Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 25, Issue 1, 2025
PRINT ISSN 2284-7995, E-ISSN 2285-3952

EATING HABITS AND PHYSICAL EDUCATION AND SPORT-COMPONENTS OF YOUTH HEALTH EDUCATION

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Abstract

This paper provides an overview of the physical activity (PA) and dietary behaviour of college students, emphasizing the need for long-term education to lead a healthy life. Four research objectives were set, and an online study was carried out (N = 365, 65.21% women, 65.21% urban residence), using a self-administered questionnaire. The average age of the respondents was 20.34 years. The collected data was analysed, processed and interpreted accordingly with the help of tables and figures. The main results: in the families of 84.11% of those surveyed, a part of the necessary food needed is produced in the household. The main source of food supply is the hypermarket, the proportion with which the food is purchased from here varies depending on the product category: 65.48% other food products; 60.55% milk and dairy products; 46.58% meat and fish products; 46.03% bread and bakery products; 44.93 % fruits; 43.01% vegetables. The dietary habits indicate that 91.33% of young people include all food categories in their diet. Approx. 19% of the young adults have a hyperprotein diet, and 13.97%, a hypocaloric one. More than 90% of the subjects recognize the importance of physical education for human health, approximately 92% of them engage in walking as a form of PA, 41% work out in the gym, and 53.15% stated that they allocate between 1 and 5 hours for PA/week. The main motivation to practice different sports is the desire to stay healthy (score of 4.17), and the main benefit identified for their own health refers to the way they feel, full of energy (score 4.03). More than 70% of young people use digital applications to monitor the number of steps taken and PA. More than 2/3 of the study participants believe that it is important for physical education to be part of students' daily routine. Universities can generate societal change, giving young people the opportunity to adopt healthy eating habits and understand the importance of PA for both human and planetary well-being.

Key words**:** *habits, food consumption, food purchase, physical education, physical activity, student, health education*

INTRODUCTION

Physical activity (PA) and eating behaviour are formed from adolescence [37], and then it becomes final in adulthood, having major health consequences. These behaviours in young people are closely related to the Sustainable Development Goals of the United Nations [36], especially with SDG- 3 (good health and wellbeing), SDG 5 (quality education),respective and SDG-12 (sustainable production and consumption).The specialized literature shows that diets contribute to planetary health, food being closely linked to sustainable development goals. The health of individuals requires a holistic approach, integrated into the natural systems in which they live [32].

Increasing the level of practicing PA also contributes to achieving many of the sustainable development objectives set by the United Nations in the 2030 Agenda for Sustainable Development, with the aim of having a healthier, more sustainable and prosperous humanity [40].

PA should be part of the daily life of every individual, regardless of age. The latest recommendations (Figure 1) show that adults should do an average of 300 minutes of moderate-intensity PA each week or 150 minutes of high-intensity PA [41], with beneficial effects on physical and mental health [43].

Fig. 1. Recommendations regarding the weekly time of physical activities in adults.
Source: [42].

The aim of the work is to identify the habits of young people to purchase and consume food and to practice physical exercises, their motivation and perception of their importance to have a healthy life.
A word cloud view of the most frequent terms in the abstract of the paper is shown in Figure 2.

Fig. 2. Wordcloud view of terms from the abstract of the paper
Source: own design using [38].

To achieve the goal of the work, four objectives were established:
RO1. Identifying food purchase and consumption habits to maintain health and support PA.
RO2. Identifying the habits of practicing physical activities, their frequency and duration.
RO3. Identifying the perception regarding the importance of PA, the motivation and the main benefits brought by its practice.
RO4. Recognizing the habit of engaging in fitness, along with the duration and frequency of training, and the use of apps to enhance physical performance.

