

READINESS TO CHANGE AND PRO-HEALTH BEHAVIOURS AMONG STUDENTS OF PHYSICAL EDUCATION AND OTHER TEACHING SPECIALISATIONS

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Abstract The aim of the study was to analyse the relationship between the profile of readiness to change and pro-health behaviours as well as physical activity among students of physical education and other teaching specialisation. The study was carried out among a randomly selected group of teaching specialisation students (464 females and 143 males). In the research, the following were applied: Inventory of Pro-health Behaviours by Z. Juczyński, the IPAQ and the Readiness to Change Questionnaire. Diversification in pro-health behaviours, level of physical activity and selected features of readiness to change among students of teaching specialisations was demonstrated. In the general population, along with the increase in self-confidence, passion and optimism, the level of health pro-behaviours also increased. Regardless of the type of studies, there were significant positive correlations between the level of physical activity and the degree of passion, optimism and boldness. Among students of other teaching specialisations (apart from physical education), a positive relationship was also noted between physical activity and creativity. Among the students of teaching specialisations, a correlation was demonstrated between the level of pro-health behaviours and physical activity as well as the degree of selected features constituting readiness to change.

Key words students of teaching specialisations, pro-health behaviours, physical activity, readiness to change

Introduction

A key determinant of holistically defined health is a lifestyle shaped as a result of the socio-cultural factors and personal resources of a subject. Preservation and improvement of health potential are fostered by pro-health behaviours, particularly related to a rational diet, recreational physical activity, effectively coping with psychological stress, undergoing regular preventative check-ups and avoiding psychoactive substances (Grey, 2017).

Despite the key role of a pro-health lifestyle in raising health potential and prevention of chronic diseases, numerous studies have demonstrated the prevalence of anti-health behaviours in the lifestyle of different population groups, including academic youth, even among those of teaching specialisations (Palacz, 2014; Deasy, Coughlan, Pironom, Jourdan, Mcnamara, 2015; Monhollen, Summers, Sabin, Rutherford, 2016; Kosiba, Gacek, Bogacz-Walancik, Wojtowicz, 2016) or teachers (Sharma et al., 2013; Laudańska-Krzemińska, 2014).

Pro-health behaviours, as behavioural determinants of health, are shaped in the process of socialisation. In this respect, a special role, apart from family, is played by schools, which have the obligation to create conditions for shaping the pro-health attitudes and behaviours of students, including the implementation of health education. An important condition for fulfilling the role of a health educator is a teacher's readiness to present his/her own attitude towards health via pro-health behaviours, making teachers role models for students (Schee, Gard, 2014). Referring to the subjectivity of health, active and conscious care for health among teachers is conducive to shaping positive attitudes towards health and factors conditioning them in children and adolescents. Being aware of the importance and value of health, a teacher becomes a more reliable health educator (Schee, Gard, 2014; Moynihan, Paakkari, Välimaa, Jourdan, Mannix-McNamara, 2015). In this context, the proper preparation of teaching specialisation students in the field of knowledge, skills and social competences is a prerequisite for the effective implementation of school health education among children and adolescents (Moynihan et al., 2015).

As is evident from contemporary concepts regarding professional development, developing and shaping teachers' qualifications is of processual nature, and in order to properly function in this profession, readiness to change, including modification and improvement of professional competences, is a key aspect (Leśniewska, 2016) also found in the area of health education (Talvio, Berg, Ketonen, Komulainen, Lonka, 2015).

The optimal level of readiness to change facilitates the enrichment of teachers' competences regarding the implementation of school health education. Readiness to change is defined as the subjective perception of requirements from the environment, related to specific emotional states, cognitive processes and behavioural elements, which is the result of interpreting objective reality. In the model by R. Kriegel and D. Brandt, which concerns readiness to change, seven indices are distinguished, namely: creativity, passion, self-confidence, optimism, boldness, adaptability and tolerance of uncertainty. A person of ready-to-change profile is able to generate ideas and effectively implement them, s/he positively responds to reality, is active and open to new challenges, aware of his/her competences and able to adapt to changing environmental conditions (Kriegel, Brandt, 1996).

