

# Beliefs Assessment of the Faculty of Sport Sciences Students in Nutritional Supplements and Health Literacy

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**Abstract.** *Study Objectives:* This study aimed to assess the relationship between the level of belief in nutritional supplements and the health literacy of students studying at the Faculty of Sport Sciences. *Methods:* This descriptive and correlational study was conducted with the students of the Faculty of Sport Sciences of a state university in the Central Anatolia Region of Turkey. This study was completed with 804 students who agreed to participate. The data were collected using the socio-demographic data form (16 questions), the Turkish Health Literacy Scale-32 (THLS32), and The Scale of Beliefs of Sports Supplements Turkish Version prepared by the researchers. *Results:* A significant difference was found between the department where university students studied, where they stayed, and the belief in sports nutritional supplements. Meanwhile, in the health literacy index, a significant difference was found only with the chronic disease status. 47.4% of the students took energy drinks and 47% took dietary supplements. The health literacy of 68.8% of the participants was at an adequate/excellent level. No significant correlation was found between THLS32 and the belief in sports nutrition supplements. *Conclusion:* It has been determined that students of the faculty of sports sciences widely used dietary supplements and observed that the belief in dietary supplements did not change significantly with the increase of health literacy. Having a high nutritional supplement belief score might increase the use of banned supplement products, such as doping among students. Health education on nutritional supplements should be given to students, including trainers.

**Key words:** sports science students, dietary supplement, dietary supplement belief, health literacy

## Introduction

When dietary supplements are mentioned, vitamins, minerals, amino acids, and some herbal foods come to mind that are consumed widespread. When used, it is desired to have a positive effect. A dietary supplement is frequently used for supplementation when the individual does not receive the desired amount of nutrients with the foods consumed, in case of insufficiency of nutrients in the body, in cases where nutritional deficiency is felt in the body due to some diseases (1,2).

The World Health Organization has defined Food Supplementation as the practice of deliberately

increasing the content of one or more micronutrients, i.e., vitamins and minerals, in food, for the benefit of public health regarding health and improving nutritional quality through a reinforcing policy. Thus, the deficiency of lost micronutrients will be prevented by increasing the nutrient content and incorporating micronutrients (3).

In addition to supporting nutrition, nutritional supplements are marketed in many different areas as weight loss agents, food supplements, analgesics, cosmetics, immune-boosting or health, energy, cognitive, and physical performance enhancers (4,5). Although there is no clear scientific response to prove the claimed benefits in the studies in the literature, it is

reported that more than 37-98% of athletes continue to use these supplements. It has been reported that the supplements frequently preferred by athletes include vitamins, minerals, energy drinks, and protein supplements (6-9). In another study conducted on athletes, the overall prevalence of use was 46% by meta-analysis of 51 published surveys involving 10,274 male and female athletes on the use of supplements (10).

Many users believe that dietary supplements are not medicines and that there will be no adverse effects. However, nutritional supplements are pharmacological, just like medications; they can interact and show side effects. Hence, its use should be avoided unless it is recommended by a doctor, pharmacist, dietitian, and health professional (11).

Individuals who are interested in sports activities tend to take nutritional supplements because of the pressure to increase their performance. They widely use dietary supplements to adapt to training, reduce the interruption of training due to illness or training, and strengthen concentration. It is reported that iron supplementation, which athletes take routinely, causes toxicity. It has been suggested that dietary supplements should not replace food in malnourished people (12).

Various definitions of health literacy have been made in different sources in the literature. The American Medical Association (AMA) has described health literacy as “the ability to read and understand prescriptions, appointment papers, and other important health-related materials” (14). The World Health Organization (WHO), on the other hand, described it as the cognitive and social skills related to the individual’s access to health information, understanding of health information, ability to use it, understanding and interpretation of health issues, and wishes to protect, maintain, and improve the well-being of their health. Health literacy is a subject that enhances the quality of life of people, contributes to the development of their health, helps them make decisions on health-related issues, raises awareness about the health issues, and bolsters their ability to understand and interpret information. (13-15).

This study was planned to investigate the relationship between nutritional supplements belief and health literacy of students studying at the Faculty of Sports Sciences. It is considered that assessing the

health literacy of athletes using nutritional supplements would be useful for further studies to be conducted on this issue.