MATERIALS AND METHODS

Study design

The study is based on survey research in which a self-administered online questionnaire was used, completed by a non-probability sample of students in Sibiu, Romania. Data were collected between November 2024 and January 2025, and the total sample size was 365 young adults. The age of the study participants is at least 18 years. They were informed about the purpose of the study and about data protection (GDPR). The thematic questionnaire was constructed specifically for this research and was based on both the literature review and original research ideas aimed at addressing topics related to young people's exercise habits, their perception of the importance of physical education (PE) for maintaining health and the support of intellectual effort, the motivation underlying the practice of physical exercises and different sports, their duration and the frequency of their practice, the habit of using various mobile applications for monitoring physical effort and food consumption, identifying food purchase and consumption habits to maintain their health status. The questionnaire included 25 items on the subject, to which 6 items related to standard socio-demographic data were added. Most questions included a 5-point Likert scale for recording responses. The obtained data were analysed and exported to the Microsoft Office Excel 2017program (MS Excel; Microsoft Corporation, Washington, DC, USA), in which the data were statistically processed, including the creation of tables and figures.

Study participants

The questionnaire was completed by 365 students from the 1st and 2nd years of studies, of the "Lucian Blaga" University in Sibiu, residing in 27 counties and in the city of Bucharest. From the total number of respondents, 197 people (53.97%) live in Sibiu County, 65 people live in Vâlcea County (17.81%), 21 live in Alba County

(5.75%), 15 people live in Brașov County (4.11%), while 18.36% of the respondents live in 23 other counties or in the city of Bucharest. Other socio-demographic data of the sample are: 65.21% (238 people) of the respondents are female, and 127 are male (34.79%); 65.21% (238 people) live in urban areas, respectively 34.79% (127 people) live in rural areas. The age of the respondents is between 18 and 57 years, and the average age is 20.34 years (Standard deviation 4.167; Confidence Level 95% = 0.428). Although all respondents are currently students in their 1st and 2nd years of study, 95.07% (347 people) are high school graduates, 3.01% (11 people) have graduated from a college, 1.37% (5 people) have graduated from a master's program, and 0.55 % (2 people) graduated from a post-secondary school. The respondents' family consists of 3.70 people on average (Standard deviation = 1.404; Confidence Level (95 %) = 0.144). The family's net monthly income is below 500 euros for 7.40% (27 people); 28.49% of people (104 people) have an average monthly income between 500 and 1,000 euros in their families; 51.78% (189 people) of people declared that the average monthly family income is between 1,001 and 2,000 euros, while only 12.33% (45 people) of people declared a net monthly family income of more than 2,001 euros (1 euro = 4.9728 lei).A question on subjective well-being was also added, for which the answers were collected on a scale from 1 to 5 (in which: 1 The income is not even enough for the bare necessities; 5 We manage to have everything we need, without much effort). The average score obtained for this item was 3.87, with the standard deviation: 0.919 and Confidence Level (95 %) = 0.094. This score shows that the surveyed subjects agree that the family income allows them to live decently, sometimes managing to buy more expensive things.

RESULTS AND DISCUSSIONS

RO1. Identifying food purchase and consumption habits to maintain health and support physical activity.

The specialized literature presents more and more evidence regarding the importance of healthy eating habits on the maintenance of health and the general well-being of individuals [13]. In this context, we aimed to identify the purchase and food consumption habits of young people, closely related to the practice of PE and sports.

The origin of the food consumed by the family

As can be seen from Figure 3, a share of 15.89% (58 people) of the respondents stated that their family does not produce food. In the case of 31.51% (115 people) of young adults, their families produce between 1 and 25% of the food needed in the household, while 24.66% (90 people) of young people believe that their family produces between 26 and 50% of the food needed. In the case of the other 17.95% of the respondents(102 people), their families produce more than 51% of the food consumed in the household.