Readiness to change fits into the essence of modern models of change in health behaviours, including the transtheoretical model, concerning graded introduction, continuation and maintenance of behaviours that are conducive to health. In this context, literature comprises works on changing health behaviours, including limiting the consumption of alcoholic beverages (Kazemi, Wagenfeld, Van Horn, Levine, Dmochowski, 2011) and increasing the level of physical activity among students (Dae-Jung, Ki-Jong, Myoung, 2014; Han, Gabriel, Kohl, 2017). Research on readiness to change in the context of tackling various challenges was undertaken among various professional groups, including teachers (Leśniewska, 2016; Yusuf, Gil, 2016; Winardi, Prianto, 2016; Kondakci, Beycioglu, Sincar, Ugurlu, 2017).

Pro-health behaviours, including physical activity, are key determinants of health, and students of teaching specialisations taking up professional work will be involved in the implementation of school health education. Research on the lifestyle of teaching specialisation academic youth in the context of features constituting their

readiness to change, as one of the factors determining the development of professional competences, is also present in the dimension of health culture.

The aim of the study was to assess pro-health behaviour and level of physical activity, readiness to change, as well as to analyse the relationship between the examined variables (profile of readiness to change and health-related behaviours) among students of physical education (PE) and other teaching specialisations (OTS).

The specific objectives concerned analysis of: a) the degree of pro-health behaviours and the level of physical activity as well as readiness to change depending on sex and educational profile; b) the relationship between the degree of pro-health behaviours and the level of physical activity as well as the degree of features constituting readiness to change depending on sex and educational profile. The hypothesis was verified stating that female and male students demonstrating higher values of indices constituting readiness to change present, at the same time, a higher level of pro-health behaviours and physical activity.

Material and methods

The study was carried out among 607 subjects, including 464 females (76.44%) and 143 males (23.56%), aged 22–28 (M: 22) – teaching specialisation female and male students of 3rd year B.A. studies at four Krakow universities: the Pedagogical University (53.05%), the Jagiellonian University (20.26%), the Andrzej Frycz Modrzewski Krakow University (6.75%) and the University of Physical Education (19.93%).

On the basis of the Inventory of Pro-health Behaviours (IZZ) by Z. Juczyński (2012), four categories of health behaviours (proper eating habits, preventive behaviours, pro-health practices and positive mental attitude) and the overall pro-health behaviour index were assessed.

Based on the short version of the International Physical Activity Questionnaire (IPAQ), the level of physical activity was assessed, including four of its categories: vigorous activity (above 1,500 or 3,000 MET-min/week), moderate physical activity (600–1,500 or 600–3,000 MET-min/week), walking (less than 600 MET-min/week) and sitting (Biernat, Stupnicki, Lebedzinski, Janczewska, 2008).

Based on the Readiness to Change Questionnaire (Kriegel, Brandt, 1996, Polish translation: Brzezińska, Paszkowska-Rogacz, 2002), the degree of readiness to change (creativity, passion, self-confidence, optimism, boldness, adaptability and tolerance of uncertainty) was assessed. The scale contains 35 items describing beliefs, attitudes and behaviours regarding various life situations.

Statistical analysis was performed using the SPSS 21 and Statistica PL 13 programmes with: a) the Student's *t*-test to determine gender-based differences related to educational profile (PE and OTS) – in the absence of homogeneity of variance, the *t*-test was carried out with a separate estimation of variance; b) analysis of variance for factor systems to determine differences in indices regarding the level of readiness to change depending on sex and specialisation of studies (PE and OTS); c) analysis of moderation to determine differences regarding the relationship between the level of indices of readiness to change, overall level of physical activity and the overall index of pro-health behaviours in the studied groups. Normality of distribution was determined using the Shapiro-Wilk test and distribution analysis. The significance level of $\alpha = 0.05$ was assumed.

Results

Intensity of pro-health behaviours (IZZ) among teaching specialisation students

Among the categories of pro-health behaviours included in the IZZ, students of physical education (PE) obtained the highest average scores in the category of positive mental attitude (21.01), while students of other teaching specialisations (OTS) obtained 19.48 points for everyday pro-health practices and 19.47 for positive mental attitude.

