# SELF-ESTEEM IN STUDENTS' EVERYDAY LIFE, DEPENDING ON THE NUTRITIONAL STATUS AND MOTIVES FOR PHYSICAL ACTIVITY

# SAMOOCENA STUDENTÓW DOTYCZĄCA FUNKCJONOWANIA W ŻYCIU CODZIENNYM W ZALEŻNOŚCI OD STANU ODŻYWIENIA I MOTYWACJI DO PODEJMOWANIA AKTYWNOŚCI FIZYCZNEJ

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### ABSTRACT

**Introduction.** Balanced nutrition and physical activity are key determinants of human health at any age.

**Aim.** The aim of the study was to analyse the relationship between self-esteem in everyday life, nutritional status and motives for physical activity among students of fields related and unrelated to health care.

**Material and Methods.** The study was conducted among 400 students of the State Higher Vocational School in Tarnow (200 students of fields related to health care and 200 students of other fields). The Motives for Physical Activity Measure – Revised (MPAM-R) and the Rosenberg Self-Esteem Scale (SES) were applied. Measurements of body weight and height were carried out to calculate the Body Mass Index (BMI).\_Basic descriptive statistics, Mann-Whitney U test, Kruskal-Wallis test, chi-squared test and Spearman's correlation index were used to describe the results. Differences were considered significant when p<0.05.

Results. 67 students (16.75%) were overweight, 19 (4.75%) were underweight and 8 (2.00%) were obese. There were no statistically significant differences between the field of study and the nutritional status of students (p > 0.05). Students of health care-related fields gave higher ratings for their physical fitness (p < 0.05). The average rate of motivation for engaging in physical activity among the studied group was 144.6 (± 37.0 points). Students gave the highest ratings for the domain of "fitness", followed by "appearance", "enjoyment", "competence", and the lowest ratings for "social factors". Higher scores in terms of MPAM-R were obtained by students of health care-related fields (p < 0.001). Students of fields related and unrelated to health care did not differ in the level of self-esteem (p > 0.05). The BMI did not significantly affect the motivation of students for engaging in physical activity or the level of their selfesteem (p > 0.05). The study showed a significant positive correlation between the MPAM-R and SES scores (p < 0.05).

**Conclusion.** Factors such as the nutritional status and the field of study do not affect the level of student's self-esteem. Higher levels of self-esteem were associated with greater motivation for engaging in physical activity. Greater motivation for engaging in physical activity was demonstrated by the students of health care-related fields.

KEYWORDS: students, nutritional status, physical activity, MPAM-R.

#### STRESZCZENIE

**Wstęp.** Racjonalne odżywianie się oraz aktywność fizyczna są podstawowymi czynnikami warunkującymi zdrowie człowieka w każdym wieku.

**Cel.** Celem pracy była analiza zależności pomiędzy samooceną funkcjonowania w życiu codziennym a stanem odżywienia i motywacją do podejmowania aktywności fizycznej wśród studentów kierunków związanych i niezwiązanych z ochroną zdrowia.

Materiał i metody. Badania przeprowadzono wśród 400 studentów PWSZ w Tarnowie (200 studentów kierunków związanych z ochroną zdrowia i 200 osób z pozostałych kierunków). Posłużono się skalą oceny motywacji do aktywności ruchowej (ang. The Motives for Physical Activity Measure - Revised, MPAM-R) oraz skala samooceny Rosenberga (ang. Rosenberg Self-Esteem Scale, SES). Przeprowadzono pomiary masy i wysokości ciała, na podstawie których obliczono wskaźnik BMI (ang. Body Mass Index, BMI).\_Do opisania wyników wykorzystano podstawowe statystyki opisowe, test U Manna-Whitneya, Kruskala Wallisa, chi2, oraz współczynnik korelacji rang Spearmana. Różnice uznawano za istotne, gdy p < 0,05. Wyniki. U 67 studentów (16,75%) stwierdzono nadwagę, u 19 (4,75%) niedowagę, a u 8 (2,00%) otyłość. Nie zaobserwowano istotnych statystycznie różnic pomiędzy stanem odżywienia a kierunkiem studiów badanych (p > 0,05). Studenci kierunków związanych z ochroną zdrowia istotnie lepiej oceniali własną sprawność fizyczna (p < 0,05). Średni wskaźnik motywacji do aktywności fizycznej w badanej grupie wyniósł 144,6 (± 37,0 pkt.). Najwyżej studenci ocenili domenę "zdrowie", w dalszej kolejności "wygląd", "zabawę", "wyzwanie", najsłabiej – "interakcje z ludźmi". Wyższe wyniki w skali MPAM-R uzyskali studenci kierunków związanych z ochroną zdrowia (p < 0,001). Studenci obu typów kierunków nie różnili się poziomem samooceny (p > 0,05). BMI nie wpływało istotnie na motywację studentów do podejmowania aktywności ruchowej ani na poziom samooceny badanych (p > 0,05). Wykazano istotną dodatnią korelację pomiędzy punktacją skali MPAM-R a wynikiem skali SES (p < 0,05). Wnioski. Stan odżywienia i kierunek studiów nie wpływał na poziom samooceny studentów. Wyższy poziom samooceny wiązał się z większą motywacją do podejmowania aktywności ruchowej. Większą motywację do aktywności ruchowej prezentowali studenci kierunków związanych z ochroną zdrowia.

