

Evaluation Report of the UNESCO’s project “Nutritional supplements in fitness centers: necessity or lifestyle (Survey in major Bulgarian cities)”

The project has been aimed to study the relation between demographics (as age, gender) of visitors in fitness centres and the nutritional supplements intake and the attitude to these products.

A survey of 26 questions was carried out among volunteers (athletes and non-athletes) in fitness-centres in eight major Bulgarian cities for revealing the incentives for nutritional supplements intake.

The research was conducted at the following towns: Sofia (85 participants), Varna (46 participants), Plovdiv (44 participants), Bourgas (42 participants), Rouse (43 participants), Veliko Turnovo (44 participants), Stara Zagora (40 participants), Vratsa (42 participants). The total amount of the participants in the survey is 388, at average age of 30.35 years. In the study, 214 men and 145 women took part (2 of the participants did not mark their gender).

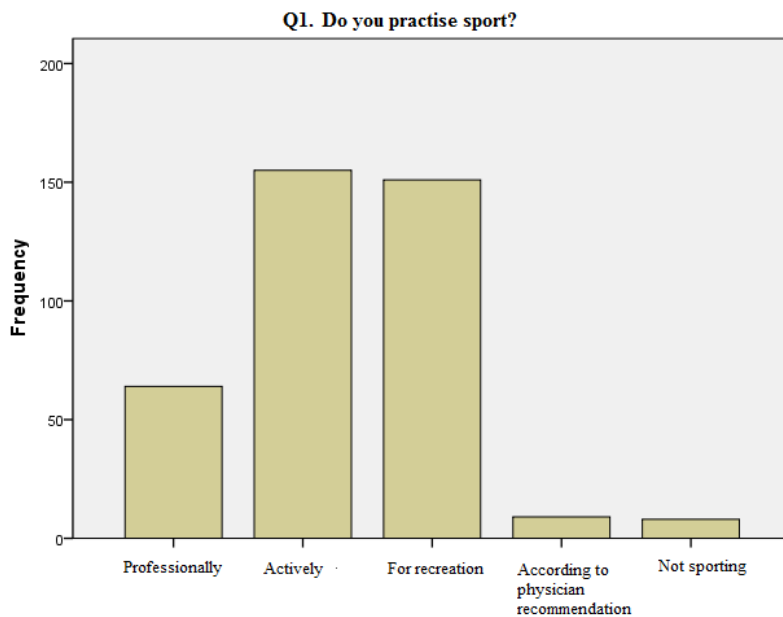


Figure1. Distribution of how the surveyors practice sport

Of the respondents, 72% practice fitness only. As an addition, the others most commonly practiced sports are football, bodybuilding and Bulgarian traditional dances, which account for 2 to 5% of the total number of respondents.

We could note that over 50% of the participants in the survey are very active and visit fitness centers 4-5 times a week (Fig. 2- Question 3).