Statistically significant differences were found between physical education students and those of other teaching specialisations in the area of positive mental attitude and proper eating habits (in favour of PE students) and regarding daily pro-health practices (in favour of OTS students). In the category of preventive behaviours and the IZZ overall index of pro-health behaviours, there were no differences in the results depending on type of teaching specialisation (Table 1).

Table 1. Categories of pro-health behaviours (IZZ) among the academic youth depending on type of teaching specialisation (PE and OTS)

Pro-health behaviours	Total (n = 607)		PE (n = 121)		OTS (n = 486)		t (df = 605)	p
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD		
Positive mental attitude (PMA)	19.77	4.13	21.01	3.78	19.47	4.16	3.71	<0.001
Preventative behaviours (PB)	18.00	4.61	18.07	4.50	17.99	4.64	0.17	0.867
Proper eating habits (PEH)	19.22	4.93	20.31	4.85	18.95	4.92	2.73	0.007
Pro-health practices (PHP)	19.29	4.07	18.52	3.86	19.48	4.10	-2.32	0.021
IZZ overall index	76.28	12.75	77.90	12.33	75.88	12.83	1.57	0.118

N - number of observations; \bar{x} - mean; SD - standard deviation; t - Student's t-test; p - p value.

Analysis of IZZ results depending on sex showed that females obtained significantly higher average values than the males in terms of degree of the overall pro-health behaviour index ($p < 0.001$), preventative behaviours ($p < 0.001$) and proper eating habits ($p < 0.001$) (Table 2).

Table 2. Categories of pro-health behaviours (IZZ) among academic youth depending on sex

Pro-health behaviours	Total (n = 607)		Females (n = 464)		Males (n = 143)		t (df = 605)	p
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD		
Positive mental attitude (PMA)	19.77	4.13	19.86	4.09	19.50	4.25	0.90	0.370
Preventative behaviours (PB)	18.00	4.61	18.41	4.57	16.68	4.48	3.98	<0.001
Proper eating habits (PEH)	19.22	4.93	19.62	4.77	17.90	5.23	3.71	<0.001
Pro-health practices (PHP)	19.29	4.07	19.46	3.99	18.71	4.28	1.92	0.055
IZZ overall index	76.28	12.75	77.36	12.30	72.79	13.56	3.79	<0.001

N - number of observations; \bar{x} - mean; SD - standard deviation; t - Student's t-test; p - p value.

Physical activity level (IPAQ) among students of teaching specialisations

Among the physical activity categories included in the IPAQ questionnaire, physical education students obtained statistically significantly higher values for indices regarding vigorous and moderate efforts (IPAQ), and significantly lower values for the sitting index (IPAQ) than students of other teaching specialisations. It was also shown that the level of physical activity of physical education students expressed in the overall IPAQ index was statistically significantly higher than that for other teaching specialisations (Table 3).

Table 3. IPAQ physical activity categories (MET-min/week) of students according to teaching specialisation (PE and OTS)

IPAQ categories	Total			PE			OTS			t	df	p
	N	\bar{x}	SD	N	\bar{x}	SD	N	\bar{x}	SD			
IPAQ vigorous	587	1,794.28	2,728.55	119	4,153.95	3,662.84	468	1,194.27	2,042.66	-8.49	137.18	<0.001
IPAQ moderate	580	966.76	1,582.47	119	1,923.03	1,962.46	461	719.91	1,366.19	-6.30	148.77	<0.001
IPAQ walking	560	2,951.00	2,874.76	115	3,306.17	2,911.37	445	2,859.21	2,861.35	-1.49	558.00	0.137
IPAQ sitting	510	371.29	172.24	117	277.44	147.12	393	399.24	169.42	7.03	508.00	<0.001
IPAQ overall index	532	5,812.28	5,192.33	114	9,451.18	5,920.31	418	4,819.85	4,497.27	-7.76	150.36	<0.001

N - number of observations; \bar{x} - mean; SD - standard deviation; t - Student's t-test; df - degrees of freedom; p - p value.