SŁOWA KLUCZOWE: studenci, stan odżywienia, aktywność ruchowa, MPAM-R.

# Introduction

Lifestyle is believed to be the foundation of life, as it contains all the positive components affecting our health behaviours. These include, among others, balanced nutrition, physical activity, strengthening the organism, taking care of body clearance and maintaining adequate sleep [1, 2]. Determinants of health, as well as genetic factors may directly or indirectly cause illness, injury or death. Indirect determinants that affect the state of human health include social, environmental and economic conditions, while direct determinants include diet, the quality of consumed food and water, smoking and drinking alcohol [3].

Balanced nutrition is in line with the recommendations of food science as well as genetic, social and cultural predispositions. In other words, balanced nutrition satisfies all the needs of humans, which include biological, psychological and physical needs that enable proper mental and physical development, and also protect the body from illnesses [4].

It is a widely held view that the concept of healthy lifestyle cannot be separated from balanced nutrition and physical activity, as they go hand-in-hand in one direction – guaranteeing good health. Furthermore, in 2016 physical activity were added by the Food and Nutrition Institute to the Food Guide Pyramid, which from that time has been called the New Food Guide and Physical Activity Pyramid [4, 5].

Physical activity is any action related to physical effort and movement (the work of muscles), during which the heart rate and breath accelerate and a feeling of warmth (and often sweating) appears [4]. Even moderate physical exercise has a positive impact on human health, and it is not likely to cause injury and exhaustion, as opposed to the high-intensity physical exercise. According to the European Society of Cardiology, the best solution is physical exercise of moderate intensity and endurance exercise undertaken for 30–45 minutes 4–5 times a week [6].

According to the literature on the subject, there are two approaches to the relationship between selfesteem and pro-health behaviours: motivation and behaviours related to "personal development". The first approach describes a person with high self-esteem who undertakes health behaviours, which in turn increase the person's own value. The second approach describes a positive impact associated with successes and improvement of skills, which build up self-esteem [7]. A sense of health occurs when one can observe synchronization between physical and mental spheres as well as the surrounding environment. The subjective dimension of health is represented by all active and conscious activities undertaken by a person to achieve health [8, 9]. The aim of the study was to evaluate the relationship between self-esteem in everyday life, the nutritional status and levels of physical activity in students of fields related and unrelated to health care of the State Higher Vocational School in Tarnow.

## **Material and Methods**

The study was conducted among 400 students of the State Higher Vocational School in Tarnow (200 students of fields related to health care and 200 students of other fields). The Motives for Physical Activity Measure – Revised (MPAM-R) and the Rosenberg Self-Esteem Scale (SES) were applied.

Anthropometric measurements were used in order to determine the nutritional status of students. Body height was measured from the ground surface (basis) to the highest point of the skull (vertex) using a graduated anthropometer with an accuracy of 0.01 m. During the measurement, the subjects stood upright with their feet together and eyes facing forward. Body weight was measured on the Tanita scale with an accuracy of 0.1 kg.

The obtained results were used to calculate the Body Mass Index (BMI). The measurements were taken in a well-lit, warm room. The sequence of measurements was fixed. The same equipment, operated by the same person, was used to take all measurements. Students were wearing only underwear, without shoes. The interpretation of the nutritional status based on BMI was made in accordance with recommendations of the World Health Organization (WHO) [10].

The MPAM-R scale consists of respondent's particulars, self-assessment of physical fitness and 30 questions defining motives for physical activity, sorted into five major domains: fitness, enjoyment, appearance, competence and social factors. The respondents assess the extent to which they agree with the stated motives for physical activity based on the seven-point Likert scale (entirely disagree, mostly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, mostly agree, entirely agree). The more points scored, the greater the motivation for engaging in physical activity is. The study used the Polish version of the scale, the authors of which are: Jana Vašíčková, Hana Hřebíčková (Czech Republic) and Dorota Groffik (Poland) [11].