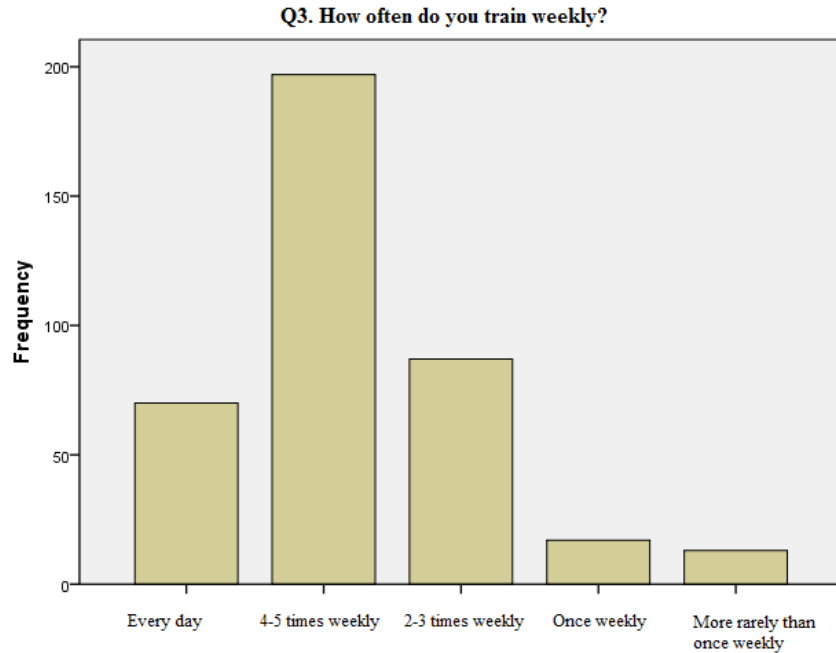


Figure2. Frequencies of training among visitors of fitness centres in Bulgaria

The average value of the answers to the question “How long are you practicing sports?” (Question 4) is 10.5 years. Nearly 60% of the surveyed respondents say that their training lasts for 1 hour and the average value of the replies to this question is 1.5 hour (Q5 “What is the duration of your usual training?”).

Of the participants, 40% use the advices and the service of a fitness instructor for their training process, the other 60% train without instructor.

To question 7 “What is the intensity of your training?”, 200 (51,9%) of the respondents mark the intensity of their workouts as moderate, 137 as high and 38 as low or they could not assess it (Fig. 3).

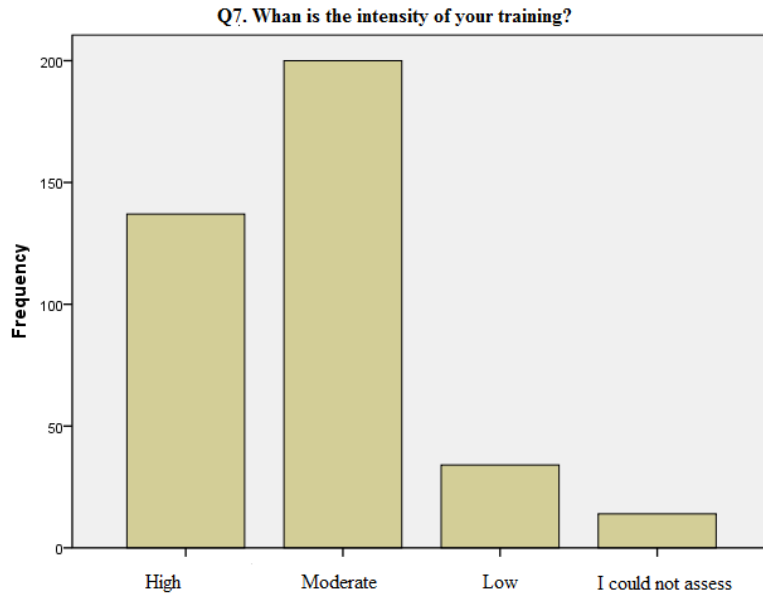


Figure3. Training intensity of the respondent persons

Half of the respondents (50.9%) admit of taking nutritional supplements, 16.8% used to take, but do not take presently, 32.3% have not ever-taken nutritional supplements (Q8. “Do you take nutritional supplements?” - Fir. 4). The participants, who have answered that use or have used supplements, assumed that the average value of the duration of supplements taking is 3.17 years. Comparing these values with the values of the answers to the Q4 “How long are you practicing sport?”, could reveal that the trend of using these kind of products by visitors of fitness centers has gained popularity.