Analysis of IPAQ results in relation to sex revealed that males obtained significantly higher values for indices concerning vigorous ($p < 0.001$), moderate ($p = 0.001$) and overall physical activity ($p < 0.001$) than females. At the same time, they spent significantly less time sitting per week ($p < 0.001$) (Table 4).

Table 4. IPAQ physical activity categories (MET-min/week) of students according to sex

IPAQ categories	Total			F			M			T	df	p
	N	\bar{x}	SD	N	\bar{x}	SD	N	\bar{x}	SD			
IPAQ vigorous	587	1,794.28	2,728.55	446	1,406.46	2,291.24	141	3,020.99	3,532.85	-5.10	178.71	<0.001
IPAQ moderate	580	966.76	1,582.47	440	818.14	1,377.38	140	1,433.86	2,037.08	-3.34	181.17	0.001
IPAQ walking	560	2,951.00	2,874.76	429	2,910.15	2,920.54	131	3,084.74	2,725.93	-0.61	558.00	0.543
IPAQ sitting	510	371.29	172.24	385	387.35	170.70	125	321.84	168.13	3.74	508.00	<0.001
IPAQ overall index	532	5,812.28	5,192.33	406	5,161.91	4,688.91	126	7,907.92	6,123.08	-4.63	172.87	<0.001

N - number of observations; \bar{x} - mean; SD - standard deviation; t - Student's t-test; df - degrees of freedom; p - p value.

Level of readiness to change among teaching specialisation students

Of the features in the Readiness to Change Questionnaire, the students of physical education and other teaching specialisations obtained the highest scores in terms of degree of passion and creativity, and the lowest regarding boldness and tolerance of uncertainty (Table 5).

Table 5. Categories of features determining readiness to change among PE students and other teaching specialisations (OTS) (descriptive statistics)

Type of school	Sex	N	Creativity		Passion		Self-confidence		Optimism		Boldness		Adaptation		Tolerance of uncertainty	
			\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD
OTS	M	70	21.53	4.43	18.64	4.88	18.67	4.24	18.41	5.53	16.63	4.34	17.23	4.24	13.41	3.91
	F	416	20.15	4.05	19.43	4.40	17.70	4.33	19.25	5.03	15.58	4.51	17.10	3.85	12.09	4.45
	total	486	20.35	4.13	19.32	4.48	17.84	4.33	19.13	5.11	15.73	4.50	17.12	3.91	12.28	4.40
PE	M	73	22.01	3.00	22.12	3.75	20.67	2.99	20.29	4.47	16.40	3.85	17.00	3.50	13.33	3.26
	F	48	21.56	3.19	22.56	4.21	19.15	4.18	20.77	4.22	16.69	3.87	18.00	3.29	12.52	3.61
	total	121	21.83	3.07	22.30	3.93	20.07	3.57	20.48	4.36	16.51	3.84	17.40	3.44	13.01	3.41
Total	M	143	21.78	3.76	20.42	4.66	19.69	3.78	19.37	5.08	16.51	4.08	17.11	3.87	13.37	3.58
	F	464	20.30	3.99	19.75	4.48	17.85	4.33	19.41	4.97	15.70	4.46	17.20	3.80	12.14	4.37
	total	607	20.65	3.98	19.91	4.53	18.29	4.28	19.40	4.99	15.89	4.38	17.18	3.82	12.43	4.23

N - number of observations; \bar{x} - mean; SD - standard deviation; df - degrees of freedom.

Analysis of the results depending on the type of teaching specialisation (PE and OTS) and sex showed that PE students (regardless of gender) were characterised by a higher level of creativity ($p < 0.05$), passion as well as self-confidence ($p < 0.001$) and optimism ($p < 0.01$) than students of other teaching specialisations (OTS), and men (regardless of the type of teaching specialisation) demonstrated greater creativity ($p < 0.05$), self-confidence ($p < 0.01$) and a higher level of tolerance of uncertainty ($p < 0.05$) than women. However, no statistically significant differences were found regarding the level of boldness, adaptability or tolerance of uncertainty depending on the analysed variables (Table 6).

