

PHYSIOPROPHYLAXIS IN THE COGNITIVE AND PRACTICAL COMPETENCES OF PHYSICAL EDUCATION STUDENTS FROM POLAND AND BELARUS

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A – study design, B – data collection, C – statistical analysis, D – interpretation of data, E – manuscript preparation, F – literature review, G – sourcing of funding

ABSTRACT

Background: The task of physioprophyllaxis is to popularize health-promoting behaviors and to shape and maintain the fitness and endurance of people of all ages in order to prevent disability.

Aim of the study: The aim of the work is to present the diversity of cognitive and practical competences regarding the use of physical activity in physioprophyllaxis of health threats by physical education students. The cognitive competences include: the attitudes, knowledge of the respondents, practical competences, the frequency of AF, and other health behaviors.

Material and methods: The study administered an original questionnaire to a group of 224 physical education students from Grodno in Belarus (B, n=124) and Biała Podlaska in Poland (P, n=100).

Results: Students from Belarus indicated the following as important health risk factors significantly more often ($p < 0.05$) than students from Poland: smoking (B=76.6%, P=59%, $p=0.006$), alcohol abuse (B=75%, P=43%, $p < 0.001$) and permanent stress (B=63.7%, P=35%, $p < 0.001$). Health behaviors undertaken by the respondents for the protection and maintenance of health are primarily related to the observance of personal hygiene (B=86.3%, P=72.0%, $p=0.011$), adequate sleep time (B=62.9%, P=45.0%, $p=0.010$) and rational nutrition (B=58.9%, P=52.0%, $p=0.344$).

Conclusions: Assuming that the level of health competence (cognitive and practical) of the students in the field of physical education translates to a large extent into professional competence, the education of the respondents requires further development of the knowledge of health sciences. The curricula and standards of physical education should be oriented towards the development of health competence.

KEYWORDS: health promotion, education, exercise, students

BACKGROUND

Physioprophyllaxis is a procedure intended to counteract, slow down, inhibit, or withdraw the adverse effects of an incorrect lifestyle, involuntary changes, and disease processes among others by popularizing physical activity (PA) and health education. Thus it reduces risk factors and functional diagnos-

tics, subsequently avoiding or stopping the development of functional problems or diseases [1]. According to experts from the World Health Organization (WHO) and the European Union (EU), PA is one of the most effective ways to prevent non-communicable diseases and combat obesity. There is increasing evidence of a positive correlation between exercise and mental health and cognitive processes. Lack of

PA is detrimental not only to the health of individuals, but also to health systems and the economy, due to the significant direct and indirect costs associated with a lack of PA. In 2010, WHO made recommendations on PA for health, as insufficient PA was found to be the fourth highest risk factor for premature deaths and diseases worldwide [2].

Full-time students are typically in a period of late adolescence or early adulthood (19–22 years); when we relate them to life stages, it is arguably the period of the acquisition of one's identity. This is possible thanks to the development of the ability to think and act independently, i.e., to be independent. Physical education studies enrich young people's identity with competences enabling care for their own and other people's health thanks to PA, which is the basic factor in the prevention of health threats. This idea is consistent with the axiological approach to physical education goals that set out the educational process [3,4]. The integrative nature of physical education, which manifests in public health and physiotherapy among other areas, shows that physioprophyllaxis is the educational and professional competence of physiotherapy and physical education students [5]. In 2018, physiotherapy regulations were updated to include 16 professional tasks, including physioprophyllaxis, with the aim of controlling risk factors for the emergence of diseases [6]. Physical education students preparing for the role of a teacher and health educator at school should have the ability to shape students' health attitudes by implementing hygienic behaviors that are safe for their own health and the health of others, strengthening knowledge of rational nutrition, the benefits of PA, and the use of risk prevention [7]. Physical education students' level of competence regarding health-related PA is very important, as they will have an immediate impact on the health of children and young people. HBSC researches from 42 countries showed that, based on WHO requirements (60 minutes a day of moderate PA), Polish children were ranked 12th for PA. Among girls the requirements were met by 27% of 11-year-olds, 19% of 13-year-olds, and 16% of 15-year-olds. Among boys in the same age groups, the requirements were met by 34%, 29%, and 18%, respectively [8].