## Material and Methods

### *Scope of the Research*

This cross-sectional study was conducted at the Faculty of Sports Sciences of Yozgat Bozok University between October and December 2021. In this research, we aimed to reach the entire population (n=1003) by not doing a sampling. This study was completed with 804 (80.15% of the population) students who agreed to participate in the present study.

### *Data Collection Tools*

The data were collected via the internet by administering an e-survey. Personal Information Form (16 questions), The Turkish Health Literacy Scale-32 (THLS 32 questions), and the Scale of Beliefs of Sports Supplements Turkish Version (6 questions) were used as data collection tools in this study. THLS32 is a 32-item 5-point Likert scale developed by Okyay and Abacıgil (2016). The conceptual framework includes two health-related dimensions and four processes of obtaining knowledge (access, understand, evaluation, and use) related to health-related decision making and practice. The scale consists of 5 Likert responses as Very easy (4), Easy (3), Difficult (2), Very difficult (1), No idea (0). As in the European Health Literacy Survey-HLS-EU study, the formula of “Index= (arithmetic mean-1) \*(50/3)” was used to ensure that the Scale score was in the range of 0-50.

According to THLS-32, health literacy is classified as inadequate health literacy (0-25 points), problematic – limited health literacy (>25-33 points), adequate health literacy (>33-42), and excellent health literacy (>42-50 points) (16).

The Scale of Beliefs of Sports Supplements (Turkish Version), The Nutritional Supplements Belief Scale, developed by Hurst et al. (2017) (17) and adapted to Turkish by Karafil et al. (2019), was used to measure the athletes’ belief in nutritional supplements.

As a result of the study, it was concluded that the scale of beliefs of sports supplements is a valid and reliable measurement tool for use in students studying in sports sciences. The scale is a 6-point Likert-type scale consisting of six questions. The items of the scale are as follows: (1) strongly disagree, (6) strongly agree. The lowest score that can be obtained from the scale is 6 and the highest is 36 points. With the highest score that can be obtained from the scale, it can be concluded that people may be more prone to doping and the use of similar banned dietary supplements (18).

The classification of the WHO was used in the Body Mass Index (BMI). A BMI of <18.5 was considered underweight, 18.5-24.9 normal weight, while a BMI of 25.0-29.9 was considered overweight, and >30.0 to be obese (19).

#### Statistical Analysis

The data were analyzed using the Histogram plot, Simple Scatter Chart, and Kolmogorov-Smirnov Test ( $p < 0.05$ ), and the data were not normally distributed. Of the non-parametric tests, the Mann-Whitney U and Kruskal-Wallis H tests were used. The correlation between the two variables was analyzed by Spearman Correlation analysis. In statistical analyses, descriptive data were expressed in number and percentiles, and

the results were considered statistically significant at  $p < 0.05$  in comparative analyses.

#### Ethical Approval

Ethical approval of this study was obtained from Yozgat Bozok University Ethics Committee with the decision dated 29.09.2021 and numbered 25/29. The necessary institutional permission was obtained with the decision dated 07.2021 and numbered E-50514558-200-25130. This research was conducted in accordance with the principles of the Declaration of Helsinki.

#### Results

In this study, 808 students participated, four students whose data were missing were not included, and 804 students were assessed. The mean age of the students was 22.76 (min-max 19-37) years. A comparison of the descriptive characteristics of sports science students and their belief in sports nutritional supplements with the health literacy index is presented in Table 1.

A significant difference was found between the department where university students studied ( $p = 0.016$ ), where they stayed ( $p = 0.034$ ), and the belief in sports nutritional supplements. However, no significant difference was found between belief in

**Table 1.** Comparison of descriptive characteristics and scale scores of participants

				A		B	
Characteristics		n	%	Median	p*	Median	p*
Sex	Female	298	37.1	25.0	0.780 <sup>a</sup>	34.38	0.494 <sup>a</sup>
	Male	506	62.9	25.0		34.38	
Grade of The Student in the University	1st Grade	74	9.2	26.0	0.795 <sup>b</sup>	33.86	0.334 <sup>b</sup>
	2nd Grade	201	25.0	25.0		34.90	
	3rd Grade	260	32.3	25.0		34.90	
	4th Grade	269	33.5	25.0		34.38	
Department	Physical Education and Sports	245	30.5	25.0	0.016 <sup>b</sup>	34.90	0.289 <sup>b</sup>
	Coaching Education	398	49.5	25.0		34.38	
	Sport Management	161	20.0	24.0		34.38	
Mother's Educational Status	Primary School and Lower	338	42.0	24.5	0.050 <sup>b</sup>	34.90	0.287 <sup>b</sup>
	High School	397	49.4	25.0		34.38	
	University and Higher	69	8.6	26.0		34.38	