The self-esteem scale contains 10 diagnostic statements which relate to personal beliefs of the respondents. The respondent, based on the four-point Likert scale (entirely disagree, mostly disagree, mostly agree, entirely agree), points to one answer, which gives a detailed view on the extent to which the respondent agrees with the statement. The scale presents two types of sentences that depict the body in a positive or negative way. The overall rate of self-esteem is calculated by adding up points (from 1 to 4 points for one question), which are subject to interpretation (32–40 points – high self-esteem, 28–31 points – average self-esteem; 10–27 points – low self-esteem) [12].

Basic descriptive statistics, the Mann-Whitney U test, the Kruskal-Wallis test, the chi-squared test and the Spearman's correlation index were used to describe the results. Differences were considered significant when p < 0.05. The study was conducted in accordance with the ethical principles and good research practice resulting from the Helsinki Declaration.

### Results

#### **Characteristics of participants**

The study included 67 representatives (16.75%) of fields such as: physiotherapy, physical education, economics and Polish philology. In addition, 66 students (16.50%) of nursing and computer science were examined. The vast majority, i.e. 260 respondents (65.00%) were female.

#### Nutritional status and field of study

The average weight of students was 66.12 kg (SD = 12.68) and ranged from 40 to 115 kg. Students of fields related and unrelated to health care differed in body weight: students of fields unrelated to health care weighed more. The average height was 1.71 m (SD = 0.08). It was demonstrated that students of fields unrelated to health care were characterized by higher height. 67 students (16.75%) were overweight, 19 (4.75%) were underweight and 8 (2.00%) were obese. There were no statistically significant differences between the field of study and the nutritional status of students (p > 0.05) (**Table 1**).

 Table 1. Nutritional status of students of fields related and unrelated to health care

Field	Body weight [kg]								n *
i ieiu	n	Х	SD	Me.	Min.	Max.	Q1	Q3	μ
Related to health care	200	64,33	12,98	60	40	115	55	70	
Unrelated to health care	200	67,92	12,15	66	48	102	59	75,25	p=0,001
In total	400	66,12	12,68	63	40	115	56	73,25	
		Body height [m]							р*
Related to health care	200	1,7	0,09	1,68	1,5	1,94	1,65	1,74	
Unrelated to health care	200	1,72	0,07	1,7	1,54	1,98	1,66	1,78	p=0,013
In total	400	1,71	0,08	1,69	1,5	1,98	1,65	1,75	
BMI	Fields related to health care			Fields unrelated to In total				p **	
	n		%	n		%	n	%	

Obese (BMI ≥ 30)	5	2,50%	3	1,50%	8	2,00%	
Overweight (BMI 25- 29,99)	26	13,00%	41	20,50%	67	16,75%	p=0,000
Normal range (BMI 18,5- 24,99)	156	78,00%	150	75,00%	306	76,50%	n=0.088
Underweight (BMI < 18,5)	13	6,50%	6	3,00%	19	4,75%	

n – sample size; X – arithmetic average; SD – standard deviation; Me. – median; Min. – minimum; Max. – maksimum; Q1 – the first quartile; Q3 – the third quartile; p – significance level; \* Mann-Whitney U test; \*\* Chi-squared test

Source: author's own analysis

#### Level of self-esteem and field of study

The average score on the Rosenberg scale was 29.58 points (SD = 4.8) and ranged from 10 to 40 points. Students of fields related and unrelated to health care did not differ in the level of self-esteem (p > 0.05). In total, 242 students (60.50%) had average self-esteem, 147 (36.75%) had high self-esteem, and 11 respondents (2.75%) – low self-esteem.

#### Self-assessment of physical activity and field of study

The vast majority of students of both types of fields identified their physical fitness as above average. Students of health care-related fields gave higher ratings for their physical fitness (p < 0.05) (**Table 2**).

 Table 2. Self-assessment of the physical fitness level among students

 of fields related and unrelated to health care

Determine your level of physi- cal fitness in	Field to he	s related alth care	Fields unrelated to In total health care			Chi- squared	
comparison with other students	n	%	n	%	n	%	test
Above average	134	67,00%	109	54,50%	243	60,75%	n 0.014
Below average	66	33,00%	91	45,50%	157	39,25%	p=0,014

n – sample size

Source: author's own analysis

# Motivation for engaging in physical activity and field of study

The average rate of motivation for engaging in physical activity among the studied group was 144.6 ( $\pm$  37.0 points). Students gave the highest ratings for the domain of "fitness", followed by "appearance", "enjoyment", "competence", and the lowest ratings for "social factors". Higher scores in terms of MPAM-R were obtained by students of health care-related fields (p < 0.001) (**Table 3**).