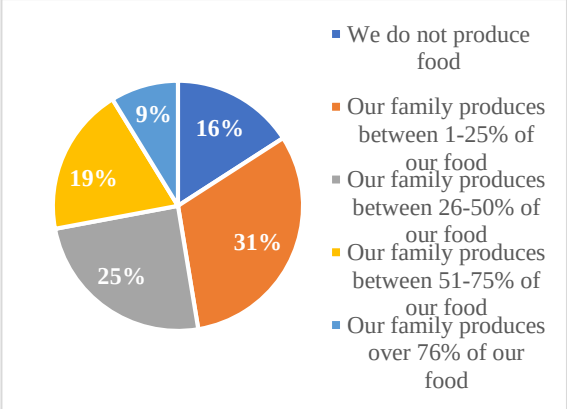

Fig. 3 Origin of food consumed in respondents' households
Source: own design

Favourite place to buy food, on assortments

Table 1 shows the preferred place for purchasing different food categories. The hypermarket/supermarket is the preferred place for purchasing food in the case of approx. 50% of families.

Although the supermarket/hypermarket remains the preferred place for purchasing food, it is observed that more than half of the respondents use to purchase milk (60.55%) and other food products (65.48%) from here. Vegetables are purchased from the supermarket only by 43.01% of the

respondents, and fruits by 44.93% of them. In the case of meat and meat or fish products, after hypermarket it is noted in the case of approx. ¼ of the people, the preference for direct purchase, from the farm, from the producer (23.29%), which denotes the creation of a relationship based on the consumer's trust in the producer.

Table 1. Food supply source

Favourite place to buy food, by category	Dairy products (%)	Meat or fish products (%)	Vegetables (%)	Fruits (%)	Bread and pastries (%)	Other food products (%)
Hypermarket/Supermarket (1)	60.55	46.58	43.01	44.93	46.03	65.48
Agri-food market (2)	4.93	5.85	21.37	21.10	5.21	5.21
Direct from the producer/farm (3)	20.00	23.20	16.99	15.62	12.33	10.68
Specialized store (4)	3.01	10.68	4.93	4.38	11.51	4.66
Shop of local producers (5)	8.49	10.96	7.67	7.12	13.15	6.03
Neighbourhood shop (6)	3.02	2.73	6.03	6.85	11.77	7.94
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: own calculation.

Perception of the importance of local products

A good part of the food products consumed in the respondents' families are purchased from producers, either directly from the farm, or from agri-food markets, producers' stores or specialized stores. These foods are mainly perceived as tasty and beneficial for health (average score 4.22), fresh and seasonal (average score 4.18) and ecological, made with less addition of chemical substances (average score 4.05) (Table 2).Even though the registration of food products on voluntary quality schemes certifies their authenticity and organoleptic and nutritional value [13], the lowest score (3.77) was recorded for the statement that farmers' products are products registered on voluntary quality schemes quality, which denotes an insufficient knowledge of these voluntary quality schemes, existing at national or international level, as shown by other researchers [9, 10]. In general, the registration of these products on quality schemes is directly related to care for the environment, animal welfare and the creation of short food chains [7, 34], future studies are needed to highlight the value of these products for health [16]. Also, relevant authorities should carry out information and education campaigns regarding the importance and nutritional value of these products.

Table 2. Reason for buying food from farmers (from household, market or farmer's shop)

Specification	Score	Ranking
Tasty and beneficial to health	4.22	1
They are local, fresh and seasonal products	4.18	2
They are organic products, with less added chemicals	4.05	3
They are traditional products, made in the specifics of the area where they are produced	3.99	4
They are food products that have a lower impact on the environment	3.92	5
They are food products registered on voluntary quality schemes	3.77	7
They are food products obtained in an extensive system, which contributes to the well-being of farmers	3.85	6

Source: own calculation.

Frequency of household food purchases

More than 50% of the respondents use to buy food 2-3 times a week, while 27.67% buy food once a week. It is observed that 15.62% of young people use to purchase food daily (Table 3).

Table 3. Frequency of purchasing food in the household

How often do you buy food in your household?	Frequency (no.)	Percentage (%)
Daily	57	15.62
Once/week	101	27.67
2-3 times/week	184	50.41
Once every two weeks	23	6.30
Total	**365**	**100**

Source: own design.

