

ORIGINAL ARTICLE

Study the Prevalence of Anabolic Steroids Consumption among Bodybuilding Athletes in Yasuj, Iran

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ARTICLE INFO

Keywords:

Anabolic steroids
Athlete
Prevalence
Iran

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Received: December 28, 2016

Revised: April 30, 2017

Accepted: June 11, 2017

ABSTRACT

Background: Today, in Iran sport has gained a special place among people and meantime, bodybuilding centers were able to attract many people, while a large number of athletes have the desire to consume anabolic steroids to enhance their athletic performance, gain championship and fitness, and increase their muscle mass and energy. This study was performed to survey prevalence of anabolic steroids consumption in athletes in Yasuj, Iran.

Methods: During 2012, totally, 214 male and female athletes in Yasuj, Iran were randomly enrolled. The necessary information was obtained using a questionnaire containing demographic questions, the amount and type of substance used, their purpose of consumption, duration of exercise, the manner of preparation and consumption, the place of preparation and awareness about the side effects of these compounds.

Results: The least were athletes less than 20 years old (9.8%) and the most were 20-25 years (55.1%), while 43% of athletes used anabolic steroids. Creatine (77.2%) and anabolic steroids (72.8%) were the most commonly used drugs among consumers. About 69.6% of consumers reported an increase in muscle mass as the reason, 28.6% provided the substances from free market, 11% reported consultation with their doctor or nutritionist to use the proper substance, 45.8% had low awareness, and only 14.5% were completely aware of side effects.

Conclusion: Regarding the frequency of consumption of anabolic steroids and low awareness of athletes about the complications, educational programs seem to be necessary to control their use and increase the awareness of users.

Please cite this article as: Rezaei SMA. Study the Prevalence of Anabolic Steroids Consumption among Bodybuilding Athletes in Yasuj, Iran. Int J Nutr Sci 2017;2(2):103-108.

Introduction

Bodybuilding centers have been able to attract many people in Iran, while a large number of

athletes had a desire to consume ergogenic substances to enhance their athletic performance, gain championship, and fitness, and increase their

muscular mass and energy (1-3). An ergogenic may include any exercise method, mechanical tools, nutritional exercises and, most importantly, pharmaceutical consumptions to improve exercise capacity and habits (4). Use of ergogenic has an increasing trend on the international scene, and the consumption of this type of substances in order to increase exercise performance has resulted into several problems worldwide; so that, athletes are often under pressure from sponsors, coaches, supporters, parents, policymakers and organizations to achieve sports success. All of these pressures are factors that attract athletes to achieve some excellences in physiological, nutritional and psychological dimensions. Set of these cases can cause the tendency of athletes to use an ergogenic (2).

In the event of abusing the ergogenic, none of the body organs is safe from dangerous and sometimes deadly side-effects that this misuse in young people is a major dilemma in current societies (5). The ergogenic can be classified into two main categories of dropping materials; and dietary supplements; steroids, stimulants, weight loss drugs, fat burners, detergents drugs, insulin, growth hormones, vitamins, minerals, proteins and carbohydrate supplements as the most important materials (2). Use of an ergogenic has its own problem in Iran, including lack of consultation of athletes with informed authorities, getting misinformation from uninformed people, wide range of non-professional medical taks by athletes, use of inappropriate drugs with exercise, severe adverse effect and non-standard supplements (3).

Use of the ergogenic may have different effects on the body and also on mental status and behavior of the consumer (2-6). Anabolic steroids at high doses may cause sexual anomalies and severe side effects, including liver cancer and cardiovascular diseases (1, 7). The use of some ergogenics can lead to sexual complications, cardiovascular disorders, and some poisonings (1), and also may create welds and acne on the face skin (8). The ergogenic can have irreparable health, social, economic, and cultural consequences too (4). Millions of dollars are spent annually to prevent athletes from misusing drugs, drug tracking, and doping control. Unfortunately, in spite of the efforts of sport federation in maintaining the prestige of the heroes, with increasing growth of sports clubs for bodybuilders, drug abuse has taken on a particular and dangerous way, and young population has been exposed to terrible complications and even death, and also has attacked the sport reverence (9).