Table 1 (Continued)

				A		B	
Characteristics		n	%	Median	p*	Median	p*
Father's Educational Status	Primary School and Lower	220	27.4	25.0	0.788 <sup>b</sup>	34.38	0.081 <sup>b</sup>
	High School	380	47.3	25.0		34.38	
	University and Higher	204	25.4	25.0		35.42	
Body Mass Index	Normal	580	72.1	25.0	0.690 <sup>a</sup>	34.38	0.964 <sup>a</sup>
	Overweight	224	27.9	25.0		34.38	
Chronic Disease	Present	10	1.2	28.0	0.227 <sup>a</sup>	30.21	0.001 <sup>a</sup>
	Absent	794	98.8	25.0		34.38	
Where the Student Stays	-with Family/Relatives	172	21.4	25.0	0.034 <sup>b</sup>	34.90	0.111 <sup>b</sup>
	-at the Student House	350	43.5	26.0		34.38	
	-in the Student Dormitory	282	35.1	25.0		34.38	
Total		804	100				

\*: p<0.05 was significant; a: Mann-Whitney U; b: The Kruskal-Wallis H test;  
A: The Belief in Sports Nutritional Supplements; B: The Health Literacy Index

**Table 2.** Health literacy scores of students with food supplement information and belief in sports nutritional supplements

				A		B	
Characteristics		n	%	Median	p	Median	p
Dietary Supplement	Receiving	378	47.0	25.0	0.083 <sup>a</sup>	34.38	0.472 <sup>a</sup>
	Not Receiving	426	53.0	25.0		34.64	
Frequency of Dietary Supplementation	Never	426	53.0	25.0	0.075 <sup>b</sup>	34.64	0.418 <sup>b</sup>
	Rarely	172	21.4	25.0		34.38	
	Frequently	106	13.2	24.5		34.90	
	Regularly	100	12.4	26.0		34.90	
Energy Drink	Receiving	381	47.4	25.0	0.082 <sup>a</sup>	34.38	0.375 <sup>a</sup>
	Not Receiving	423	52.6	25.0		34.90	
Monthly Expenditure on Dietary Supplements	0	388	48.3	25.0	0.103 <sup>b</sup>	34.38	1.000 <sup>b</sup>
	1-300 TL*	285	35.4	25.0		34.38	
	300 TL and above	131	16.3	25.0		34.90	
Where he/she Acquired Information on Dietary Supplement	-From Nowhere	328	40.8	25.0	0.251 <sup>b</sup>	34.90	0.275 <sup>b</sup>
	-Gyms	125	15.5	26.0		34.90	
	-Internet/Social Media	141	17.5	24.0		33.86	
	-Healthcare Professionals	63	7.8	25.0		34.38	
	-Other	147	18.3	25.0		33.86	
Total		804	100				

\*: Turkish Lira; a: Mann-Whitney U; b: The Kruskal-Wallis H test  
A: The Belief in Sports Nutritional Supplements; B: The Health Literacy Index

sports nutritional supplements and sex, grade, parental education, body mass index, chronic disease status ( $p>0.05$ ). Meanwhile, in the health literacy index, a significant difference was found only with the chronic

disease status ( $p=0.001$ ). Students who did not have the disease have a higher health literacy score. A comparison of the students' knowledge about food supplements and their belief in sports nutritional

supplements with the health literacy index is presented in Table 2.

No significant difference was found between the students' status of taking food supplements, their status of using energy drinks, where they acquired dietary supplement information, their spending on dietary supplement and their THLS-32, and belief in sports nutritional supplements ( $p>0.05$ ). The mean scores of the participants in this study on THLS-32 and its subcomponents and belief in sports nutritional supplements are presented in Table 3.

The results of the correlation analysis between THLS-32 and the belief in sports nutritional supplements are presented in Table 4.

No significant correlation was found between the THLS-32 score of the students of the Faculty of Sports Sciences and the belief in sports nutritional supplements score ( $r_{\text{Spearman}}=0.016$ ;  $p=0.642$ ). Moreover, no significant difference was found between the

THLS-32 classified score and the belief in sports nutritional supplements score ( $p=0.363$ ).

