

Nutritional Supplements Use in Physically Active Italian Adults: What Do They Use and How Are They Influenced?

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Abstract

Nutritional Supplements (NS) are widely used by the athletic community either elite or amatorial despite the lack of evidence to support claims related to performance enhancement. The objectives of this study was aimed to determine: i) the most common sources of NS information; ii) the prevalence of the different types of NS used by individuals that are regularly physically active; iii) and if sex influence the use of supplements. We thought to use a thematic forum to gathering data from Italian amatorial athletes over the age of 18. The results pointed out that forty-one different supplements were used by amatorial athletes. The most commonly reported source of NS information was the internet (reported by 42% of participants). Of the participants, 92.2% were male and only the 7.8% were female. Because the widespread popularity of NS among Italian male amatorial athletes, further research should be conducted on possible benefits or detriments posed by NS use, especially when multiple NS are taken concurrently. Besides that, education programs should also be implemented to encourage athletes to seek out information on NS from physicians, nutritionists or dietitians rather than other sources. This should result in athletes being more likely to only take NS that would most benefit their health and to help dispel faulty advertising claims.

Keywords: Nutritional Supplements; Italian; Learning and memory in sports; Sex-specific cognition.

Introduction

During the 1980s few companies were manufacturing and marketing nutritional supplements (NS) to a small percentage of the population (1). The next decade saw an explosion within the NS industry and the number of products sold to consumers doubled (2). Professional and non-professional athletes represent a significant percentage of NS users worldwide (2). Many NS companies exploit this knowledge and market their products directly to athlete consumers, often under the pretense that the products will enhance athletic performance, although this not always true (2,3). NS are regulated as food by the European Food Safety Authority (EFSA) and health claims by NS companies about safety and efficacy are often unsubstantiated and can become a form of addiction (3-8). For example, even though NS companies market whey protein to

athletes, the EU register on nutrition and health claims states that all claims made about the effect of whey protein on muscles, performance, endurance, strength, are in non-compliance:

“Non-compliance with the Regulation because on the basis of the scientific evidence assessed, this claimed effect for this food has not been substantiated.” (5-8)

There have been several studies in the literature that have reported the influence of non-health professionals on NS use in young athletes. A 2005 study by Nieper reported NS use by young athletes in the UK and found that multivitamins and minerals were most popular. Coaches had the greatest influence on NS intake, while doctors or sports dietitians had the least influence. Even though 72% of the young athletes had access to a sports dietitian, they underutilized the resource, believing they had enough self-knowledge (9). Diehl et al. in 2012 showed comparable results to those found by Nieper in 2005 (9,10). In the study NS use and source of NS information was analyzed in German elite adolescent athletes. Many of the elite adolescent athletes were overusing NS, some as a result of contractual obligation and their main source of information about NS came from coaches (10). Enforced NS use in young athletes is likely to ensure continued use into adulthood of those or other NS and the perpetuation of unsupported health claims by non-professionals. Despite lack of scientific evidence to support many of the claims made by the NS industry, retail sales of NS in Italy are expected to reach € 2.2 billion by 2020 (11). Throughout the economic recession of 2011, the Italian peoples' interest in NS products increased considerably and was not hindered by increased EFSA regulations on health claims (5-8).

The objectives of this survey were aimed to determine: i) the most common sources of NS information; ii) the prevalence of the different types of NS used by individuals that are regularly physically active; iii) and if sex influences the use of supplements. Finally, the results of our study should elucidate what education interventions, if any, would be beneficial to Italian athlete and NS consumers.

Method

On the January 2014 to January 2017, a thematic forum was posted on the message board at <https://www.bodyweb.com/>². The forum counts over than 30,000 subscribers who practice regularly sport. Questions on the thematic forum were designed to assess the following spheres: an graphic data (age, sex), physical activity (type, frequency, intensity), use of sources for food supplements information and attitudes associated with NS use. Inclusion criteria for the survey were men and women 18 years of age and older who engaged in regular physical activity, such as strength training, soccer, volleyball, skiing, swimming, tennis, basketball, and martial arts. Beside data collected in the survey message, data entered on the forum from January 2011 through August 2013 were analyzed and evaluated for source of NS information, types of NS used, physical activity, sex, and age. The same collection tool has been used in previous study for different supplements and similar conditions (12).