Identification of food regimes to maintain health and support PA

The results of recent studies [8] emphasize the need for systemic change to support healthy eating behaviours with beneficial effects on health and physical performance. Healthy eating habits are created from childhood, within the family, are consolidated in adulthood and play a major role in physical and mental health in adulthood [14].

The health and well-being of individuals depends on a whole series of factors, of which nutrition plays an essential role. Young people often look to role models online, which can have a lasting impact on their eating behaviours and habits [25]. Scientific evidence shows that nutrition influences mood, energy levels and attitude towards school [6]. Mantzioris et al (2024) showed that although the beneficial effects of the Mediterranean diet on health are known, studies are needed to highlight its effects on sports performance [26].

The university context represents a favourable environment for changing and promoting healthy lifestyle habits [35], being at the same time an important vector of societal change for development [3, 32].

Weight management can be managed through nutrition appropriate to the age, body development and physical and intellectual effort of everyone [12].In general, young people and athletes do not have sufficient nutritional knowledge and do not follow the approved nutritional recommendations [20].

As can be seen from Figure 4, 91.23% (333 people) of the young people surveyed used to consume all types of food.

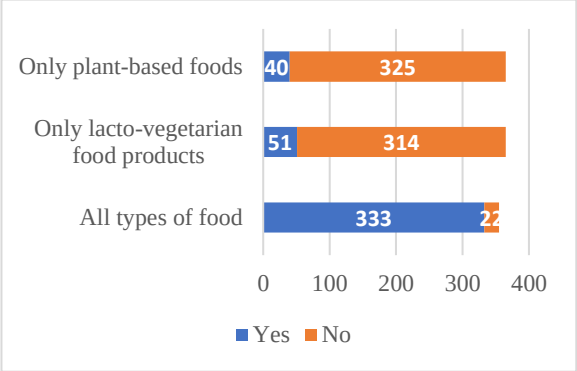

Fig. 4. Foods included in the diet to maintain health
Source: own design.

The share of those who state that they follow food diets is low: hyperprotein diet (18.63%, 68 people) or hypocaloric diet (13.97%, 51 people) (Figure 5), because at this age young people have fewer health problems.

An adult should consume an average of 55 g of protein per day, half of which should be animal protein. In 2022, a Romanian consumed on average 29.3 g of animal protein/head/day, respectively, 74 kg/inhabitant/year [31].

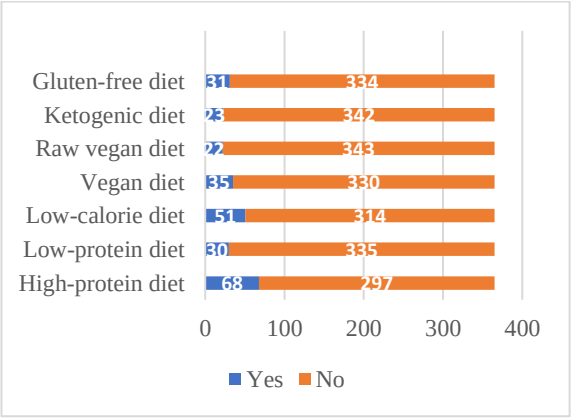

Fig. 5. Diet to maintain health
Source: own design.

Healthy diets in young people are associated with the tendency to practice various PE and sports activities [1]. Regardless of the individual's age, any nutritional recommendation should be based on scientific evidence. In the USA, the My Plate app was created, which provides information related to healthy diets [19].

RO2. Identifying the habits of practicing physical activities, their frequency and duration

Students' attitudes towards PE can be changed [29] and their knowledge of health benefits can be improved by promoting healthy behaviours [21] and prevention of internet usage addiction [15]. Young people are used to frequent PA, the most common way to exercise is walking (92.1%, 336 people), followed equally (47.9%, 175 people each) by hiking and exercising at the gym (Figure6).