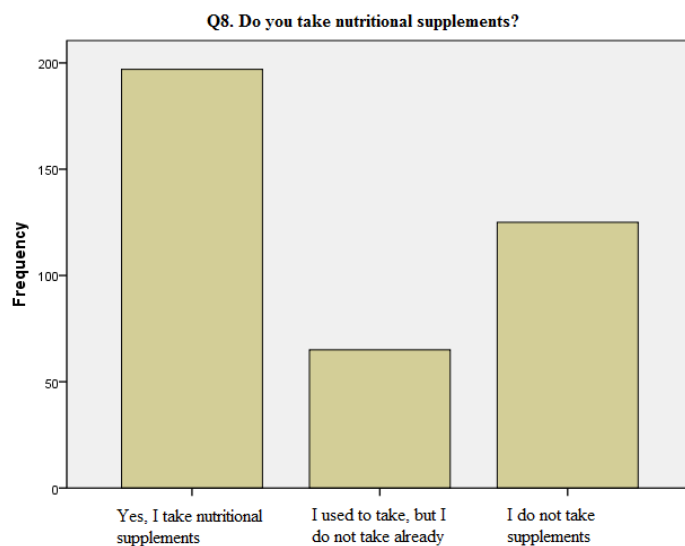


Figure 4. Nutrition supplements intake among the surveyed

The statistics, aimed at obtaining information about sports supplements, is rather disturbing (Fig.5). Information is mainly received from instructors/coaches (38.1%), 13% of the respondents use advices of a friend and 17.3% do not look for information at all. Only 11.1% of the respondents use as a source doctor's advice or medical prescription.

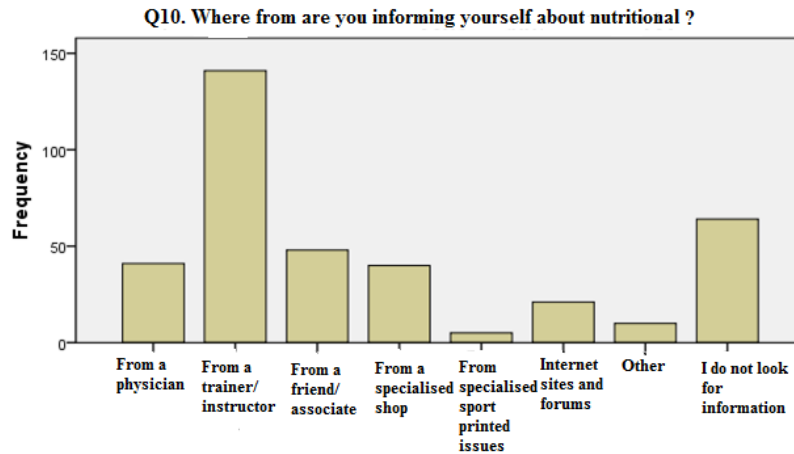


Figure 5. Informational sources

The data of the answers of Q11 “What kind of nutritional supplements have you taken, regardless when?” shows that proteins (65.8%) are the most commonly used nutritional supplement, followed by amino acids (50.1%) and vitamins (40.4%). Only 19.7% of the respondents marked that they have not used the listed in question 11 supplements.

Q11. What kind of nutritional supplements have you taken, regardless when?		
	Responses	
	N	Percent
Proteins	244	65.8%
Amino acids	186	50.1%
Nitrogen boosters	93	25.1%
Isotonic drinks	94	25.3%
Green foods	67	18.1%
Fat burners	111	29.9%
Minerals	124	33.4%
Probiotics	91	24.5%
Vitamins	150	40.4%
Energy drinks	120	32.3%
Other	21	5.7%
I have no taken similar kinds	73	19.7%

Table 1. Responses on Q11 of the survey

The respondents are almost equally divided on the reason for using nutritional supplements. To the Question 12: “After you, why do people take nutritional supplements?”, 20.3% answer for health, 28.6% for endurance, 32% answer for achievements and 19% “other”. The higher percentage of respondents, who mentioned achievements as a reason to take nutritional supplements, indicates that there is an attitude in society that the athletes use nutritional supplements in their training programs.

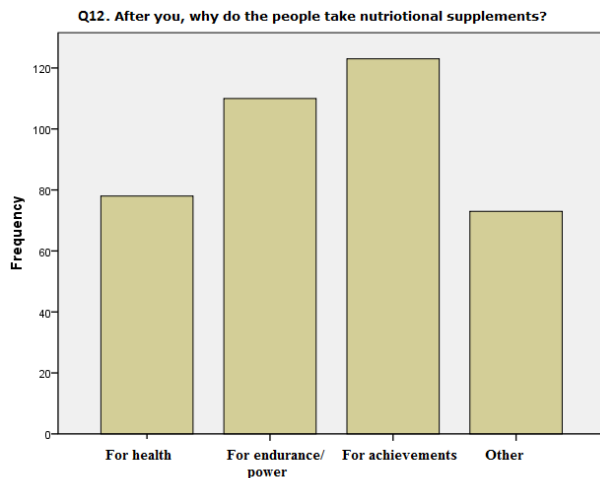


Figure 6. Results of revealing the reason of nutritional supplements intake

Of the respondents, 143 (37.8%) follow recommendation of taking supplements (Fig. 7 - Question 13) by a coach/instructor and not a small part, 22%, decided independently what nutritional supplements to take.