According to the current core curriculum, the task of school health education is to shape pupils' pro-health attitudes, including strengthening the knowledge of the benefits of PA as well as the application of prophylaxis (physioprophyllaxis), developing in pupils the attitude of caring for their own and other people's health and the ability to create an environment conducive to health. Expectations of physical education require new standards of preparing pupils for lifelong PA and health care. Physical education is not only a fitness preparation, but

above all a health-promoting one (a forward-looking function). In the curriculum, the physical fitness concept is health-oriented, and physical education plays a leading role in the health education of pupils at every stage of education [7,8]. It is important, therefore, to determine whether the competences (cognitive and practical) of physical education students are at a level that will ensure effective implementation of the above mentioned educational tasks for physical education teachers, which include physioprophyllaxis.

Aim of the study

The aim of the current study is to present the differentiation of the level of cognitive and practical competences regarding the use of PA in the physioprophyllaxis of health threats by physical education students from the Yanka Kupala State University of Grodno (Belarus) and the University of Physical Education in Biała Podlaska (Poland). The cognitive competences include: the attitudes, knowledge, and beliefs of the respondents; practical competences; the frequency of practicing PA and the reasons for not practicing; and other health behaviors. Assuming that the students' level of health competence in the field of physical education translates to a large extent into professional competence, their evaluation is needed to adapt and develop the curricula and standards of physical education.

MATERIAL AND METHOD

Study design, setting, and selection criteria

The study design was cross-sectional in the form of a survey. The study was conducted from January to June 2019 for the field of physical education at the University of Physical Education in Biała Podlaska (Poland), and at the Yanka Kupala State University of Grodno (Belarus). In each of the universities, 300 questionnaires were distributed to students of all years (1st–5th).

Before commencement of the study, students were informed about its purpose and methodology, as well as their right to withdrawing from it at any time. Respondents were also provided with full anonymity and voluntary participation in the study. Students agreed that sending back a completed questionnaire was equivalent to agreeing to participate in the study.

The following selection criteria were used for enrollment: aged between 19 and 35 years, studying Physical Education, and informed consent. Exclusion

criteria comprised studying at another faculty and failure to agree to participate in the study.

Participants

The research was carried out among (total) 224 students of physical education; 100 from the University of Physical Education in Białą Podlaska (Poland), and 124 from the faculty of Physical Culture at the Yanka Kupala State University of Grodno (Belarus).

Data sources/measurement

The research tool used was an original questionnaire. The survey consisted of two parts; part one included demographic questions, such as age and gender. Part two contained questions regarding: (1) sources of knowledge about physioprophylaxis, (2) opinions on important health risk factors, (3) health behaviors undertaken by the students enabling the protection and maintenance of good health, (4) self-assessment of being active, (5) the frequency of PA undertaken during the week, (6) and barriers preventing respondents from practicing PA. All questions were in a closed form with the possibility to choose more than one answer, except for questions 4 and 5, where respondents could mark only one answer.

Ethical Considerations

The research was approved by the Bioethics Committee of the Pope John Paul II State School of Higher Education in Białą Podlaska No. 6/2018. All procedures were carried out in accordance with the principles set out in the Declaration of Helsinki and each participant expressed their informed written consent.

Statistical analysis

Statistical analysis was carried out using the SPSS program. For the purposes of this study, Phi and V Kramer tests were used (for questions on nominal scales). In the case of tables, when the minimum expected number condition was not met for chi-square, the Fisher test result was read. The significance level in the tests was $p < 0.05$.

RESULTS

Characteristics of the study groups

The majority of respondents (139; 62.1%) from both universities were in early adulthood, from 21 to 25 years old. There were 51 (51.0%) women among the group of respondents from Poland, and 54 (43.5%) in the group from Belarus. Detailed data on the age and sex of respondents is provided in Table 1.

Table 1. Characteristics of respondents from Grodno (Belarus) and Białą Podlaska (Poland)

Features	Answers	Grodno		Białą Podlaska		Phi	Chi-square	p
		N	%	N	%			
Age	Up to 20 years	58	46.8	6	6.0	0.497	55.355	< 0.001*
	21–25	51	41.1	88	88.0			
	26–30	8	6.5	5	5.0			
	Over 30	7	5.6	1	1.0			
Sex	Women	54	43.5	51	51.0	-0.074	1.234	0.284
	Men	70	56.5	49	49.0			

* Statistically significant data.

Main results

Physical education students from the Yanka Kupala State University of Grodno (Belarus) acquired knowledge about the physioprophylaxis of health threats by participating in didactic classes at the university to the greatest extent. This was the source most frequently mentioned by them (71.8%; 89), significantly more often than by students from the University of Physical Education in Białą Podlaska (Poland) (52%; 52) ($p=0.003$). Mass media and the Internet (60%; 60) were the most important sources of knowledge for students in Poland. Detailed data showing various sources of knowledge are presented in Table 2.

