# Frequency of the use of anabolic drugs in bodybuilding athletes in Jahrom city

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## Abstract

**Introduction**:
Bodybuilding exercise is one of the most popular sports among the youth. Body builders use anabolic agents to increase their muscle growth and improve their appearance but the adverse effects of these drugs are greater than their advantages. Therefore, there was an attempt in this study to evaluate the prevalence of anabolic drugs in body builders in Jahrom city to find out appropriate strategies to control the indiscriminate use of these drugs.

**Materials and Methods:**
This cross-sectional study was conducted on 299 cases of gym athletes in Jahrom city in 2012. Random cluster sampling - was done. Data were collected through questionnaires and interviews were performed using club officials. Prevalence and distribution of anabolic drugs as well as other variables such as the type of drug, prescription trends and individual sports in the samples under the study were examined.

**Results:**
The results of the study showed that among 299 samples studied 154 (51.5%) individuals used different types of anabolic drugs. 30 (10%) of them used testosterone, 23 (7.7%) used Somatropin, 21 (7%) used Metadianabol, and 24 (8%) of the athletes were using more than three drugs.

**Conclusion:**
Due to the outbreaks, 51.5 percent seen in the present study, and the terrible effects of anabolic drugs, there is a need to monitor the athletes more; moreover, increasing their knowledge about the risks of using such drugs is recommended.

**Keywords:** Sport, Anabolic Agents, Effect

## Introduction

In ancient Iran, sports played a major role in the lives of people in such a way that commanders were chosen from among men experienced in warfare (1). Sports are still considered significant aspects of our lives today and different groups deal with them in different ways. Sports are one of the healthiest and most beneficial hobbies that both teenagers and young adults can enjoy during their leisure. Sports remove indolence from people, furnish them with joy and livelihood, prepare them for their routine tasks both in their private and social lives, and inspirit them.

One of the most favorite sports among young adults in the modern world is fitness, namely, bodybuilding -a sport which dates back to the 19th century. This sport demands several years of intense

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practice for the muscles to be in shape and tone (2). A number of those active in this field strive to grow remarkable muscles in the shortest time possible in order to win contests and have a stunning muscular body; they thus disregard their physical and spiritual well-being. In this regard, bodybuilders, whether novice or professional, resort to the use of anabolic drugs without being conscious of their possible adverse side-effects and the risks associated with their use. Anabolic drugs, anabolic steroids in particular, are synthetic materials with chemical structures similar to male sex hormones (androgens) and therefore imitate the biological roles of these hormones. The range of their effects is not limited to the growth of skeletal muscles (anabolic effects) and the development of male sexual characteristics (androgenic effects). There are more than 100 types of anabolic steroids produced to date. Some anabolic steroids are taken orally, some are taken as intramuscular injections and some others are taken in the form of gels or creams) 4). The improper use of anabolic steroids increases the risk of heart attack and liver cancer and involves several adverse side-effects such as the development of acne, fat cysts, greasy hair and skin )5). The improper use of anabolic steroids disrupts the production and secretion of hormones and causes irreversible changes such as hair loss and gynecomastia. As was determined in a study on male bodybuilders, more than half suffered from testicular atrophy and the rest suffered from gynecomastia. The use of anabolic steroids in women leads to their development of masculine behaviors in such a way that they cause the breasts to shrink, the body fat to decrease, the skin to grow rough and coarse, the clitoris to enlarge and the voice to grow masculine and harsh (6, 7).

The use of anabolic steroids is also associated with liver cancer and hemorrhagic cysts (6). The use of these drugs has irreversible side-effects such as tachycardia, hypertension and abnormal rise in cardiac output (8). In a study conducted on the effect of high levels of testosterone on the heart tissue in rats, histological evaluations demonstrated that serum testosterone increase enlarged and thickened the heart tissue in rats (9). Those using these steroids often tend to use two or more different types of anabolic steroids due to the assumption that the use of various types of these drugs leads to a better growth in muscle size; what they do not know is that they are falling victim to their lack of knowledge about the adverse side-effects of this practice –which could potentially cause serious irreversible damage to their health. The studies show an increase in the anabolic steroid consumption rate in Iran, particularly among young adults (10, 11). A study was thus conducted to determine the consumption frequency of anabolic drugs among bodybuilders in Jahrom.

## Materials and Methods

The present cross-sectional study was conducted in 2012 on 299 bodybuilders in Jahrom selected through cluster random sampling method. Sample size was calculated to be 26% based on the prevalence of anabolic drug use in previous studies, statistical power of the 70% and the confidence interval 95%. In order to select the samples, information was collected from the physical education organization about the number of active gyms (12 gyms) and the number of bodybuilders qualified to be included in the research (472 persons), upon which 7 gyms were randomly selected from among the gyms across the city according to the ratio of calculated sample size to population size. Considering that the selected clusters included a sample size equal to the population size, there was no need to randomly select the subjects and everybody was thus included in data collection. Inclusion criteria consisted of attendance in club for a minimum duration of 2 months. Data collection tool consisted

of a researcher-made questionnaire whose validity was confirmed by 10 faculty members of Jahrom University of Medical Sciences who were experts in the subject area. The reliability coefficient of the questionnaire was estimated at 0.72 using Cronbach's alpha test. Data were collected by face-to-face interviews with bodybuilders after obtaining permission from gym managers. The questionnaires comprised 2 sections: the first section covered demographic information such as age and level of education, and the second section had questions on length of presence in bodybuilding, specialty field of activity, anabolic drug use record, drug type used (oxymetholone, somatropin or growth hormone, methandrostenolone or dianabol, testosterone, andriol, nandrolone, etc.), the person prescribing the drug and drug use method. After data were entered into the statistical software SPSS 11.5, the consumption frequency of anabolic drugs and their frequency distribution were calculated according to variables such as drug type used, field of activity, and the person prescribing the drug to the subjects. Given the qualitative nature of the variables of education level and drug use record, a nominal scale was used to determine their association through Chi-square test.