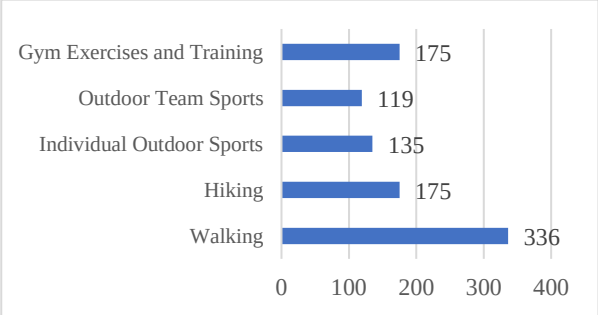

Fig. 6. The most frequently practiced type of physical activity
Source: own design.

Walking is preferred by over 91% of young people (Figure 7), being a pleasant way to exercise outdoors that does not require intense physical effort.

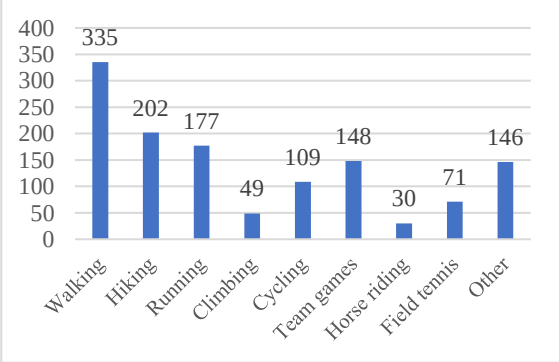

Fig. 7. Favourite physical activities of young people
Source: own design.

A study published by Zhou et al (2025) shows that the number of hours of physical education depends on factors such as grade level, location of the lesson, content of PA, and its context [44].The sports practiced regularly by the young respondents are, in order of their preferences, fitness (38.90%, 142 people), running (34.25%, 125 people) and football (22.47%, 82 people).
The frequency with which various sports are practiced is in the case of 45.48% of the respondents 1-2 times a week, for 29.04% of them 3-4 times a week, for 12.33% 5-6 times a week, and for 6.30 % daily. There is also a share of 6.85% (23 people) among young people who declared that they do not practice sports (Figure 8).

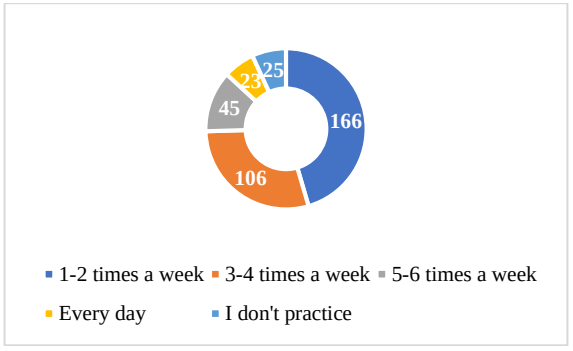

Fig. 8. Frequency of practicing various sports
Source: own design.

The weekly time allocated to the practice of various sports is for 53.15 % (194 people) of young people between 1 and 5 hours. There are also 21.37% (78 people) of the study participants who declared that they do less than 1 hour of sports per week or not at all. Almost a quarter of the young adults questioned (24.66 %, 90 people) declared that the weekly time allocated to practicing sports is between 6 and 20 hours, falling within the recommendations of the World Health Organization regarding the exercise regime of adults. Only 0.82 % (3 people) of the respondents perform physical activities more than 21 hours per week (Figure 9).

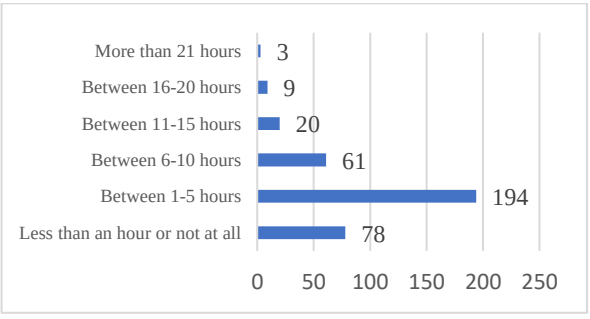

Fig. 9. Weekly time allocated to practicing sports
Source: own design.

