

The Use of Nutritional Supplements Among Male Collegiate Athletes

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ABSTRACT

Background: The consumption of nutritional supplements is high in various sports, whereas, there are not enough documents supporting the beneficial effects of supplements in athletes. In addition, there is no information about taking supplements by Iranian students who participate in sports. Therefore, the goals of this study were to assess the type and prevalence of supplement use, the frequency of use, and relationships between consumption and age, body mass index, training load and type of sport.

Methods: One hundred ninety two male students from “Isfahan University of Medical Sciences” participated in this study, voluntarily. A questionnaire that included questions about type and effects of supplements, recommendation resources, place of obtaining, and type of sports were sent to students. Descriptive data were calculated as frequencies (%). Chi-square (χ^2) analysis was used to analyze the correlation between supplement use and the study variables.

Results: Forty-five percent of respondents used some forms of supplements. Supplement users consumed 14 different supplements and each used as many as 1.8 ± 1.2 various supplements during the past six months. Multivitamins (64%) and vitamin C (42%) were the most popular supplements. Students, who participated in individual sports, were more likely to consume dietary supplements ($P < 0.05$) and ergogenic aids ($P < 0.01$), but “team sports” athletes, took more recovery nutrients ($P < 0.01$). Fifty seven point five percent of student bought their products from pharmacies, 40% from “sport supplements stores” and 2.5% from their friends.

Conclusions: It can be concluded that less than half of these students consumed supplements and their information resources were inappropriate.

Keywords: Nutritional supplementation, students, sport

INTRODUCTION

The use of nutritional supplements by athletes has been widespread in various sports and is growing rapidly.^[1,2] Extra

energy providing, performance improvement, prevention of fatigue, and compensation for insufficient diet, are among major reasons reported for supplement use by athletes,^[3-8] whereas, there is little scientific evidence that confirms the beneficial effects of nutritional supplements in athletes.^[9,10] Furthermore, there is some risks of an unintentional doping as a result of supplement use, too.^[11-14]

Several studies also have demonstrated some adverse effects of dietary supplements use such as cardiovascular, hematological, metabolic, and neurological problems.^[15-17] Nevertheless, nutritional supplements manufacturers claim that their products are safe and improve performance of athletes.

In the United States, consumers spending on supplements was increased from 6.5 billion \$ in 1996 to 18 billion \$ in 2002.^[18]

The prevalence of “Nutritional Supplements” consumption includes dietary supplements, ergogenic aids, recovery nutrients, and sport foods among athletes is 46% to 100%.^[19,20-26] Some of these supplements may cause harm or have potential health problems if use inappropriate.^[27]

As our knowledge, there are not reports on nutritional supplements use by Iranian university athletes; therefore, the aims of this study were to assess the prevalence and type of supplement use, the reasons for use, the frequency of use, and relationships between use and age, body mass index, training load and type of sport.

METHODS

One hundred and ninety two male students from “Isfahan University of Medical Sciences” were enrolled in this study. At first, the objectives of the study were explained and informed consent was obtained from all students.

A questionnaire draft was sent to five athletes who are playing for Sepahan Novin Sports Club to determine clarity, in the beginning. The questionnaire included questions about supplementation patterns, type of sports, effects and side effects of consumption, place of obtaining, and recommendation resources. The questionnaires were anonymous. The contact details of the researchers were included at the end of questionnaire for any possible question. Approximately one week was allowed for return

of the questionnaires. Questions were about supplements usage within the past six months.

In the data analyses, supplements were defined as “dietary supplements” (proteins, amino acids, carbohydrates, slimming products, fish oils), “ergogenic aids” (creatine, caffeine), and “recovery nutrients” (vitamins, minerals, glucosamine/chondroitin sulphate).

Statistical analyses were conducted using the Statistical Program for the Social Sciences (SPSS version 13, Inc., Chicago, IL) computer software package. Data are presented as means \pm standard deviation. Statistical significance was accepted at $P < 0.05$ in all cases. Descriptive data were calculated as frequencies (%). Pearson analysis was used to analyze the correlation between supplement use and the study variables.

RESULTS

A total of 173 questionnaires were received, so that response rate was 90%. The characteristics of the students are shown in Table 1 and type of products and frequency of use are presented in Table 2.

Overall, 45% of respondents (78 students) used some forms of nutritional supplements. No significant relationship was observed between the use of the supplements and age ($P = 0.3$), body mass index ($P = 0.24$), and training volume ($P = 0.18$). These athletes used a total of 14 different nutritional supplements [Table 2]. Each athlete, however, took as many as 1.8 ± 1.2 different supplements during the past six months. The most popular supplements were multivitamins (64%) and vitamin C (42%), respectively.

Athletes, who participated in individual sports, were more likely to use dietary supplements ($P < 0.05$) and ergogenic aids ($P < 0.01$). On the other hand, “team sports” athletes used more recovery nutrients ($P < 0.01$).