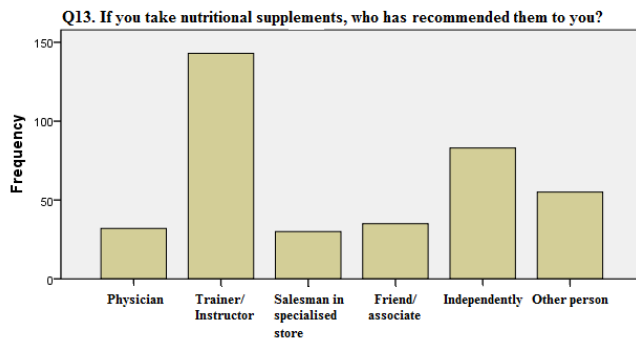


Figure 7. Sources of recommendations about taking nutritional supplements

We receive equivalent information for the scheme of taking supplements (Q14 - Fig.8). Most of the participants in the survey answer that they are informed by the instructor or use the scheme of the package. One fourth of the respondents does not take nutritionals, using any scheme.

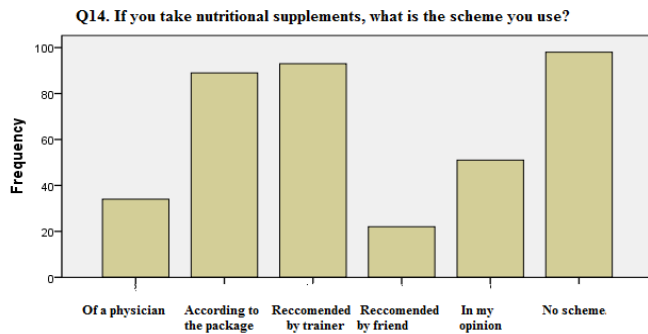


Figure 8. Used schemes of intake of supplements

Question 15 (Table 12) was focused on the use of substances, which are in the WADA Prohibited List. The use of stimulants and steroids is definitely not inherent to the respondents. Of the latter, 88.4% said they did not use these kinds of substances. The percentage of respondents (93.8%), who responded, replied that they did not use growth hormone stimulants (releasing factors) or diuretics (89.6%), hormone modulators (94.6%) and SARMs (94.3%).

Although the majority of the respondents answered that they did not use steroids, diuretics, stimulants, growth hormone stimulators or hormone modulators, among the respondents there were persons, in the range between 5% and 11%, who used these substances.

Diuretics were used as the highest percentage. For other substances, we assume that they are either not widely used or are unknown to the respondents.

		Q. 15. Have you used any of the listed products?											
		Steroids		Stimulants		Growth-hormone stimulants (releasing factors)		Diuretics		Hormone Modulators		SARMs products	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Valid	Yes	45	11.6	45	11.6	24	6.2	40	10.3	21	5.4	22	5.7
	No	342	88.1	342	88.1	363	93.6	346	89.2	366	94.3	365	94.1
	Total	387	99.7	387	99.7	387	99.7	386	99.5	387	99.7	387	99.7
Missing	System	1	0.3	1	0.3	1	0.3	2	0.5	1	0.3	1	0.3
Total		388	100.0	388	100.0	388	100.0	388	100.0	388	100.0	388	100.0

Table 2. The usage of some of the prohibited substance of WADA's Prohibited List

The aim of question 16 (Table 3) is to find out where from the fitness-centers visitors provide supplements and whether the illegal sale of nutritional supplements is widespread. The participants in the survey purchase nutritional supplements mainly from a specialized store (52.8%), a pharmacy

(28.2%) or a gym (25.8%). Only a small percent of the answers are “from friend/associate”, which means that the illegal sale is not widespread.