² The forum was moderated by Roberto Cannataro.

Results

3.1 Recruitment

The sample of the study included 3,148 physically active Italian adult's participants. Of the participants, 92.2% were male (n=2901) with an age range of 18 to 55 years (mean=26.75 ± 8.16 years) and 7.8% were female (n=247) with an age range of 21 to 40 years (mean=29.26 ± 6.76 years).

3.2 Statistics and Data Analysis

Data parameters were checked for normality using the Shapiro-Wilk normality test and analyzed accordingly. Office-Excel was used to calculate percentage.

3.3 Source of information on the use of nutritional supplement

As illustrated in Figure 1, there were five reported sources of NS information. 42% of our sample gets information from the net. Then training mate 22%, trainer or gym instructor 21%. Vendors of supplements 11% and last with only 4% qualified professional figure i.e.: Physician and Nutritionist. We see a compelling need to have a qualified professional that could lead the user in his way. Source of information on buying should be considered, but more important is the "know how" use nutritional supplements.

3.4 Nutritional supplement consumer frequencies

The frequencies for NS use can be found in Figure 2 and Table 1. The five most used NS were whey protein, branch chain amino acids (BCAA), creatine, multivitamins, and "pre-workout" supplements. Forty-one distinct supplement categories were reported. Four percent of the participants (n=126) reported that they do not use NS. Total users for all supplements reported is 17624, indicating that at least some participants used more than one supplement.

Discussion

The results of our study support previous findings that most of the NS information athletes receive do not come from qualified physicians or nutritionists (9, 10). In the work of Rockwell et al. 30% of participants knew of availability of a dietitian and the same 30% utilized this resource (13). Only 4% of this study's participants received NS information from a physician or nutritionist, leading to several possible explanations. Participants may not realize that their physician is a good source of NS information, they may not have a nutritionist readily available at their training facility, or they may more readily accept information from those they know and trust – friends, coaches, training partners, etc. The problem is that none of the top reported sources are guaranteed to be properly educated on athlete nutrition. Since this study did not ask participants why they chose a specific source for NS information, we can only speculate until further research is conducted. Also interesting was the fact that nearly half of NS information was sourced from the internet. At this time there is no way to determine the quality of information received from internet sources.

The top supplement reported in this study was whey protein to build muscle (in males). Even though the EFSA states that claims of performance enhancement have not been substantiated,

nearly 80% of participants reported using this supplement (5-8). Considering that most participants received their information on NS from sources other than a doctor or nutritionist, it is not surprising that they received misinformation. The top five reported supplements (whey, BCAA, creatine, multi-vitamin, and pre-workout) were used by more than a third of the participants. The main purpose of dietary supplement use was for both sex the health benefits beside to build muscle in males, and weight loss in females. In fact, it is very likely that some participants were using more than one supplement because total users of all supplements were 17624. The danger of this is that misinformed athletes are taking multiple supplements that could be ineffective and a waste of money, or it is possible that a single NS or a combination of NS is actually harmful to the athlete's health and wellbeing.

Our last objective was to investigate sex influence on NS use. Men (92.2%) were more represented in the study population than women (7.8%). This large difference in participation between sexes could be due to several factors. Women may be less likely to use NS and/or less likely to use a forum such as the one from this study. Also possible is that women may use NS with the same frequency as men and this study may have introduced unintended bias by using the forum on the website. However, the prevalence of men in this study is consistent with NS advertising that targets a mostly male athlete population. This aspect was also pointed out recently in Japan among students either in among elementary, junior high, and high school students or college (14-17).

