | 8.0 | $\chi^2 = 65.7$ |
| Med Tr | 166 | 38.3 | 136 | 30.3 | 302 | 34.2 | $p < .05$ |
| Never | 204 | 47.2 | 306 | 67.9 | 510 | 57.8 | |

Abbreviations: Dp = Doping, PED = Performance enhancing drug, Med Tr = Medical treatment.

used were anabolic steroids in 60.5%, l-carnitine in 12.7%, erythropoietin in 5.4%, Na-bicarbonate in 11.3% and creatinine in 14.1% of 71 cases. Over a quarter percent (28.6%) of drug offenders reported taking them in regular intervals.

In the present study, 41.3% of the cases reported that their friends advised them to take the drugs. The 5.19 % of the drug users reported that they had taken the drugs in order to treat their illnesses and 84.1% of them admitted that they had used the agents for doping. The drugs were administered via parenteral and oral routes in 20.6% and 79.4% of the cases, respectively. The drug was used in standard doses in 80.9% of cases and in excessive doses in 3.2%. The 52.4% of drug users reported that they were unaware of the full drug and the potential side effects. The rationale of the drug use for success was accepted by 54% of the cases. The ratio of athletes who "experimented with" the drugs at least once up to that date was 29.0%.

In Table 3, the opinions of the athletes about doping use are given. The 54.8% users and 25.1% non-users empathized with doping as reasonable for success; ($p < 0.05$). Legalization of doping was an acceptable choice for 31.7% of athletes who use the agents and 9.8% of s who do not ($p < 0.05$).

The reasons for doping use were to have a better body condition in 34 cases (47.9%) and to solve weight problems in 8 (11.3%) cases. Seven (9.9%) cases doped in order to be selected for the team. Doping use due to pressure from others was the case in 8 (11.3%) subjects. Four (4.6%) cases reported that they doped in order to recover from injury as quickly as possible.

DISCUSSION

Official controls during competitions are the major source for gathering data about drug usage in Turkey. In this study the questionnaire was designed to evaluate the doping and performance enhancing drugs usage and the stimulus behind it.

In summary, the doping rates in the athletes

and non-athletes were 14.5% and 1.8%, respectively in the present study. The high rate of doping usage was observed in body builders (8.8%). A representative sample of 150 soccer players from Ivory Coast filled out questionnaires anonymously, and about 18.7% of them admitted using doping substances, 42% being tempted of using them, and 38% of being in the know of some other soccer players using a doping substance (Dah et al., 2002). Our data are in accordance with the previous reports (Dah et al., 2002; Laure, 2001).

The main drugs used by athletes are stimulants, narcotics, corticosteroids and anabolic steroids (Laure, 2000). In the present study, main drug used in athletes was anabolic steroids with a majority of 60.5% in 71 cases. According to results of Bahrke et al., (2000) and Buckley et al., (1988) 3 to 12% of adolescent men admitted taking an anabolic androgenic steroid some time in their life. For women, the ratio was that 1 - 2% (Bahrke, 2000). Similarly, drug usage rate was higher in men compared with women in the present study.

In the present study, 79% of the doping agent users claimed that their rivals were already taking doping drugs. Additionally, 54.5% of nonusers shared the same argument. This may be a strong motive for committing doping offence. The main reasons for using doping drugs were to improve appearance and to enhance performance in sports (Kindlundh et al., 1998). However, 30% of athletes managers, and coaches and 21% of doctors indicated that drugs or other doping practices could enhance athletic performance (Scarpino et al., 1990). Our results, however, indicate that the main reason for doping was to have a better body condition. Other reasons were to solve weight problem and to be selected for the team.

According to the users, the drugs are obtained with a medical prescript from underground market, or from other participants (Laure, 2000). Therefore, it may be preferable to concentrate the efforts on education and prevention of the young population (Chalchat, 2002). In a high-performance society,

Table 2. Rate of doping and performance enhancing (PE) drug use according to the type of sports.

| | Doping Drug User | | PE Drug User | | Non-User | | Total |
|---------------|------------------|------|--------------|------|----------|------|-------|
| | n | % | n | % | n | % | n |
| Body Building | 25 | 65.8 | 3 | 7.9 | 10 | 26.3 | 38 |
| Judo | 1 | 10.0 | 1 | 10.0 | 8 | 80.0 | 10 |
| Basketball | 2 | 4.3 | 6 | 12.8 | 39 | 82.9 | 47 |
| Athletics | 2 | 12.5 | - | - | 14 | 87.5 | 16 |
| Handball | 1 | 6.3 | 1 | 6.3 | 14 | 87.6 | 16 |
| Climbing | 1 | 2.8 | 2 | 5.6 | 33 | 91.6 | 36 |
| Soccer | 2 | 1.3 | 1 | 2.6 | 147 | 98.1 | 150 |
| Others | 8 | 6.7 | 7 | 5.8 | 105 | 87.5 | 120 |

Table 3. The athletes' opinions about doping use.

| | Doping User | | Non-User | | |
|--|-------------|------|----------|------|------------------------------|
| | n | % | n | % | |
| Do you think your competitors use doping? | | | | | |
| Yes | 49 | 79.0 | 79 | 54.5 | $\chi^2 = 11.09$ p < 0.05 |
| No | 14 | 21.0 | 66 | 45.5 | |
| Might doping be necessary for success? | | | | | |
| Yes | 35 | 54.8 | 87 | 25.1 | $\chi^2 = 22.37$ p < 0.05 |
| No | 28 | 45.2 | 260 | 74.9 | |
| Should doping be legalized? | | | | | |
| Yes | 20 | 31.7 | 34 | 9.8 | $\chi^2 = 22.57$ p < 0.05 |
| No | 43 | 68.3 | 314 | 90.2 | |

which is also a high-risk society, doping behaviour is observed in a large number of persons who may or may not participate in sports activities (Gallien 2002). Doping has developed into a widespread problem in competitive and high-performance sports due to increasing professionalism and commercialization of sports (Striegel et al., 2002). As 82% of Italian athletes emphasized stricter controls not only during competitions but also during training period (Scarpino et al. 1990), increasing the frequency of doping controls and spreading them for the whole competition and training periods would help to reduce and/or prevent doping and performance enhancing drugs offence by a sizable portion of the athletics community.

CONCLUSIONS

Doping and performance enhancing drug use was 71 (8.0%) in 883 subjects, and it was significantly higher (14.5%) in the athletes compared with the non-athletes (1.8%) in Sivas, Turkey. Since the potential side effects of doping drugs are not satisfactorily familiar to the most users, the education of athletes on the matter must be a top priority. Particular attention should be paid to the younger population, who may suffer the most from the health problems caused by doping use.

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KEY POINTS

- Doping and performance enhancing drug use was 71 (8.0%) in 883 subjects, and it was significantly higher (14.5%) in the athletes compared with the non-athletes (1.8%) in Sivas, Turkey.
- The rate of athletes who experienced such drugs at least once in their life was 29.0%.
- The 52.4% of doping and performance enhancing drug users accepted that they were unaware of the drugs full and/or potential side effects.

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