Q16. Where from do you buy the nutritional supplements?		
	Responses	
	N	Percent
From an alimentary shop	55	16.1%
From a specialized shop	180	52.8%
From a pharmacy	96	28.2%
From a specialized Bulgarian on-line shop	79	23.2%
From the fitness centre	88	25.8%
From The trainer/ instructor	43	12.6%
From a friend/ associate	24	7.0%
From specialized foreign on-line shop	55	16.1%
Other place	46	13.5%

Table 3. Sources of providing nutritional supplements

Of the interviewed visitors, 64.7% state that, before taking a nutritional supplement, they get acquainted with its contents and became familiar with its purpose (64.8%), and whether or what side effects it has (53.7%). Respondents also have a high interest in the expire date of the supplement (49.7%), but are not too interested in its manufacturer (32.3%) (Q17. Figure 9).

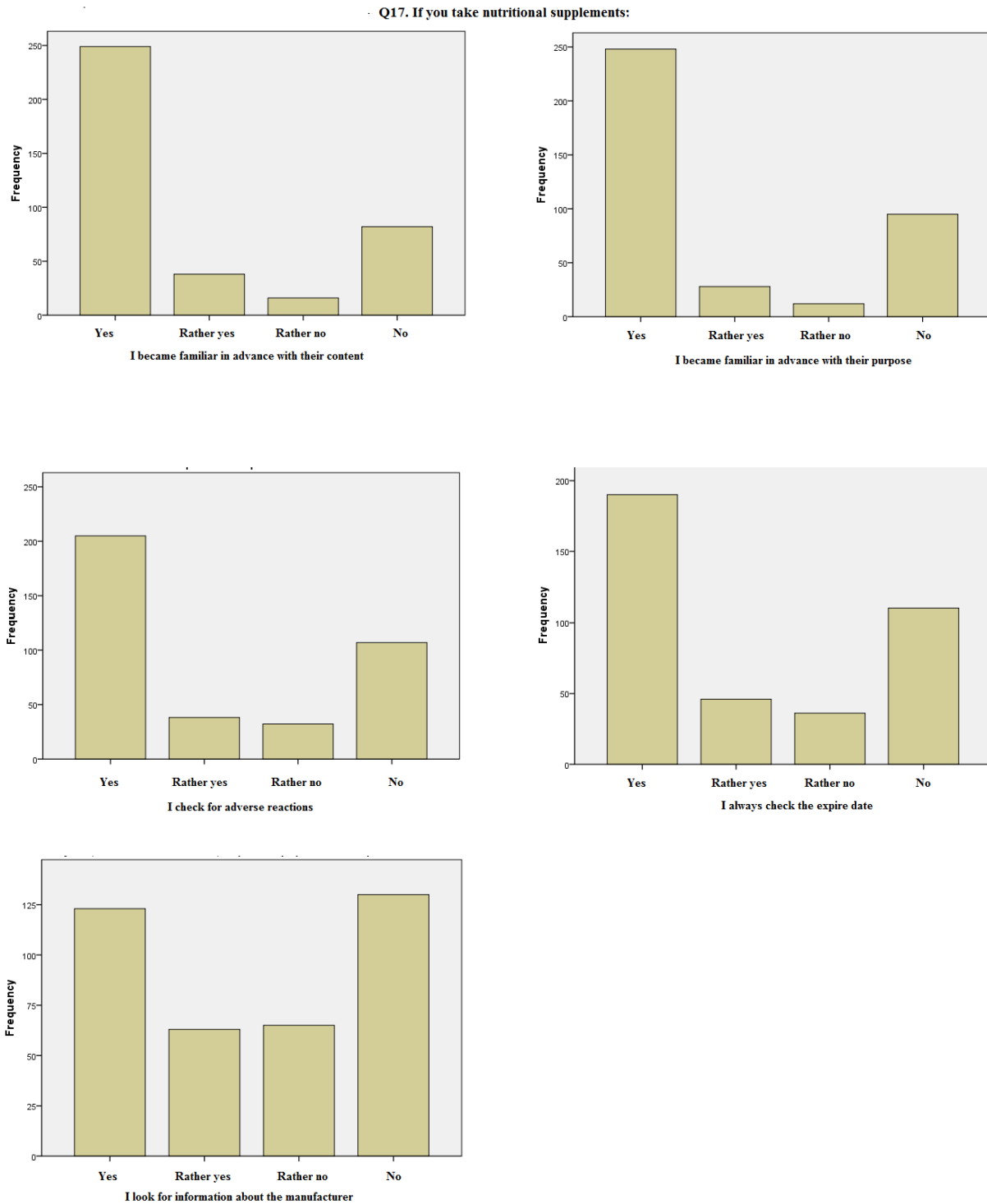


Figure 9. Research on the interest in contents, purpose and origin of the nutritional supplements