In conclusion, this study is an excellent foundation for future research on Italian athlete NS use. Because of the widespread popularity of NS among Italian male athletes, further research should be conducted on possible benefits or detriments posed by NS use, especially when multiple NS are taken concurrently. Education programs should also be implemented to encourage athletes to seek out information on NS from physicians, nutritionists or dietitians rather than other sources in order to guarantee that they are properly informed. This should result in athletes being more likely to only take NS that would most benefit their health and to help dispel faulty advertising claims.

Acknowledgments

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Source of information on the use of NS

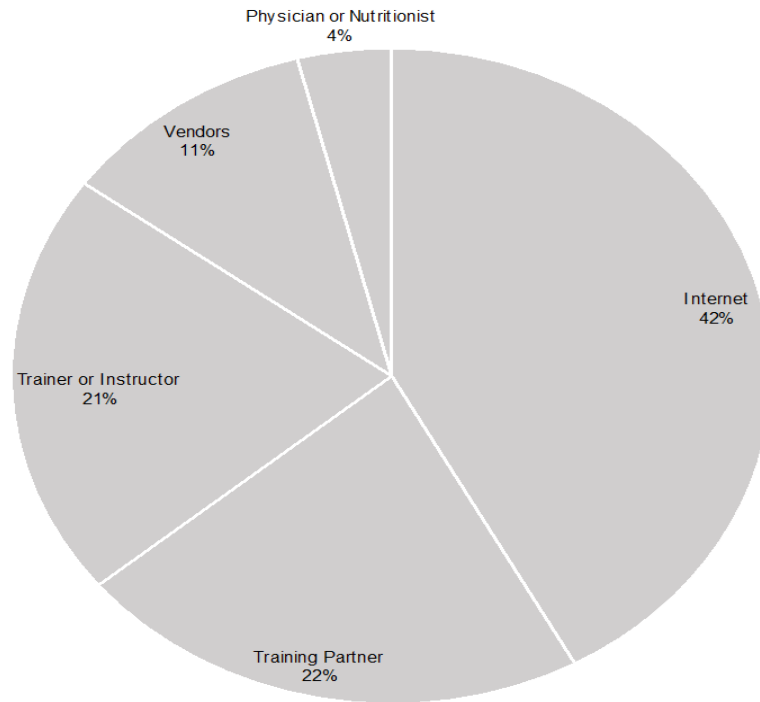


Figure 1. Source of information

Supplements Reported

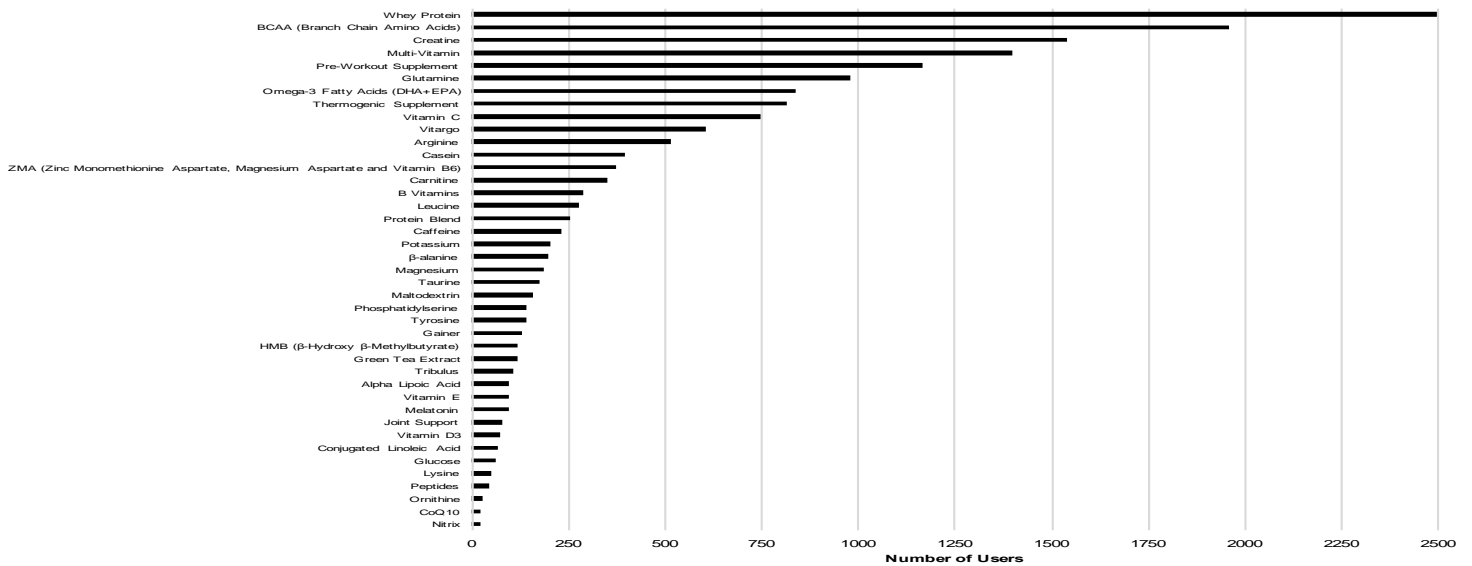


Figure 2. Supplements Reported by Frequency

Supplement	Users	Non users	Percentage of users	Percentage of non users
Whey Protein	2498	650	79.35%	20.65%
BCAA (Branch Chain Amino Acids)	1959	1189	62.23%	37.77%
Creatine	1539	1609	48.89%	51.11%
Multi-Vitamin	1399	1749	44.44%	55.66%
Pre-Workout Supplement	1166	1982	37.04%	62.96%
Glutamine	979	2169	31.10%	68.90%
Omega-3 Fatty Acids (DHA+EPA)	839	2309	26.65%	73.35%