Table 6. Level of features characterising readiness to change among females and males studying PE and other teaching specialisations (OTS)

Effect	df	Creativity		Passion		Self-confidence		Optimism		Boldness		Adaptation		Tolerance of uncertainty	
		F	P	F	P	F	p	F	p	F	p	F	p	F	p
Teaching specialisation	1	4.56	0.033	44.65	<0.001	13.31	<0.001	9.12	0.003	0.78	0.378	0.60	0.440	0.13	0.718
Sex	1	4.24	0.040	1.54	0.216	6.99	0.008	1.38	0.241	0.58	0.446	1.02	0.312	5.01	0.026
Teaching specialisation * sex	1	1.09	0.298	0.12	0.725	0.35	0.556	0.10	0.754	1.82	0.178	1.69	0.193	0.29	0.589
Error	603														
Total	607														

F - coefficient of analysis of variance; df - degrees of freedom; p - p value.

Relationships between the degree of features characteristic of readiness to change, pro-health behaviours (IZZ) and the level of physical activity (IPAQ) among teaching specialisation students

Analysis of the relationships between the degree of individual features comprising change and degree of pro-health behaviours showed differentiation depending on the type of teaching specialisation (as a moderator)

(Table 7). It was demonstrated that the type of teaching specialisation moderated the relationship of pro-health behaviours with creativity and tolerance of uncertainty ($p < 0.05$). Among PE students, the level of pro-health behaviours increased along with creativity ($p < 0.05$), while a decrease could be noted along with the increase in tolerance of uncertainty ($p = 0.001$). However, for students of other teaching specialisations, these two characteristics of readiness to change were not significantly correlated with pro-health behaviours (Figures 1 and 2). It was also found that regardless of the teaching specialisation, the level of students' pro-health behaviours increased with increasing self-confidence, passion and optimism. At the same time, in none of the subjects were there significant relationships between the level of pro-health behaviours, adaptability or boldness.

Table 7. Correlations between features of readiness to change and pro-health behaviours according to type of teaching specialisation (PE and OTS)

Dependent variable	Moderator	Independent variable	β	SE	t	p	Interaction
IZZ	Type of teaching specialisation	creativity	0.09	0.05	2.08	0.037	$\beta_O = 0.04$ ($p = 0.420$) $\beta_P = 0.30$ ($p = 0.012$)
		passion	0.02	0.05	0.47	0.636	$\beta_O = 0.12$ ($p = 0.008$) $\beta_P = 0.18$ ($p = 0.092$)
		self-confidence	0.03	0.05	0.66	0.508	$\beta_O = 0.18$ ($p < 0.001$) $\beta_P = 0.26$ ($p = 0.017$)
		optimism	-0.04	0.04	-1.04	0.298	$\beta_O = 0.28$ ($p < 0.001$) $\beta_P = 0.17$ ($p = 0.094$)
		boldness	-0.04	0.04	-0.82	0.415	$\beta_O = 0.05$ ($p = 0.291$) $\beta_P = -0.05$ ($p = 0.661$)
		adaptability	-0.01	0.04	-0.17	0.865	$\beta_O = 0.01$ ($p = 0.751$) $\beta_P < 0.01$ ($p = 0.963$)
		tolerance of uncertainty	-0.13	0.04	-3.03	0.003	$\beta_O = -0.01$ ($p = 0.824$) $\beta_P = -0.37$ ($p = 0.001$)

Legend: β – Beta standardised coefficient; SE – standard error; t : Student's t -test; p : p value; O – other teaching specialisations; P – physical education (PE).