Using the Likert's scale¹, Question 18 "Which of the listed is most important to you when buying nutritional supplements/products?" was asked in the way of setting two extreme positions, among which the

1. The Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research. The scale is named after its inventor, psychologist Rensis Likert. When responding to a Likert item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item.

respondent has to choose. We explained to the respondents, which position we chose as "positive - 1" and which one is "negative - 9".

The results show that the price of the nutritional supplement is crucial when buying it, respondents also believe that the content of the nutritional supplement is important on a scale of 1 to 9, indicating mostly answers 1 to 4. The tendency for the purpose of the nutritional supplement is similar, and the respondents' answers were again from 1 to 4, on a scale from 1 to 9.

The distribution of the answers about brand/manufacturer is surprising, the respondents' answers indicating that interest in the manufacturer or brand of the nutritional supplement is low. There was a certain lack of interest on the part of the respondents to the weight/number of the package of the nutritional supplement.

However, the way of taking the nutritional supplement appears essential. Fitness-centers visitors also show little interest in the side effects of a nutritional supplement, the largest response being 8 on a scale of 1 to 9.

Regarding the conditions for the delivery of sports nutritionals, 64% of the respondents categorically reply that this is not a priority for them.

Question 19 breaks down the diet and habits, and is of the matrix type, so it consists of questions, whose answers match. The surveyor evaluates an action or product, in our case, the eating habits of each interviewed visitor of the fitness centers. It seems that the respondents follow the diet and strive to consume more fruits and vegetables so their food to be healthful. More than 60% of the respondents follow some kind of diet. Based on the answers, we could state the positive attitude of the respondents towards the usefulness of organic foods over the common ones. Despite the fact that the surveyors scale the brand/manufactures as not so important (Q.18), it should be noted that a large number of respondents is looking for certain brands of nutritional supplements. The same trend is observed in the respondents' attitude towards supplements' contents and their origin.



Figure 10. Results of researching of the diet and healthy habits of the respondents

Questions 20 to 26 are aimed at determining the social status of the surveyed in order to find whether there is a relationship between material status, educational degree, marital status, the city they inhabit and the consumption of nutritional supplements. The analysis strongly shows that no dependencies are found between the listed indices. Figure 11 shows the distribution between nutritional supplements intake and the material status.

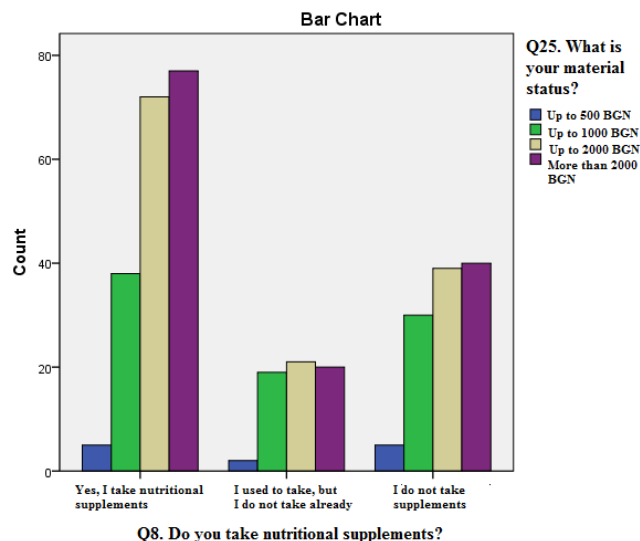


Figure 11. Comparing of the material status of the surveyed and nutritional supplements intake

There are no significant differences between intake of nutritional supplements and the material status.