 
 Table 3. Descriptive statistics of the results of the MPAM-R questionnaire among students of fields related and unrelated to health care

MPAM-R	Х	Result	SD	Me.	Min.	Max.	Q1	Q3	p*
		Total	result (r	number	of ite	ems: 3	0)		
In total Fields rela-	144,59	4,82	37,03	146	30	210	119	176	
ted to health care Fields	158,97	5,30	31,22	163,5	77	210	136,5	182,25	p<0,001
unrelated to health care	130,21	4,34	36,87	131	30	207	108,5	155,25	
		Fitr	ness (nu	umber	of iter	ns: 5)			
In total	25,55	5,11	6,83	26,5	5	35	21	31	
ted to health care	27,84	5,57	5,85	29	12	35	24	32	p<0,001
unrelated to health care	23,26	4,65	6,99	23	5	35	19	29	
		Enjo	/ment (	numbe	r of it	ems: 7	7)		
In total	33.67	4.81	9.43	34	7	49	, 27	42	
Fields rola-	00,07	4,01	0,40	04	'	40	21	76	
ted to health care	37,23	5,32	8,37	39	7	49	31	44	p<0,001
unrelated to health care	30,12	4,30	9,09	30	7	49	24	36	
		Appe	arance	(numbe	er of i	tems:	6)		
In total Fields rela-	30,39	5,07	8,06	31	6	42	25	37,25	
ted to health care Fields	33,49	5,58	6,67	35	14	42	29	39	p<0,001
unrelated to health care	27,3	4,55	8,16	28	6	42	22,75	33	
		Comp	etence	(numb	er of i	items:	7)		
In total	33,34	4,76	9,66	33	7	49	27	41	
ted to health care	36,76	5,25	8,68	38	13	49	30	44	p<0,001
unrelated to health care	29,93	4,28	9,4	30	7	49	23,75	36	
		Social	factors	: (numb	er of	items:	6)		
In total Fields rela-	21,63	3,61	7,47	22	5	35	17	27	
ted to health care	23,65	3,94	6,9	23	5	35	19	29	p<0,001
unrelated to health care	19,61	3,27	7,48	20	5	35	15	25	

n – sample size; X – arithmetic average; SD – standard deviation; Me. – median; Min. – minimum; Max. – maksimum; Q1 – the first quartile; Q3 – the third quartile; p – significance level; \* Mann-Whitney U test

Source: author's own analysis

# Nutritional status, self-esteem and motivation for engaging in physical activity

The BMI did not significantly affect the motivation of students for engaging in physical activity (p > 0.05) or the level of their self-esteem (p > 0.05).

# Motivation for engaging in physical activity and self-esteem

The study showed a significant correlation between motivation for engaging in physical activity (at each subscale of the MPAM-R) and self-esteem of the respondents (p < 0.05). These relationships are positive, i.e. the higher the score on the MPAM-R scale, the more points obtained in the SES questionnaire (**Table 4**).

Table 4	. Motivation	for enga	iging in p	hysical a	activity	and self-estee	em
among s	students of f	ields rela	ted and u	inrelated	to heal	th care	

MPAM-R	Correlation coefficient	Correlati Correlation coefficient p		Strength of the rela- tionship
Total result	0,314	<0,001	positive	average
Fitness	0,299	<0,001	positive	weak
Enjoyment	0,307	<0,001	positive	average
Appearance	0,211	<0,001	positive	weak
Competence	0,294	<0,001	positive	weak
Social Factors	0,288	<0,001	positive	weak

p - significance level

Source: author's own analysis

### Discussion

Physical activity has been the subject of many studies. Epidemiological studies clearly demonstrate that the absence or low levels of physical activity increase the risk of coronary heart disease and cancer, and above all, obesity and the metabolic syndrome. Conversely, regular and moderate physical activity has many health benefits; it has a positive effect on the respiratory and circulatory systems, it also significantly reduces the number of diseases associated with the lack of physical activity. Changes in the approach to physical activity are evident, particularly in young people. More and more people from the media or culture promote physical activity. In the era of consumer electronics and the Internet, an increasing number of free applications, which measure physical activity during the day, can be observed [4, 5, 13].

Despite the emerging positive trends, the surveys of the Central Statistical Office show that the majority of adult Poles do not get enough exercise on a daily basis [14]. It is worth paying attention to a certain relationship – physical activity in children and adolescents is inversely proportional to their age. The recommended level of physical activity (at least an hour a day for 5–7 days a week) is achieved by 45% of boys at the age of 11 and 17% of boys at the age of 18. This relationship is similar in the case of girls – the percentage of active girls at the age of 11 is 39%, and 11% at the age of 18 [4]. Planned and targeted participation in physical education classes amounts to only 70% of all school children. More than 80% of children have no positive patterns of physical activity in their families and use unjustified exemptions from physical education classes [15].