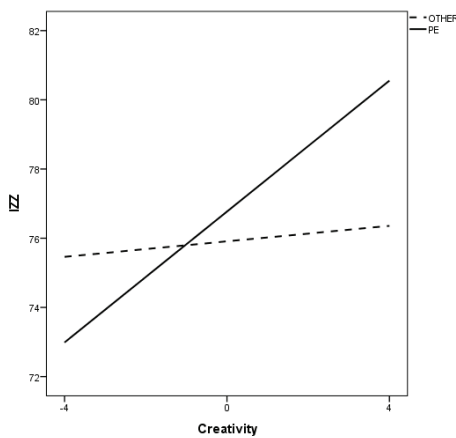


Figure 1. Relationship between the level of pro-health behaviours and creativity depending on the type of teaching specialisation (PE and OTS)

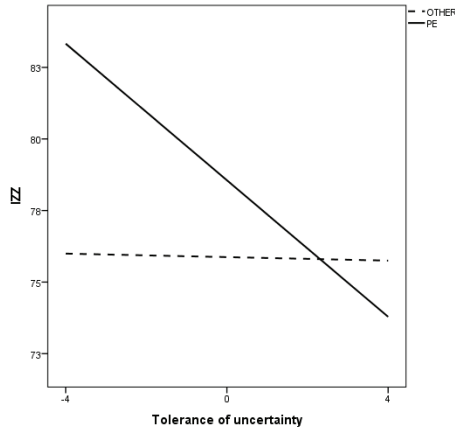


Figure 2. Relationship between the level of pro-health behaviours and tolerance of uncertainty depending on the type of teaching specialisation (PE and OTS)

Analysis of correlations between the degree of individual features comprising readiness to change and the level of physical activity did not show differentiation according to type of teaching specialisation (as a moderator). Regardless of the type of studies, there were significant, positive correlations between physical activity, passion, optimism and boldness. Among students of other teaching specialisations, there was a positive correlation between physical activity and creativity (Table 8).

Table 8. Correlations between features of readiness to change and the level of physical activity depending on type of teaching specialisation (PE and OTS)

Dependent variable	Independent variable	β	SE	<i>t</i>	<i>p</i>	Interaction
(IPAQ) overall index of physical activity	creativity	-0.01	0.04	-0.23	0.817	$\beta_O = 0.15$ ($p = 0.001$) $\beta_P = 0.12$ ($p = 0.282$)
	passion	0.05	0.05	1.02	0.306	$\beta_O = 0.18$ ($p < 0.001$) $\beta_P = 0.29$ ($p = 0.003$)
	self-confidence	-0.04	0.05	-0.87	0.386	$\beta_O = 0.08$ ($p = 0.061$) $\beta_P = -0.02$ ($p = 0.877$)
	optimism	0.05	0.04	1.08	0.281	$\beta_O = 0.09$ ($p = 0.036$) $\beta_P = 0.21$ ($p = 0.035$)
	boldness	0.07	0.04	1.67	0.096	$\beta_O = 0.09$ ($p = 0.033$) $\beta_P = 0.27$ ($p = 0.005$)
	adaptability	0.05	0.04	1.22	0.222	$\beta_O = 0.03$ ($p = 0.529$) $\beta_P = 0.16$ ($p = 0.101$)
	tolerance of uncertainty	0.03	0.04	0.70	0.486	$\beta_O = -0.01$ ($p = 0.863$) $\beta_P = 0.07$ ($p = 0.495$)

Legend: β – Beta standardised coefficient; SE – standard error; *t*: Student’s *t*-test; *p*: *p* value; O – other universities; P – PE.

Discussion

The presented research showed differentiation in pro-health behaviours and physical activity level as well as features of readiness to change among the group of teaching specialisation students (physical education and other teaching specialisations) and the existence of dependence between categories of pro-health behaviours, physical activity and the level of selected features constituting readiness to change.

Based on the obtained results, it was found that among the four categories of behaviours that are conducive to health (positive mental attitude, proper eating habits, preventive behaviours and pro-health practices), in the case of students other than those studying physical education, so-called pro-health practices (appropriate amount of sleep and rest, recreational physical activity, limitation of stimulants) and interactions beneficial for mental health (positive thinking, maintaining proper relationships with other people and avoiding strong emotions and tensions) dominated. Physical education students, alike those from other specialisations, obtained the highest results in the area of positive mental attitude. The greatest negligence in both groups was demonstrated in the category of preventive behaviours.