We also compare the usage of nutritional supplements and some of the substances in the Prohibited List between the gender and locality of the participants.

		Q11: Have you used any of the listed products:													Total
		Proteins	Amino-acids	Boosters	Isotonic drinks	Green foods	Fat burners	Minerals	Probiotics	Vitamins	Energy drinks	Other	I have never used		
Gender	Male-Yes	Count	182	150	80	68	40	65	81	46	109	85	19	32	231
		%	78.8%	64.9%	34.6%	29.4%	17.3%	28.1%	35.1%	19.9%	47.2%	36.8%	8.2%	13.9%	
	Female-Yes	Count	61	36	13	25	26	46	42	44	40	35	2	41	139
		%	43.9%	25.9%	9.4%	18.0%	18.7%	33.1%	30.2%	31.7%	28.8%	25.2%	1.4%	29.5%	
Total		Count	243	186	93	93	66	111	123	90	149	120	21	73	370

Table 4. Distribution of the nutritional supplements intake among the genders

		Q15: Have you used any of the listed products:							Total
		Anabolic Steroids	Stimulants	Growth factors	Duiredtics	Hormone modulators	SARMs		
Gender	Male-Yes	Count	41	36	21	24	17	19	63
		%	17%	15%	8.7%	9.9%	7.1%	7.9%	26.1%
	Female-Yes	Count	4	9	3	16	4	3	25
		%	3%	6%	2%	11.0%	2.8%	2%	17.2%
Total		Count	45	45	24	40	21	22	88

Table 5. Distribution of the listed prohibited substances intake among the genders

The difference between women and men regarding the intake of nutritional supplements is evident (Table 4). Men use proteins, amino acids, boosters, isotonic drinks and vitamins. Men consumed 2 to 3 times more than women the above supplements. In terms of the use of green foods, fat burners and probiotics, women are definitely more favoured than men.

Eighty eight of the respondents use any of the listed in the survey prohibited substances. The gender gap in the use of respondents is extremely clear-cut for anabolic steroids, stimulants, growth factors, diuretics and hormone modulators (Table 5). These substances are mostly taken by the males. The use of diuretics is similar in both genders.

		Locality							
		Sofia	Plovdiv	Varna	Bourgas	Rousse	Veliko Turnovo	Stara Zagora	Vratsa
Q11: What kind of nutritional supplements have you taken, regardless when?	Proteins	60	35	17	27	23	32	29	20
		70.6%	79.5%	37%	64.3%	53.5%	72.7%	72.5%	47.6%
	Amino acids	44	32	12	26	16	24	21	11
		51.8%	72.7%	26.1%	61.9%	37.2%	54.5%	52.5%	26.2%
	Boosters	28	11	4	12	9	12	10	7
		32.9%	25.0%	8.7%	28.6%	20.9%	27.9%	25%	16.7%
	Isotonic drinks	32	7	11	12	10	8	6	7
		37.6%	15.9%	24%	28.6%	23.3%	18.2%	15%	16.7%
	Green foods	21	10	6	10	7	4	4	4
		24.7%	22.7%	13%	23.8%	16.3%	9.1%	10%	9.5%
	Fat burners	22	16	11	15	22	11	9	5
		25.9%	36.4%	24%	35.7%	51.2%	25%	22.5%	11.9%
	Minerals	37	13	7	16	18	14	13	5
		43.5%	29.5%	15.2%	38.1%	41.9%	31.8%	32.5%	11.9%
	Probiotics	26	12	7	10	11	11	10	3
		30.6%	27.3%	15.2%	23.8%	25.6%	25%	25%	7.1%
	Vitamins	41	21	10	17	18	19	13	10
		48.2%	47.7%	21.7%	40.5%	41.9%	43.2%	32.5%	23.8%
	Energy drinks	34	13	11	17	14	11	12	8
	44.7%	29.5%	24%	40.5%	32.6%	25%	30%	19.0%	
Other	6	3	1	2	1	3	3	2	
	7.1%	6.*%	2.2%	4.8%	2.3%	7.0%	7.5%	4.8%	
I have never used supplements	10	5	18	9	10	5	3	13	
	11.8%	11.4%	39.1%	21.4%	23.3%	11.4%	7.5%	31%	