Table 3 shows that 45 supplement users (57.5%)

Table 1: General characteristics of the respondents

Characteristics	Individual sports	Team sports
Number	64	109
Age (year)	21.2 \pm 2.2	22.1 \pm 2.4
BMI (kg/m ²)	25.5 \pm 2.6	21.4 \pm 1.5
Training volume (h/week)	5.5 \pm 2.5	7.5 \pm 2.5

Table 2: Type of supplements and frequency of use

Supplement	Mean frequency of use (per week)	Number of subjects	Percentage of users
Dietary supplements			
Protein powders	2.4	12	15.4
Amino acids powders/caplets/tablets	1.2	4	5.1
Carbohydrates	0.6	1	1.3
Slimming products	0.8	3	3.8
Fish oils	2.8	9	11.5
Ergogenic aids			
Creatine	3.1	21	26.9
Caffeine	0	0	0
Recovery nutrients			
Multivitamins	3.4	50	64.1
Vitamin B complex	1.5	8	10.2
Vitamin C	2.6	33	42.3
Vitamin E	0.5	1	1.3
Calcium tablets	3.5	6	7.7
Iron tablets	3.5	7	9
Glucosamine/Chondroitin sulphate	2.4	4	5.1

Table 3: Correlation between supplement use and age, BMI and training volume in individual and team sports

Correlation	Individual sports Supplement use	Team sports
Age (year)	NS	NS
BMI (kg/m ²)	$P < 0.01$ $r = 0.2$	$P < 0.05$ $r = -0.1$
Training volume (h/week)	NS	NS

BMI=Body mass index

obtained their supplements from pharmacies, 31 (40%) from “sport supplements stores” and 2 (2.5%) from their friends. Seventy-seven percent of them (60) had been recommended to take supplements by their friends, followed by their trainers (11.5%) and advertisements (11.5%) [Table 4].

Table 4: Place of supplements obtaining by users

source	Number	Percent (%)
Pharmacy	45	57.5
Sport supplements store	31	40
Friends	2	2.5
Total	78	100

Table 5: Sources of recommendation

source	Number	Percent (%)
Friends	60	77
Trainers	9	11.5
Advertisements	9	11.5
Total	78	100

The most frequent positive effects that reported from dietary supplements consumption included improved performance (34.6%), reduced fatigue (23%), and faster recovery (14.1%).

DISCUSSION

Supplement consumption was 45% among university athletes in Isfahan University of Medical Sciences. The trend was not similar to that observed in previous studies.^[28,29] This diversity may be explained by methodological differences such as data collection methods and definition of supplements. Meanwhile, athletes in our study were not professional and they had physical activity alongside their study courses. In this study, supplement intake was not influenced by age, BMI, and training volume.

Respondents took an average of 1.8 different products. These findings are similar to those of Slater and Tan and Nieper.^[29,30]

This study, however, was conducted in male students, merely, and results might be different than a general population. Students were also asked to recall only the past six months when estimating their supplement use because some of students were in first trimester.

The most popular supplements consumed by athletes participated in team sports were the “recovery nutrients”. Such supplements were also popular in other studies.^[18,20,22,31] This might be explained by the finding that many vitamins and minerals have possible positive effects on aerobic capacity.^[32] Athletes participated in individual sports used “dietary supplements” and “ergogenic aids” more than the team sports athletes.

These findings are supported by the Sundgot-Borgen *et al.* study.^[33] This is not similar with the Slater findings that only one athlete, a canoeist, used creatine.^[30]

Although some studies show that creatine have ergogenic effects,^[34] nevertheless, these substance may have side effects. Gastrointestinal distress, water retention and nephritis have been reported with creatine consumption in some studies.^[35-37]

There is no enough scientific documents supporting the consumption of nutritional supplements in a healthy athlete following a balanced diet, but side effects are likely if supplements are consumed more than prescribed dosages.^[34,38] The American College of Sports Medicine (ACSM), the American Dietetic Association (ADA), and the Canadian Dietetic Association, have declared that if energy intake of athletes is sufficient to maintain body weight at the time of training or competition, they do not require vitamin/mineral supplementation.^[39]

However, a study showed an increasing inclination among athletes to use vitamin/mineral supplements more than general population.^[28]

None of the supplement users in our study sought information on supplements from reliable resources such as healthcare professionals or textbooks [Table 5]. Consistent with these results, 77.6% and 41% of the athletes in Herbold and Jacobson studies obtained information from family members, friends and the media.^[21,40]

Most trainers and friends have little or no knowledge on sports nutrition; therefore, their advice may be inaccurate or inappropriate.^[41]

We did not consider sport foods such as sport drinks and sport bars and selected only male athletes; these were the main limitations of our study.

CONCLUSIONS

Use of nutritional supplements was average among the population studied. They had been recommended to take supplements by inappropriate resources but most of them, supplied the products from reliable places such as pharmacies.

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