A study conducted among young people in Norway shows that the time they spend on physical activities is decreasing [17], with young people preferring to spend a large part of their time on social media networks.

Another study in China found that people with higher education and higher incomes have a modern and more active lifestyle, developing long-term healthy behaviours [23].

RO3. Identifying the perception regarding the importance of physical activity, the motivation and the main benefits brought by its practice.

Almost 90% (320 people) of young people agree with the great importance of PE for human health. The average score recorded for the importance of PE for health is 4.19 (Standard deviation = 0.977, Sample variation = 0.955, Confidence level at 95 % = 0.100) (Table 4).

Table 4. Descriptive statistics on the perception of the importance of physical education for health

Mean	4.1890
Standard Error	0.0511
Median	4
Mode	4
Standard Deviation	0.9777
Sample Variance	0.9559
Kurtosis	3.5379
Skewness	-1.7875
Range	4
Minimum	1
Maximum	5
Sum	1,529
Count	365
Largest (1)	5
Smallest (1)	1
Confidence Level (95.0%)	0.1006

Source: own calculation.

The first objectives (Table 5) pursued by practicing PE and various sports are in ranking order: improving physical condition (score 4.19), maintaining body weight (score 3.61), and increasing muscle mass (score 3.57).Strategies are needed to promote PA and healthy eating habits among young people, which would prevent life-threatening diseases in adulthood [4].

PE and diets based on good quality food can help maintain an optimal body weight and a healthy lifestyle [30].

The social support provided by friends and socialization in general correlates positively with the level of PE practice by students [39].

Table 5. Objectives pursued by practicing sport

The main objectives pursued by practicing PE and sports	**Score**	**Ranking**
Increase muscle mass	3.57	3
Weight loss	3.29	4
Maintain body weight	3.61	2
Improve physical condition	4.19	1
Other	3.25	5

Soruce: own calculation.

The motivation to practice different sports is mainly related to the desire to stay healthy (score 4.17), the way young people feel when they exercise (score 4.13), the way they look (score 4.02).

Young people recognize the importance of practicing PE and sports and for learning new things about healthy eating (score 3.70) or for socializing (score 3.34) (Table 6).

Table 6. Motivation to stay active

Specification	**Score**	**Ranking**
The way I feel	4.13	2
The way I look	4.02	3
Helps me stay healthy	4.17	1
Helps me socialize	3.34	5
I can learn new things about healthy eating	3.70	4

Soruce: own calculation.

Numerous studies have highlighted the benefits that young people perceive by practicing PE and sports: maintaining physical health, general well-being [27], the perception of a state of well-being [28], improving social behaviours, confidence [11], and anxiety prevention.

In the chosen sample, young people note the benefits (Table 7) that practicing sports brings to the way they feel and to their well-being. Thus, the main benefit refers to the surplus of daily energy I feel (score 4.03), to the reduction of stress and anxiety (score 4.00), respectively to the improvement of the body's immunity and a more peaceful and restful

sleep (score 3.99). The lowest score was obtained regarding the perception of the advantages of practicing sports on the improvement of school results (score 3.22).

Table 7. The benefits felt by young people by practicing sports

Specification	Score	Ranking
It helps me feel better, with more energy	4.03	1
It helps me reduce stress and anxiety	4	2
It helps me maintain an optimal body weight	3.95	5
It helps me sleep better	3.99	3
It helps me have more self-confidence	3.97	4
It improves my body's immunity	3.99	3
It helps me achieve better school results	3.22	6
Average score	**3.88**	

Soruce: own calculation.

More than 77% (282 people) of those surveyed say that it is important for PE to be part of students' daily routine.