The ergogenic, along with transient roles that may produce temporary satisfaction, over time, it can create complications and sometimes irreparable

poisonings. On the other hand, the effects of ergogenic use are dependent on physical and genetic condition of the individual, so that the degree of absorption, kidney and liver function are different from person to person. Hormonal disorders due to high consumption of hormonal substances and central nervous system dysfunction after using brain stimulants, are undesirable effects of these drugs (9).

Athletes' awareness of the side effects of ergogenics is determined by their understanding about the complications in six vital organs (heart, liver, kidney, genital, skin and muscle). In different studies, a relationship was observed between the lack of awareness of complications and the rate of ergogenic consumption, so that, one of the factors affecting ergogenic consumption is the lack of awareness of drugs side effects on these six vital organs, which, considering the low awareness of complications, and the notification plays an important role (9). The prevalence of ergogenic consumption conducted in Semnan and Kermanshah provinces of Iran were 27.3% and 38.3%, respectively and also the awareness of adverse drug reactions was 4.7% and 39.4%, respectively (2-7).

In similar studies in Zahedan and Gonabad, there were 17.8% and 86.3%, good and high level of knowledge, respectively and the complications were 8.8% and 2.3%, respectively too (10, 11). Its prevalence in Iran (which was carried out in 5 provinces) was 63.3% (2). In a study in Singapore, the prevalence of supplement usage in athlete students was 76.8% (12). In Belgium, it was shown that the use of ergogenic in bodybuilders was 38-57% between 1988 and 1993. In bodybuilder athletes, there was very little awareness on side effects of the ergogenic (2). Nowadays, due to increased use of the ergogenic and the low awareness of these substances and their side effects, while the use of ergogenic used in athletes is more than the nonathletes (2, 13, 14), and o lack of evidence in Yasuj, we decided to study the frequency of ergogenic consumption and level of awareness of athletes in Yasuj, Iran.

Materials and Methods

This study was conducted on male and female athletes who practiced in athletic clubs for at least 3 days a week. Sample size was 214 persons according to population of Yasuj athletes, and considering the error of $\pm 5\%$. Subjects were randomly selected by referring to 11 male and 5 female athletic clubs. The information was obtained by a questionnaire which had been previously verified and validated.

The questionnaire contained demographic questions, the amount and type of substance used, their purpose of consumption, duration of exercise,

the manner of preparation and consumption, place of preparation and awareness about the side effects of the ergogenic consumption. The questionnaire was distributed by the individuals who had already been trained for the correct completing of the questionnaire in a justification session. In this study, athletes were asked to complete the questionnaire according to their recent one-year experience. The type of consumed substance was put in intended group after being announced by the athlete. Awareness of complications was also assessed based on the knowledge of athletes about the effect of the ergogenic on vital organs.

In order to observe ethics and ensure about the honesty of athletes in giving real information, completion of the questionnaire was done without the presence of others in an uncrowded place and the athletes were assured about the information obtained from them, while kept confidential and used only for research. Finally, the information was analyzed by SPSS software (Version 19, Chicago, IL, USA) and Chi-square ratio tests at a significant level of 5%.

Results

Totally, 9.8% of athletes were under 20 years old, 55.1% were 20-25, 24.8% were 26-30 and the rest were over 30 years old. Overall, 43% of athletes reported using at least one of the ergogenics during the past year, while 22.9% of them were not aware of the complications, 45.8% had low, 16.8% had moderate awareness and only 14.5% were completely aware of the side effects. Athletes listed 73 types of substances, each of them was categorized in Table 1. Among the various types of the ergogenics, creatine was the most consumed substance, and 77.2% of athletes reported using creatine. Unfortunately, the second most commonly used substance in this study was steroid drugs used by athletes orally and in injectable form, and 72.8% of them had used steroids (Table 1).