Table 6. Distribution of the nutritional supplements intake among the towns

		Q15: Have you been used any of the following substances:						Total
		Anabolic Steroids	Stimulants	Growth factors	Diuretics	Hormone Modulators	SARMs	
Locality	Sofia	11	14	6	17	5	6	22
		12.9%	16.5%	7.1%	20.0%	5.9%	7.1%	
	Plovdiv	2	2	1	4	1	3	8
		4.5%	4.5%	2.3%	9.1%	2.3%	6.8%	
	Varna	2	0	0	4	0	0	6
		2.2%	0%	0%	8.7%	0%	0%	
	Bourgas	6	6	1	1	3	1	9
		14.3%	14.3%	2.4%	2.4%	7.1%	2.4%	
	Rousse	8	5	9	2	5	7	11
		18.6%	11.6%	20.9%	4.7%	11.6%	16.3%	
	Veliko Turnovo	4	8	3	5	1	2	13
		9.1%	18.2%	7.0%	11.4%	2.3%	4.5%	
	Stara Zagora	6	3	1	4	2	0	9
		15%	7.5%	2.5%	10%	5%	0%	
Vratsa	6	7	3	3	4	3	10	
	14.3%	16.7%	7.1%	7.1%	9.5%	7.1%		
Total		45	45	24	40	21	22	88

Table 7. Distribution of the listed prohibited substances intake among the towns

The most used nutritional supplement is protein, followed by amino acids. In almost every city, most of the surveyed respondents take proteins or amino acids (Table 6). The percentage of visitors, who take vitamins, is also high in every town. It is noteworthy that, as a whole, the respondents in the city of Varna use a smaller percentage of the nutritional supplements mentioned in the survey, and there are no additional ones mentioned by them. The same statement applies to prohibited substances. The highest percentage of usage of nutritional supplements appertains of Sofia (Table 7). The difference in intake of any prohibited substances is pronounced between some of the towns. The highest use of anabolic steroids, growth factors, hormone modulators and SARMs is in Rousse. Stimulants are most commonly taken in Veliko Tarnovo and diuretics - in Sofia. As we already mentioned, the men (26.1%) use prohibited substances more frequently than the women (17.2%).

Conclusion

This project is the first to identify the prevalence of the intake of nutritional supplements and by people who visit fitness centers in Bulgaria. We found that approximately half of the participants who regularly exercised in gyms used nutritional supplements and that most of them got their information from their instructors/coaches. The main reason for taking nutritional supplements is for endurance/power or for achievements. Also, approximately half of the respondents buys supplements from specialized shop or on-line shop.

We have also researched the awareness of the origin of the nutrients, their purpose and contents. The most important factor for participants, when buying supplements, is their purpose and contents, but only half of them reported having a medical check-up for adverse reactions. Some of the questions in the survey affect the diet habits of the surveyors. We found that more than 60% of them follow any kind of diet and try to feed healthy, and also take any kind of nutrition in parallel.

Of all the participants, 22 % reported prohibited substance use. There is a variety of used prohibited substance among the genders and the cities. The most commonly taken prohibited substance by men is anabolic steroid and by women is diuretic.

Our results, obtained on the project, show clear-cut that the respondents devote major importance to the need of physical activity by training in the fitness centres actively (4-5 times a week). Based on the findings, it could be assumed that the surveyors use nutritional supplements not as an end-in-itself and a way of life but as a supplement to their diet and training regimen. For the visitors of fitness centres, nutritional supplements are a necessity for health strengthening and maintaining a high level of activity, which requires the restoration of the body's energy needs.

We found that the atmosphere in the fitness center and the coaches played an important role in visitors' decisions, and we believe that raising of public awareness could have a positive impact on reduction of the use of supplements and prohibited substances.

During the implementation of the project, one of the Bulgarian famous athletes in cross-country skiing, ski-orienteeing and ultramarathons took part in it by making a video, in which she shared her experience on the training and recovery. The aim of the video is to promote the importance of physical activity, eating a balanced diet, and the proper use of nutritional supplements.