Table 8. Descriptive statistics regarding the agreement that physical activities are part of the students' daily routine

Mean	4.1945
Standard Error	0.0487
Median	4
Mode	5
Standard Deviation	0.9305
Sample Variance	0.86590
Kurtosis	0.79045
Skewness	-1.05461
Range	4
Minimum	1
Maximum	5
Sum	1,531
Count	365
Largest(1)	5
Smallest(1)	1
Confidence Level (95.0%)	0.0957

Source: own calculation.

The average score recorded for the agreement that physical activities are part of the students' daily routine is 4.19 (Standard deviation = 0.930, Sample variation = 0.865, Confidence level at 95 % = 0.095) (Table 8).

About 61.10% of young people say that they have enough time to practice different physical activities. Among the obstacles encountered in practicing physical activities are, however, lack of time (score 3.64) and high costs to work with a personal trainer (score 3.44) (Figure 10). Lack of time, energy, skills and resources as barriers that prevent young people from practicing PE are also reported by Bobo-Arce et al (2024) [5].

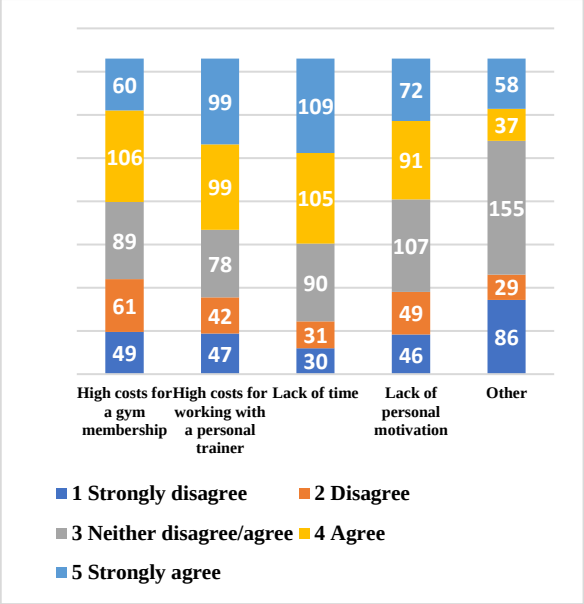

Fig. 10. Obstacles in practicing PA
Source: own design.

RO4. Recognizing the habit of engaging in fitness, along with the duration and frequency of training, and the use of apps to enhance physical performance.

The young generation puts a lot of emphasis on how they look, with a good number of young people having gym memberships. In the present sample, 41% (149 people) of young people train at the gym: 3-4 times a week (17%, 61 people), 1-2 times a week (15%, 56 people), 5- 6 times a week (8%, 30 people) or even daily (1%, 2 people) (Figure 11).Approximately 60% (221 people) of young people who regularly go to the gym train alone or with a partner.

Approximately 7.7% (28 people) of young people train with a personal trainer or with an instructor for a group of people, 2.47% train with a group of people, without benefiting

from the services of an instructor, and 29.32% of young people do not train at all.

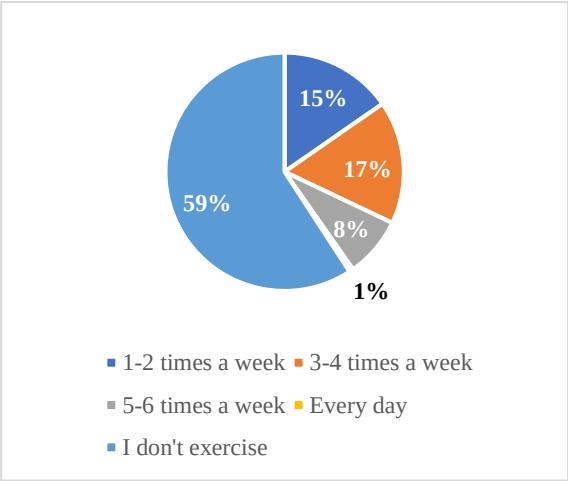

Fig. 11. Training frequency at the fitness gym
Source: own design.