Use of the ergogenic was significantly correlated with age ($p < 0.005$), while the most consumption was in the age group of 20-25 years. There was a significant relationship between the awareness about the side effects and age of athletes ($p < 0.005$). The most ignorance was seen in athletes aged 20 to 25 years including the most part of consumers. Subjects reported consultation with different people about the necessity of consumption and type of substance before their use and only 17.6% had consulted with a doctor, pharmacist or nutrition expert, and most of them stated that the club manager was their main consultant. Bodybuilder athletes chose different places for purchasing their desired substance.

Due to multiplicity of purchases of the ergogenic,

Table 1: Frequency of substance use by type of substance

Variable	of consumption %
Consumable material	
Anabolic steroid	72.8
Amphetamine	1.1
Stimulants drugs	3.3
Weight loss drugs	4.3
Calcium	8.7
Creatin	77.2
Vitamin supplement	53.3
Fat burners	12
Sorbitol	1.1
L Carnitine	2.2
Growth hormone	13
Protein supplement	66.3
Carbohydrates	51.1
Amino acids	20.7
Glutamine	35.9
Beta-hydroxymethyl butyrate	7.6
Sport drinks	5.4
Arginine	6.5
CLA	11.9

CLA: Conjugated linoleic acid

athletes selected more than one source for purchasing materials. The distribution of athletes who used the ergogenic according to the place of material preparation ($n=92$) was 34.1% from drug stores, 49.5% from coaches, 28.6% from free markets and from other places was 5.5%. The distribution of athletes who used the ergogenic according to the source of achieving the method of use was 68.1% by the coach (club manager), 30.8% by instruction written on packages, 11% by doctors, pharmacists, nutrition advisors, 17.6% by books and internet resources, and the others as 19.8%. The prevalence of the ergogenic consumption in both genders was demonstrated in Table 2 denoting to 9.3% and 54.4% prevalence, respectively.

Of those who used the ergogenic, 60.9% believed that it was beneficial for athletes, 36.9% of consumers used these materials with pride and honor, and 8.7% of them felt embarrassed when they were taking it. The rest did not have any feeling, 65.2% stated that their activity was more than before, 14.1% did not have enough satisfaction with the substance, and 43.5% were satisfied.

In this study, athletes explained about different reasons for using and choosing the type of substance that their statements were categorized as follows: An increase in muscle mass was expressed by 69.6% of athletes, body shape, energy and power increment, weight gain, necessity to achieve the championship were among other objectives of bodybuilder athletes (Table 3).

Table 2: Frequency of consumption status by gender

Gender	Use of drug	Not using the drug	Total
Male	54.4% (87n)	45.6% (73n)	100% (160n)
Female	9.3% (5n)	90.7% (49n)	100% (54n)
Total	43% (92n)	57% (122n)	100% (214n)

Table 3: Frequency of reasons for ergogenic consumption (n=92)

Reason for use	Number	Percentage
Energy increment	52	56.5
Increased muscle mass	64	69.6
Fat burning	14	15.2
Necessity to achieve the championship	16	17.4
As a necessary complement to food	31	33.7
Achieving fitness	60	65.2
Help improving the injury	5	5.4
Weight gain	30	32.6

Discussion

Our findings showed that 43% of bodybuilder athletes used an ergogenic. In a study in Hamadan that was conducted on students, 12.3% of them were using an ergogenic and the bodybuilder athletes were the most consumers (15). In a study in Belgium, ergogenic consumption was reported as 38-57% (3). In a study that was performed on athletes in 21 sports fields in Lorestan, Iran; 32.5% of athletes had used at least one type of an ergogenic (16). In Kermanshah and Semnan, 38.3% and 27.3% reported use of ergogenic, respectively (5).