The most important health risk factors indicated by the students from Belarus include smoking (76.6%;

95), alcohol abuse (75%; 93) permanent stress (63.7%; 79), and lack of PA (62.5%; 77). Students from Poland pointed to lack of PA (68%; 68), smoking (59%; 59), and an poor diet (52%; 52). Students from Belarus indicated smoking, alcohol abuse, poor mental resistance, permanent stress, lack of self-acceptance, and excessive rush as important health risk factors significantly more often than students from Poland ($p < 0.05$). Detailed data are presented in Table 3.

Health behaviors undertaken by respondents for the protection and maintenance of health were primarily about the observance of personal hygiene ($B = 86.3\%$; 107, $P=72.0\%$; 72), adequate sleep time ($B=62.9\%$; 78, $P=45.0\%$; 45), and rational nutrition ($B=58.9\%$; 73, $P=52.0\%$; 52). Respondents from Belarus engaged in personal hygiene and adequate sleep

Table 2. Sources that respondents use to obtain (deepen) knowledge about physioprophylaxis of health threats

Sources of knowledge of the subjects about physioprophylaxis	Grodno		Biała Podlaska		Phi	Chi-square	p
	N	%	N	%			
Medical / health literature	31	25.0	32	32.0	-0.077	1.342	0.296
Mass media, Internet	85	68.5	60	60.0	0.089	1.772	0.207
Didactic classes at the university	89	71.8	52	52.0	0.204	9.208	0.003*
Tabloids, popular magazines	8	6.5	10	10.0	-0.065	0.943	0.459
Friends, colleagues	47	37.9	29	29.0	0.093	0.331	0.201
Family	54	43.5	26	26.0	0.182	7.425	0.008*
Doctor / nurse / physiotherapist	63	50.8	41	41.0	0.098	2.140	0.178

* Statistically significant data.

Table 3. Important health risk factors according to respondents

Important health risk factors in the respondents' opinion	Grodno		Biała Podlaska		Phi	Chi-square	p
	N	%	N	%			
Lack of physical activity	77	62.5	68	68	-0.061	0.845	0.400
Irrational diet	62	50.0	52	52	-0.020	0.089	0.789
Smoking tobacco	95	76.6	59	59	0.189	7.993	0.006*
Alcohol abuse	93	75.0	43	43	0.326	23.766	<0.001*
Poor mental resilience	50	40.3	18	18	0.241	13.047	<0.001*
Permanent stress	79	63.7	35	35	0.285	18.257	<0.001*
No self-acceptance	15	12.1	3	3	0.166	6.199	0.013*
Excessive rush	18	14.5	5	5	0.156	5.441	0.026*

* Statistically significant data.

Table 4. Health behaviors enabling the protection and maintenance of good health undertaken by the students

Health behaviors	Grodno		Biała Podlaska		Phi	Chi-square	p
	N	%	N	%			
Compliance with personal hygiene	107	86.3	72	72	0.177	7.042	0.011*
Rational nutrition	73	58.9	52	52	0.069	1.060	0.344
Good sleep time	78	62.9	45	45	0.179	7.166	0.010*
Counteracting addictions	45	36.3	26	26	0.100	2.708	0.113
Ability to deal with stress	54	43.5	21	21	0.238	12.637	0.001*
An optimistic approach to life	55	44.4	27	27	0.179	7.185	0.008*
Practicing health education	22	17.7	14	14	0.051	0.575	0.471

* Statistically significant data.

Table 5. Self-assessment of being active, the frequency of physical activity undertaken during the week by the respondents

	Responses	Grodno		Biała Podlaska		Phi	Chi-square	p
		N	%	N	%			
Are you physically active?	definitely yes	66	53.2	40	40	0.209	9.828	0.015*
	rather yes	54	43.5	49	49			
	probably not	2	1.6	10	10			
	definitely not	2	1.6	1	1			
Frequency of AF during the week	daily	16	12.9	21	21	0.322	23.241	<0.001*
	3 times a week	102	82.3	55	55			
	once a week	5	4.0	20	20			
	less than once a week	1	0.8	4	4			

* Statistically significant data.