## Discussion and Conclusion

The descriptive characteristics of sports science students were compared with THLS-32 and belief in sports nutritional supplements. No significant difference was found between sex and their belief in dietary supplements. A significant difference was found between the department where the students studied, where they stayed, and the belief in sports nutritional supplements. Likewise, a similar result was obtained in the comparison of gender in the Ayaş (2020) study (20). It has been determined that students who studied in the Department of Coaching Education and stayed in the student house were more prone to doping or the

**Table 3.** The mean scores of participants' in THLS-32 sub-domains and belief in sports nutritional supplements

	n	Min	Max	Mean	SD
The Belief in Sports Nutritional Supplements	804	6.00	36.00	24.86	3.96
The General Index Score of Health Literacy	804	13.54	50.00	34.57	3.36
Treatment and Service	804	15.63	50.00	34.52	4.45
• Access to Health Information	804	0.00	50.00	33.67	8.73
• Understanding Health-related Information	804	0.00	50.00	34.72	8.08
• Evaluating Health Information	804	0.00	50.00	34.28	8.54
• Using/Applying Health-related Information	804	8.33	50.00	35.41	8.20
Disease Prevention/Health Promotion	804	11.46	50.00	34.63	4.39
• Access to Health Information	804	4.17	50.00	35.90	7.96
• Understanding Health-related Information	804	4.17	50.00	35.19	7.73
• Evaluating Health Information	804	4.17	50.00	34.63	7.83
• Using/Applying Health-related Information	804	0.00	50.00	32.79	8.21

SD: Standard Deviation

**Table 4.** Comparison of participants' THLS-32 scale and the scale of beliefs of sports supplements

		r*	p
The General Index Score of Health Literacy		0.016	0.642
THLS-32 Scoring Classification	n	Median**	p
Inadequate/Limited Health Literacy	251	25.0	0.363
Adequate/Excellent Health Literacy	553	25.0	

\* Spearman Correlation Analysis; \*\* Mann-Whitney U Test

use of banned dietary supplements. 56.8% of the athlete students who received ergogenic aid/medication stated that they used it after being influenced by their coach (21). In the present study, a significant difference was found between the presence of a chronic disease condition and the score of the health literacy scale. The health attitudes of the students who did not have the disease might increase their health literacy scores. 47% of the students receive dietary supplements and 25.6% of those who used supplements used them regularly/frequently. When the studies in the literature have been reviewed, it has been noticed that the frequency of dietary supplement use is about 35% and it is less than the students in this study. On the other hand, it has been observed that students (25.6%) and athletes (28%) who are involved in sports use dietary supplements more regularly (1,2,22). Besides, the frequency of dietary supplement use has been less (14.3%) in health sciences students. The perspective of health sciences students and sports sciences students on dietary supplements might affect their preferences (23). Moreover, 62.5% of individuals who exercise regularly in fitness centers believe that the use of dietary supplements is beneficial (24). The desire to look better and increase athletic performance might lead people who are involved in sports to use dietary supplements (25)

The belief in dietary supplement mean score of sports science students is 24.86, which is higher (21.68) than in a study conducted on athletes (20). The fact that the athletes had a lower average might be due to their being more conscious about the issue.

Nutritional knowledge is decisive in changing dietary behaviors. Nutritional information should be analyzed considering issues, such as health literacy (26). In the study where the impact of health literacy on diet quality was investigated, it was determined that the level of health literacy of the students studying at the Faculty of Sports Sciences was the second-highest level. The Healthy Eating Index score of the students with an adequate level of Health Literacy was significantly higher (27). No significant difference was found between the health literacy score of sports science students and their belief in dietary supplements scores ( $p > 0.05$ ). A study conducted on adolescents showed that those with high health literacy had a higher healthy eating-exercise score (28).

It has been found in this study that students use dietary supplements prevalently. High mean scores of belief in dietary supplements may lead students to be banned supplements, such as doping. It has been observed in this study that the belief in dietary supplements has not changed significantly with the increase of health literacy. Health education on nutritional supplements should be given to students, including trainers.

We should note that there are limited studies in the literature related to belief in dietary supplements and health literacy. Further studies are needed to include different sample groups on the subject addressed in this study.

**Conflicts of interest:** The authors declare that there is no conflict of interest in this study and manuscript.

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