The results obtained in this study regarding individual categories of pro-health behaviours were comparable to the results obtained by R. Rasińska (2012), in which students of Poznań universities showed the highest degree of behaviours in the area of positive mental attitude, and the lowest in the area of preventive behaviours. Also, in a study by J. Palacz (2014), the students of Holy Cross University in Kielce achieved the highest values in the area of positive mental attitude and pro-health practices, and lower values regarding rational dietary habits. These results were similar as in the case of students from the Medical University of Lublin, who presented the highest degree in the area of pro-health practices, and the lowest in the category of preventive behaviours (Kropornicka et al., 2015). Between the students of physical education and other teaching specialisations, statistically significant differences were found regarding positive mental attitude and proper eating habits (more favourable in the case of PE students) and everyday pro-health practices (more favourable for students of other teaching specialisations).

It was also shown that the women obtained higher average scores than the males in terms of the degree of the overall pro-health behaviour index. Statistically significant differences between the male and female students were also demonstrated in the area of preventive behaviours and proper eating habits. The obtained results may indicate greater involvement of female than male students of teaching specialisations in the process of conscious and active achievement as well as improvement of health potential.

One of the key elements of a pro-health lifestyle is physical activity. It was found that the total level (overall IPAQ MET-min/week) of physical education students was significantly higher than for students of other teaching specialisations. In addition, among the four categories of physical activity included in the IPAQ questionnaire, physical education students obtained significantly higher values in terms of vigorous and moderate efforts, and significantly lower values in the area of sitting (IPAQ). The higher level of both overall, vigorous and moderate physical activity is obviously related to the specificity of the field of study. The total physical activity of the studied Krakow academic group was determined at the level of 5,812.28 MET-min/week (PE – 9,451.18 MET-min/week and OTS – 4,819.85 MET-min/week).

There were also gender-related differences in the level of physical activity in the overall group of studied students. The males obtained higher values for vigorous and moderate indices as well as overall physical activity compared to women, and they also spent less time during the week on activities related to sitting. Studies by other authors show a varied level of physical activity of academic youth, with an indication of higher physical

activity among men than women (Chung-Yan, 2014; Bergier, Bergier, Tsos, 2016; Ćosić Mulahasanović, Nožinić Mujanović, Mujanović, Atiković, 2018). Similar trends were described among students of the State Higher Vocational School in Biała Podlaska, who also most frequently undertook walking (959.2 MET-min/week) and vigorous efforts (901.5 MET-min/week), more often declared by men than women (Bergier, Stepień, Niżnikowska, Bergier, 2014). The research conducted by K. Suğuksu (2011) among students of different nationalities showed the level of physical activity was higher among Polish than Turkish female (3,720 vs. 1,690 MET-min/week) and male students (5,045 vs. 2,590 MET-min/week).

The level of readiness to change, which consists of the following features: creativity, passion, self-confidence, optimism, boldness, adaptability and tolerance of uncertainty, may affect the overall attitude of subjects towards various types of modifications of health-related behaviours. The discussed research shows that students in total (PE and OTS) obtained the highest average results in terms of the degree of passion and creativity, and the lowest in boldness and tolerance of uncertainty. At the same time, it was shown that regardless of gender, PE students were characterised by a higher level of creativity and self-confidence than students of other teaching specialisations. However, regardless of the type of specialisation, the men were more creative and confident, and showed a higher level of tolerance of uncertainty than women. At the same time, students of the University of Physical Education had a higher level of passion and optimism than students of other teaching specialisations.

The research by G. Leśniewska (2016) showed limited readiness to change among teachers, varied depending on age and professional experience, with an indication of greater openness to change among younger teachers. Also, Brazilian studies have shown low readiness of teachers to change behaviours related to health problems (Rossi-Barbosa, Gama, Caldeira, 2015). Research on teachers' readiness to change has also proven that teachers, although they generally declare their willingness to actively participate in on-going changes, limit their readiness in situations of top-down changes, in which their participation in making decisions important for school and education is limited (Inandi, Gilic, 2016). Other studies have shown that trust in school as an institution is an important predictor of teachers' readiness to change (Inandi, Gilic, 2016; Kondakci, et al., 2017). In this context, one should point to the supporting role of the school environment, cooperating in favour of school culture in which teachers' communication and mutual relations are particularly strengthened and appreciated, becoming a "vital" force during periods of change (Zayim, Kondakci, 2014). Research results have also shown that teachers working at smaller schools are more willing to accept and implement changes in which cooperation, mutual commitment and support imply greater willingness and readiness to participate in changes (Zayim, Kondakci, 2014). In the system of education, knowledge on the level of teachers' readiness to change may be an important instrument for the effective functioning of a school.