Thermogenic Supplement	816	2332	25.92%	74.08%
Vitamin C	746	2402	23.70%	76.30%
Vitargo	606	2542	19.25%	80.75%
Arginine	513	2635	16.30%	83.70%
Casein	396	2752	12.58%	87.42%
ZMA (Zinc Monomethionine Aspartate, Magnesium Aspartate and Vitamin B6)	373	2775	11.85%	88.15%
Carnitine	350	2798	11.12%	88.88%
B Vitamins	288	2860	9.15%	90.85%
Leucine	279	2869	8.86%	91.14%
Protein Blend	256	2892	8.13%	91.87%
Caffeine	231	2917	7.34%	92.66%
Potassium	201	2947	6.39%	97.61%
β-alanine	199	2949	6.32%	93.68%
Magnesium	188	2960	5.97%	94.03%
Taurine	173	2975	5.50%	94.5%
Maltodextrin	158	2990	5.02%	94.98%
Tyrosine	140	3008	4.45%	95.55%
Phosphatidylserine	140	3008	4.45%	95.55%
Gainer	127	3021	4.03%	95.97%
Green Tea Extract	116	3032	3.68%	96.32%
HMB (β-Hydroxy β-Methylbutyrate)	116	3032	3.68%	96.32%
Tribulus	104	3044	3.30%	96.7%
Vitamin E	95	3053	3.02%	96.98%
Alpha Lipoic Acid	95	3053	3.02%	96.98%
Melatonin	93	3055	2.95%	97.05%
Joint Support	80	3068	2.54%	97.46%
Vitamin D ₃	70	3078	2.22%	97.78%
Conjugated Linoleic Acid	69	3079	2.19%	97.81%
Glucose	61	3087	1.94%	98.06%
Lysine	49	3099	1.56%	98.44%
Peptides	47	3101	1.49%	98.51%
Ornithine	25	3123	0.79%	99.21%
CoQ10	24	3124	0.76%	99.24%
Nitrix	21	3127	0.67%	99.33%

Table 1. Frequencies of Use of the 41 Reported Supplements. Sorted by frequency.

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