## Results

In the present study, 299 bodybuilders were studied. The mean age of these bodybuilders was 25.02±8.08. Their distribution by level of education showed that 94 (31.4%) did not have a high school diploma while 205 (68.6%) had a high school diploma or a higher degree. With regard to the prevalence of anabolic drug use among bodybuilders in Jahrom, 154 (51.5%) used anabolic drugs, 30 (10%) used testosterone, 23 (7.7%) used somatropin, 21 (7%) used methandrostenolone or dianabol and 24 (8%) used more than 3 types of drugs. Others used drugs such as insulin, somatotropin and other kinds of muscle building and strengthening medications. Of these, 101 (66%) used the medications for aesthetic purposes while 26 (17%) used them for strength purposes, and 65 (21.7%) were prescribed the drug by their coaches. The mean age of users was 26.55±15.33. The highest frequency of medication use (48.1%) belonged to those with less than high school education (Table 1). As for drug use route, i.e. defining whether the drugs were taken orally, as injections or in other forms, 64 (41.6%) injected the drugs. Eight (2.5%) used anabolic drugs for over a year. As for the person prescribing the mentioned medications, only 20 (13%) were prescribed by experts (medical professionals or physical education degree holders). As for the method of acquiring the drugs, 19 (12%) bought the medications from pharmacies while the rest bought them from supplement suppliers or their coaches.

Table 1: Frequency Distribution of Medication Use Record based on Level of Education

| Record of Drug Use | Elementary | Junior High | High School | College Degree | Bachelor's & Above | Chi-square | Degree of Freedom | P Value |
|---|---|---|---|---|---|---|---|---|
| Yes | 22 (14.3)* | 29 (18.8) | 43 (27.9) | 27 (17.5) | 33 (21.4) | 3.82 | 4 | 0.431 |
| No | 12 (8.3) | 31 (21.4) | 47 (32.4) | 29 (20) | 26 (17.9) | | | |
| Total | 34 (11.4) | 60 (20.1) | 90 (30.1) | 56 (18.7) | 59 (19.7) | | | |

*Number (percentage)

## Discussion

The present study showed that the rate of anabolic drug consumption among bodybuilders in Jahrom was 51.5%. In earlier studies conducted in 2003 on the same topic, the frequency of anabolic drug use in bodybuilders was reported 26% in Karaj and 27.7% in Semnan (10, 11). In another study conducted in 2009 in Rasht, findings were indicative of a 67% prevalence of anabolic steroid use. Based on the results of this study, there was a significant relationship found between the prevalence of anabolic steroid consumption and records of winning in competitions among bodybuilding athletes (P<0.05). Results of the study conducted in Rasht were indicative of the high prevalence of anabolic steroid consumption among young adults and their lack of knowledge about their adverse side-effects or the false knowledge thereof (12).

In another study conducted in Gilan Province in 2009, 60 bodybuilders divided into 3 groups of 20 were studied. The first group used anabolic medications with sports. The second group only exercised sports and did not use anabolic medications. The third group, the control group, did not use medications nor did any exercises.

In order to assess the C-reactive protein (CPR) levels, subjects' blood sample was collected upon 12 hours of fasting. Arm, chest and thigh strength and volume were measured by 1RM test while muscle circumference and speed were measured by 30-meter dash. Results showed that CPR levels in the first group were significantly higher than those of the second and the third groups (P<0.05). There was no significant difference observed between the CRP levels of the second and the third groups (P<0.05). A significant difference was observed between the groups with regard to their muscle strength, arm, thigh and chest circumference (P<0.05). In addition, there was no significant difference observed between the groups in their 30-meter dash. Although using anabolic steroids improves muscle strength and size in bodybuilders, the increase in CRP levels is considered a cardiovascular disease risk factor. Even though this research is not directly relevant to the present study, its results express the researcher's concerns with the undue consumption of anabolic steroid drugs –a matter consistent with the practical purposes of the present study in a way (13).

In a comparison of the results of the present study with the results of other studies, it is important to take two things into consideration; first, the high prevalence of the use of these drugs in Jahrom; and second, the rising trend of its use all across the country. Furthermore, considering the mentioned principles and the non-specialized supplying chain of anabolic medications among bodybuilders, it appears that despite the high consumption rates of anabolic drugs and their various adverse effects, there has been an increased tendency to use them a non-specialized manner. Results of the present study should warn supervisors of physical and health education institutions to take the necessary precautionary steps to prevent the undue consumption of the studied medications, which can have unpleasant side-effects in young adults, and should encourage them to monitor their use more closely and to increase public awareness on the issue of irresponsible medication use and its harms.

## Suggestions for Further Research:

It is recommended that analytical studies be designed on the side effects of anabolic medication use among athletes taking these drugs and athletes not taking them.

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