From the literature it is known that only 29.40% of girls and 41.20% of boys aged 11-15 in Poland maintain the recommended level of physical activity [16]. The case among adults is as follows: up to 57% of students from six universities in Poland claim to not engage in regular physical activity, 25% of respondents exercise twice a week, and only 12.40% of respondents exercise every day [17]. Another study, which used a shortened, Polish version of the International Physical Activity Questionnaire (IPAQ), shows that up to 58% of high school students assess their physical fitness as high, 23% as sufficient, and 19% as insufficient [18]. Yet another study considered the Moderate to Vigorous Physical Activity (MVPA), which represents the number of days a week in which we undertake a 60-minute form of physical activity. Based on these studies, it was found that 18.30% of respondents met the MVPA = 7 days. Low physical fitness was presented by 59.40% of the examined school children, and average physical activity (MVPA = 5-6 days) by 22.30% [19].

The results of this study indicate that a total of 60.75% of students claim that their physical fitness is above average and 39.25% of respondents believe that it is below the average. A slightly better fitness level was obtained by students of fields related to health care (67% rated their fitness as above average). The results of this study also suggest that much higher motivation for engaging in physical activity is presented by students of fields related to health care. The studies of Sochocka and Wojtyłko show that the field of study determines the regularity of physical activity. Students of physiotherapy, political science and computer science performed better than students of journalism, obstetrics and social communication, who were characterized by the lack of engaging in physical activity [17].

When analysing the results of this study it can be concluded that the respondents (of both types of fields) associated the highest motivation for engaging in physical activity with health, followed by appearance, enjoyment, competence and social factors. The studies of Vašíčková, Hřebíčková and Groffik show that, regardless of gender, health was the main motive for physical activity among young people, and the second motive was enjoyment. The subsequent motives include: appearance, competence and social factors [11]. For comparison, the study conducted among school children showed that the highest motive for engaging in physical activity among respondents aged 7–12 was enjoyment. As many as 82% of school children gave the highest ratings for statements such as: "Because it's fun" and

"Because I like to do this activity". The motive "appearance" came in last. Differences in responses between adults and children may be due to the age difference [19]. According to the researchers from Opole, more than half (51.10%) of the Polish students claim that taking care of mental and physical well-being is a priority when engaging in physical activity, and slightly more than 40% of the respondents take care of health and fitness through participation in sports. Appearance was the least important factor (loss of excess weight – 28.2%, maintaining a constant body weight – 18.1%, improving body shape – 15.1%) [17].

Starting a new job or studies (and often both activities at the same time) is often associated with less time for a healthy lifestyle - quickly and irregularly eaten meals, often more caloric and the lack of time for physical activity. This manifests itself in the nutritional status. Maniecka-Bryła and Bryła examined selected elements of health among students of the Medical University of Lodz. After calculating the BMI, it was found that as many as 30.2% of respondents were underweight, 56.1% were of normal weight, 10.2% were overweight and 1.1% - obese [20]. However, in this study the nutritional status of students of fields related to health care was as follows: 6.50% of respondents were underweight, 78% were of normal weight, 13% were overweight and 2.50% - obese. One can clearly see a high percentage difference in the case of underweight respondents. The results of studies conducted among high school students are similar to those obtained in this study - 5% of high school students were underweight, 84% were of normal weight, and 10% were overweight or obese [18].

The following study confirmed that the higher the students' self-esteem is, the more eager they are to engage in physical activity. Sankowski emphasizes that people who are active in sports have higher self-esteem compared to people who do not undertake any form of physical activity. Conversely, low self-esteem causes a lower level of expectations regarding the outcome of further activities. This involves a considerably higher focus on failures rather than successes. A person anticipates bad performance and the fear of failure causes even lower self-esteem. Physical activity has an indirect effect on the general self-esteem, and direct, thus more significant, on its components, such as "attractiveness", "physical strength" and so on [21].

### Conclusion

- 1. Nutritional status and the field of study do not affect the level of self-esteem.
- 2. Greater motivation for engaging in physical activity was presented by students of fields related to health care.

- 3. Higher level of self-esteem was associated with greater motivation for engaging in physical activity.
- 4. Well-being, which is the result of engaging in physical activity, may be an important strategy in health promotion programs, which pursue the goal of raising the overall mental and physical well-being of the society.

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