In a study that was conducted in America showed that the number of ergogenic consumers was increasing day by day (17) and in another study, more than 50% of subjects used supplements (18). In a study conducted in Egypt, 48.9% of athletes used sports supplements, 66.9% consumed sport drinks and 54.3% used specifically creatine, while 44% of them revealed that the consumption was only at competition times (19). It was shown that the level of ergogenic consumption in bodybuilders was 20-50%. In this study, 95.7% of consumers were under 30 years old. In United States, most of people who consumed these substances were between the ages of 11 and 24 years old (8).

In other countries, the age of ergogenic consumption denoted to a decline (20). In this study, only 14.5% of bodybuilders were aware of the side effects of ergogenic use on all six vital organs. In a study that was conducted in Semnan, Iran; only 4.7% of athletes were aware of drug complications (1). In this study, the main reasons of using ergogenic by athletes were increased muscle mass (69.6%), fitness (65.2%)

and energy increment (56.5%). In a similar study, increased muscle mass, increased body strength, changes in body composition (increased muscle and decreased fat), increased exercise efficiency, and tirelessness were other mentioned reasons (2).

In a study conducted in Egypt, the main reasons for use of ergogenic were achieving better physical appearance and increased athletic performance (19). In our study, the most commonly used ergogenic among the athletes were keratin (77.2%) and anabolic steroids such as oxymetalone, testosterone, methane, winestrone, dianabol, and nandrolone (72.8%), that testosterone was the highest used steroid (19.6%). Also in Belgium, the most common steroids were testosterone and nandrolone (3), followed by protein supplements (66.3%). In a study in the United States, protein and multi-vitamin-mineral supplementation were the most commonly used ergogenic among consumers (18).

In a study in Kermanshah, Iran; keratin (66.8%) was the most commonly used ergogenic. In another countries, anabolic steroids have been the most commonly used substance (5). In the study done in Tehran, Iran in 2008, 30% of athletes used anabolic steroids, and 10% used food supplements. In another study, higher consumption of anabolic steroids was reported in Iran (74.6%) (2). Steroids are part of Iran's generic drugs and are distributed illegally at very cheap prices and in some drugstores are easily available for athletes. One reason for high prevalence of these materials is due to their inexpensiveness and easy access (3).

In our study which was opposite to most studies, the high consumption of creatine and dietary supplements

along with steroids were noted because of different socio-cultural issues and the easy access to them. Short-term steroid side effects among athletes are more likely to be reversible as soon as the substance is discontinued, but long-term complications may vary depending on the type of anabolic steroids, dosage, frequency, age of onset and the concomitant use of the drug (2).

In addition, many existing supplements are hazardous, because 5-20% of them contain prohibited substances and are not labeled (21). In this study, 66.3% of people taking ergogenic had no or little awareness about the side effects of the substance on the body organs. In a study done in Hamedan, Iran on the students, 56.26% of them did not know about the side effects of the ergogenic (15). In other studies, there was also a correlation between the lack of awareness of the side effects and ergogenic consumption, as one of the major factors in use of ergogenic by athletes mentioning their lack of knowledge about complications. Due to low level of awareness, notices play an important role.

Due to variety of available drugs and their dangerous side effects, these drugs should be controlled and the complications of each one should be determined. Based on findingd, use of ergogenic in Iran is increasing similar to European countries. A large percentage of consumers are young people and due to little awareness of the side effects of ergogenic, this is a major threat to the young community athletes. A small percentage of athletes have consulted with specialists before taking the medication from inappropriate places. So it is recommended to pay attention for training of bodybuilder athletes especially young people and training programs by doctors, specialists and coaches. Interventional analytical studies can be proposed to resolve this inclusive problem too.

Acknowledgement

We would like to thank Yasuj University of Medical Sciences, Yasuj, Iran for financial support.

Conflict of Interest

None declared.

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