Analysis of the relationship between the degree of features constituting students' readiness to change and the degree of pro-health behaviours as well as the level of physical activity showed that regardless of the type of specialisation, the students in total, along with the increase in self-confidence, passion and optimism, there was also an increase in the level of pro-health behaviours. In addition, regardless of the type of study, significant positive correlations were observed between physical activity, passion, optimism and boldness. In students other than those studying PE, teachers have also described a positive relationship between physical activity and creativity.

The positive correlations between selected features constituting readiness to change, pro-health behaviours and the level of physical activity are justified by their characteristics and are confirmed by the research of other authors. With respect to the two primary variables analysed (health-related behaviours and physical activity),

important relationships in the case of all teaching specialisation students were described for the characteristics of passion and optimism. Associations of other features occurred in relation to areas of individual lifestyle (self-confidence – pro-health behaviours of the whole group, and creativity – physical activity of OTS students). The obtained dependencies confirm that pro-health behaviours are determined by a wide range of factors, including those related to individual resources (Juczyński, 2012). Sense of optimism, correlated with sense of satisfaction with life and effectiveness, expressing the expectations of positive events, increasing motivation and consistency, are important personal resources regulating pro-health behaviours (Carver, Scheier, Segerstrom, 2010). Passion seems to correlate with optimism as a feature that strengthens other dimensions building readiness to change. Trends described in this study also refer to the results of other research, conducted at both Polish and foreign centres, among various population groups, including students (Posadzki, Stockl, Musonda, Tsouroufli, 2010; Schnettler et al., 2015; Lesani, Mohammadpoorasl, Javadi, Esfeh, Fakhari, 2016), athletes (Lipowski, 2012; Gacek, 2015), women recreationally training fitness (Gacek, 2017). The study by P. Posadzki et al. (2010) showed the significant positive effect of positively correlated psychological traits, including sense of self-efficacy, optimism and sense of coherence on the pro-health behaviours of Polish students. The results indicating a larger scale of rational food choices along with the increase in the sense of self-efficacy, life satisfaction and features positively correlated with the level of optimism were also obtained among Polish players of American football (Gacek, 2015) and women recreationally practicing fitness (Gacek, 2017). Relationships of life satisfaction with selected health determinants, including nutrition, were also confirmed in Chilean (Schnettler et al., 2015) and Iranian studies (Lesani et al., 2016). The predictive significance of the sense of one's own generalised effectiveness for the level of physical activity was confirmed among Chinese nursing students (Chung-Yan, 2014) and Malaysian students of various specialisations (Ler, Wee, Ling, 2017).

Conclusions

1. Among the categories of health behaviours, students of physical education obtained the highest results in the category of positive mental attitude, and students of other teaching specialisations in the area of so-called health practices and positive mental attitude. However, students showed greatest negligence (regardless of their specialisations) in the category of preventive behaviours.
2. Among the physical activity categories included in the IPAQ questionnaire, students of physical education obtained statistically significantly higher values for intense (IPAQ vigorous) and moderate (IPAQ moderate) indicators, and significantly lower results for the sitting time indicator (IPAQ) compared to students of other teaching specialisations.
3. Students of physical education and other teaching specialisations, among the features constituting readiness to change, achieved the highest scores in terms of degree of passion and creativity, and the lowest in boldness and tolerance of uncertainty.
4. Along with the degree of some features regarding readiness to change (self-confidence, passion and optimism), the level of pro-health behaviours of all teaching specialisation students increased (regardless of the type of specialisation).
5. Regardless of study specialisation, significant positive relationships between the level of physical activity and selected features of readiness to change (passion, optimism and boldness) have been noted. In students

of teaching specialisations other than physical education, there was also a positive correlation between physical activity and creativity.

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