The young generation is familiar with the use of digital technology, getting used to using applications that (Figure 12): allow them to track the number of steps and monitor sports activity (71.23%, 260 people), applications that provide them with training plans and exercise instructions (52.52%, 192 people), nutrition applications (42.74%, 156 people) or combined applications (29.32 %, 107 people).

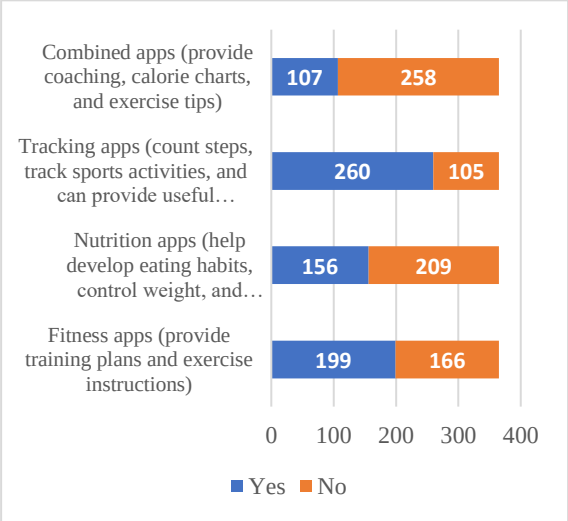

Fig. 12. Use of mobile applications
Source: own design.

The most frequently used mobile applications are (Table 9): Apple Health (36.99%, 135 people), which monitors steps, distance travelled and calories; MyFitnessPal, which allows tracking of food, exercise and calories burned (31.51%, 115 people).

Table 9. Use of digital applications for monitoring nutrition and exercise (number of responses)

Using mobile apps	Yes	No
MyFitnessPal (tracks nutrition, exercise, and calories burned)	115	250
Fitbit (tracks distance, calories burned, and sleep)	53	312
Strava (tracks routes, distances, speed, and social connections)	30	335
Nike Training Club (provides workout tutorials and allows you to create a personalized workout)	43	322
Lose It! (allows you to track calories, get nutritional information by scanning food labels, and provides personalized weight loss recommendations)	32	333
Apple Health (tracks steps, distance, calories, and workouts)	135	230
Google Fit (allows you to set goals for physical activity and health)	85	280
JEFIT (helps you create and track personalized workout programs)	16	349
MyPlate (includes nutrition and health information)	25	240
Fitbod (creates workouts based on your equipment and fitness level)	15	350
Other digital apps	164	201

Source: own calculation.

Sharma et al (2024) show that mobile applications are increasingly used in the post-pandemic period, providing health and fitness benefits to users [33]. Mobile applications enable data collection and analysis, and a better understanding of the importance of a healthy lifestyle [24].
The average use of digital fitness apps in EU member states was 27.43% in 2023, double the global average (13.42%) [22].
In Romania, there are no studies highlighting the use of technology in sports [2]. A recently published study by He et al (2024) shows that rigorous research in this direction needs to continue to better understand the potential benefits of using mobile apps in youth PA [18].

CONCLUSIONS

The work comes to complete the body of specialized literature on education for a

healthy lifestyle of Romanian students, analysed from the perspective of purchasing and food consumption habits and the practice of PE and sports.

Universities have a significant role as a factor of social change, being the ideal place for young people to learn healthy eating habits and understand the importance of PA for harmonious development and a healthy life.

For these reasons, we advocate that aspects related to healthy eating, such as balanced diets and food sustainability, should also be addressed during university training, in PE classes.

Intervention programs are needed to stimulate the practice of physical exercise and sport in universities, to improve the sports infrastructure of universities and to promote PA and sport for recreational purposes. University sports clubs, for example, can offer accessible facilities to all students for the recreational practice of various sports, and can contribute to the promotion of PA by organizing amateur competitions and organizing extracurricular activities attractive to young people.

ACKNOWLEDGEMENTS

We want to thank the 365 students who accepted to take part to this survey and their kindness to answer the questionnaires and present their opinion on their habits regarding PA and food purchasing and consumption.

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