Table 6. Obstacles / barriers preventing tested students from practicing physical activity

Obstacles / barriers preventing physical activity	Grodno		Biała Podlaska		Phi	Chi-square	p
	N	%	N	%			
Bad health condition	13	10.5	28	28	-0.225	11.358	0.001*
Fear of physical activity getting worse	16	12.9	12	12	0.014	0.041	1.000
No time	81	65.3	61	61	0.045	0.446	0.577
No motivation	32	25.8	37	37	-0.121	3.254	0.081
Aversion to physical exertion	9	7.3	11	11	-0.065	0.953	0.354
No company for AF	24	19.4	16	16	0.044	0.425	0.600
No funds	21	16.9	14	14	0.040	0.362	0.583
No sports facilities	12	9.7	1	1	0.184	7.625	0.007*

* Statistically significant data.

significantly more often than students from Poland (Table 4).

Students from Belarus rated themselves as physically active significantly more often than those from Poland ($p=0.015$); every tenth student Poland believed that they were not physically active.

There was also a significant difference between the study groups in the declared frequency of PA during the week ($p<0.001$). Detailed data are presented in Table 5.

Students from both groups most often indicated the lack of time ($B=65.3\%$; 81, $P=61.0\%$; 61) and lack of motivation ($B=25.8\%$; 32, $P=37.0\%$; 37) as obstacles preventing them from practicing PA. Students from Poland (28.0%; 28) reported poor health as a barrier to PA significantly more often than those from Belarus (10.5%; 13) ($p=0.001$). Detailed data are presented in Table 6.

DISCUSSION

Key results

Physical education students from the Yanka Kupala State University of Grodno presented a higher level of cognitive and practical health competences than students from the University of Physical Education in Biała Podlaska. Students from Belarus implemented physioprophylaxis of health threats better by having more professional health knowledge and more frequently participating in PA.

Interpretation

Physical education students should have high competences in physioprophylaxis of health threats through educational and practical dissemination of PA as it is expected they will take up the role of a teacher. In Polish schools, the role of a teacher as a practical health educator was introduced in 2002 through modification of the core curriculum; each subsequent core curriculum has strengthened it [7,9]. In accordance with the subsequent core curriculum, in 2008

the weekly duration of physical education lessons was increased, and the subject teacher was given the leading role of a health educator at school, coordinating the formation of health attitudes and behaviors of children [10,11]. However, studies have reported an insufficient level of competence in this field among both teachers and physical education students [12].

At the Belarusian school, large-scale modernization of students' physical education program took place in 2007 [13]. The number of physical education lessons was increased, and the subject was renamed "Physical culture and health". Both those studying the subject and wider society expected these changes to impact health promotion, disease prevention, and shaping a healthy lifestyle for students. Socially relevant results include achieving a high level of physical and spiritual-moral development, increasing mental and physical performance, and reducing the negative impact of mental and emotional stress caused by intensive educational activities. Of course, the prerequisite for implementing this educational content is the teacher's willingness to implement the curriculum content. Such a readiness is guaranteed by the standard of higher education specialty "Physical Culture" [14].

Among respondents from Belarus, the most significant sources of knowledge about the physioprophylaxis of health hazards included university classes and mass-media. However, only half of the students from Poland accessed curriculum content; instead the most significant source of knowledge was the Internet. Kosiba et al. showed that almost half of those studying physical education and other teaching specialties (49.92%) have knowledge about health determinants and health education at an average level. Less than 30.0% of respondents presented a high level, and 21.25% presented a low level of knowledge about health determinants and health education [15]. According to the author, this is a mediocre result assuming that the surveyed students will be health teachers and educators in the future. The data also showed an effect of gender on level of knowledge, with women showing a higher level than men. There were no statistically significant differences in the level of subject knowledge between students at indi-

vidual universities, regardless of the curriculum or content implementation in the field of education and prevention of health threats. According to Woynarowska, the inclusion of health education content in education standards should be considered clear progress in comparison to the current standards [16]. This consistency of content can therefore contribute to the conscious preparation of physical education students for the role of health educator. It is also important to continuously verify the health policy implemented by academic centers [17]. Palacz indicates that students are subject to educational socialization. Their study curriculum can be a tool that significantly contributes to the popularization of health-promoting behaviors [18].

The education standards for physical education students in Belarus are aimed at developing academic, social, personal, and professional competences. Particular attention is paid to the development of health maintenance skills, shaping the needs of a healthy lifestyle and rationally organized PA [14]. Criteria regarding the content and structure of Belarusian teacher's pro-health activities were formulated in the paper by Ovcharov [19].

Bartoszewicz and Oruc compared the structure of health behaviors in physical education, anthropology, and English philology students [20]. The authors noted a statistically insignificant ($p > 0.05$) but slightly higher indicator of general health behaviors, positive mental attitude, and nutritional health practices in the group of physical education students. Bartoszewicz and Oruc also collected data on students' PA and were surprised to find that 5% of physical education students declared the absence of any PA. These results are consistent with the current findings, in which as many as 10.0% of students from Poland declared to be rather physically inactive. Furthermore, when asked about barriers to PA, the aversion to PA felt by 7.3% of respondents from Belarus and 11.0% from Poland is surprising and incomprehensible. If a physical education student feels aversion to movement, one could question their field of study and suitability for the profession.

Health competences also include knowledge about health threats, including addictions. In the current findings, physical education students from Belarus indicated smoking and alcohol abuse significantly more often than students from Poland. Findings were similar regarding life (psychosocial) skills, with differences in poor mental resilience, permanent stress, and lack of self-acceptance. It is worth considering that even though students of both groups mentioned smoking and drinking alcohol among health risk factors, only 36.3% of students from Belarus and 26% of respondents from Poland indicated actions aimed at combating addictions among behaviors aimed at protecting health.

Physical education graduates are future teachers shaping the health behavior of their students. Bar-

toszewicz et al. found that physical education teachers have higher health behavior maturity than teachers of other subjects [21]. Shutova and colleagues found similar results in a group of 125 physical education students, indicating that the study curriculum prepares students for the future creation of training programs and transfer of knowledge about the principles of a healthy lifestyle and nutrition [22]. However, both Fyodorov et al. and Palacz note that physical education students often lack knowledge about taking care of their health and have a low level of PA [18,23]. The current research indicates students from Belarus practiced PA significantly more often than students from Poland; PA was practiced several times a week by 82.3% of respondents from Grodno and 55% of respondents from Białą Podlaska.

Fyodorov et al. also point out that many students shifted responsibility for their health to public health care [23]. The authors point out that their own lifestyle plays a key role in maintaining and promoting health. Therefore, this issue goes beyond medical science and practice to concern the educational sphere. Modern educational theory and practice give priority to the development of health culture and a healthy lifestyle. Unfortunately, current traditional forms of university education make it difficult to solve the issue of developing health culture and shaping positive attitudes towards health in students. Also, Kokun et al. noted a low level of PA among 748 students, arguing that the level of PA impacts the psychophysiological readiness of students for future professional activity [24]. Dimitrioska et al. noted that people who know the benefits of PA see fewer barriers to its cultivation. They are also more likely to indicate the need for social support from friends and family [25].

Lack of time was the most common obstacle preventing PA in both groups. Furthermore, 37.0% of students from Poland and 25.8% from Belarus indicated no motivation. Counter intuitively, even though 62.1% of students from Belarus and 68% of respondents from Poland considered physical inactivity a health risk factor, 12.0% of respondents in both groups indicated fear of deterioration of health as a barrier to PA.

It is worth noting that even though students from Belarus declared more frequent PA, among the barriers that impede it, they indicated a lack of access to sports facilities significantly more often than respondents from Poland.

The attitude of students towards their health is a complex social phenomenon that remains underestimated and requires additional research to identify the factors that contribute to a positive attitude to health care through regular PA.

The findings have revealed that physical education students from Belarus display more professional cognitive and practical competences than those from

Poland in implementing the physioprophyllaxis of health threats.

Limitation of the study

The study was limited by the fact that the number of the participants in the study groups was low and that it was only carried out in two universities.

CONCLUSIONS

Assuming that the students' level of health competence (cognitive and practical) in the field of physi-

cal education translates to a large extent into professional competence, the education of the respondents requires further development of the knowledge of health sciences.

The respondents from Biała Podlaska in particular present a level of health competence that does not yet guarantee the effective implementation of educational health tasks included in the current core curriculum.

The curriculum and standards of physical education should be oriented towards the development of health competence.

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Word count: 3159

• Tables: 6

• Figures: 0

• References: 25

Sources of funding:

The research was funded by the authors.

Conflicts of interests:

The authors report that there were no conflicts of interest.

Cite this article as:

Zaworski K, Khramov V, Kubińska Z.

Physioprophylaxis in the cognitive and practical competences of physical education students from Poland and Belarus.

Med Sci Pulse 2021; 15(1): 4-11. DOI: 10.5604/01.3001.0014.8172.

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Received: 25.11.2020

Reviewed: 05.01.2021

Accepted: 14.01.2021