Pol. J. Appl. Sci., **2016**, *2*, 133-138

PHYSICAL ACTIVITY AND PHYSICAL FITNESS OF STUDENTS AT UNIVERSITY OF PHYSICAL EDUCATION AND SPORT IN BIALA PODLASKA

Artur Litwiniuk[1,2], Ryszard Cieśliński[1], Elżbieta Huk-Wieliczuk[1], Igor Cieśliński[2], Juris Grants[3]

[1] *Faculty of Physical Education and Sport in Biala Podlaska*
J. Pilsudski University of Physical Education in Warsaw, Warsaw, Poland
[2] *The Institute of Physical Education*
Lomza State University of Applied Sciences, Lomza, Poland
[3] *Latvian Academy of Sport Education in Riga, Riga, Latvia*

E-mail: artur.litwiniuk@awf-bp.edu.pl

Abstract: Introduction. Physical exercise deficiency and lack of proper habits related to systematic physical activity, especially among the youth, can be particularly dangerous from the point of view of health in the further decades of their lives.
Materials and methods. The study covered a group of 95 students studying Physical Education on Physical Education and Sport Faculty in BiaĹ‚a Podlaska, with 39 of them being sportspeople training, among other things, football and handball, volleyball, basketball, athletics, MMA, taekwon-do and swimming.
Results. All the respondents prefer an active model of spending leisure time, where slightly fewer than every third student (29.4%) are the people who systematically attend trainings in sports clubs. Almost all of the researched people (92.64%) achieved the level of physical condition described as high between 468 and 667 points on the ICSPFT scale.
Conclusions. All the respondents prefer an active model of spending leisure time, which can be connected with the studied faculty, where slightly fewer than two third of them engage in activities classified as intensive. It means that in the light of the newest health standards adopted by WHO, all the researched students of Physical Education Department fulfilled the recommendations concerning pro-health physical activity. It was stated that almost all the respondents achieved high scores in ICSPFT, however, no statistically significant correlations between the results obtained in subsequent ICSPFT trials assessing physical fitness and their weight and height were observed.

Key words: physical activity, physical fitness, students.

Introduction

Civilization progress as well as social and cultural changes taking place in the contemporary world are reflected in the condition of physical, mental and social health of human population. Either theoreticians as well as practitioners dealing with the issue of health agree that contemporary knowledge helps to indicate the causes of various diseases and emphasize the argument that maintaining proper health condition is the resultant of many variable factors [1–4].

According to numerous authors dealing with various aspects connected with health, a person's level of physical activity has a profound significance for the development of structure and functions of every human organism [5, 6].

Physical exercise deficiency, especially among children and teenagers, can be particularly dangerous when taking into consideration their health in further decades of life. It leads to the occurrence of postural defects, excessive fat deposition and can result in the future with cardiovascular and respiratory diseases. On the other hand, the optimal level of efficiency and fitness of the human organism obtained in childhood and sustained in further years postpones involution processes in terms of motility, has positive influence on the ability to work during working age, enhances resistance to stress, improves cardiovascular, respiratory and nervous systems activity [7–9].

Physical activity and fitness are increasingly more often the subjects of scientific exploration. As physical fitness is a very complex characteristic and depends on various factors such as sex, age, genetic factors, type of work and undertaken physical activity during leisure time (recreation or sport), the physical activity depends mainly on motivation, health condition and accessibility to leisure and sports facilities and equipment [10, 11].

Contemporary concepts of physical fitness, activity and health are related to the possibility to achieve optimal quality of life. The starting point to define physical fitness is its connection with the fullness of human health according to the 'health-related-fitness' concept [12, 13].

Physical fitness is defined in the literature in a number of ways, but most often it is understood as the ability to perform any muscles work. As it is highlighted by experts,

for the proper development of a human being, physical fitness is as important and necessary as intellectual and spiritual development. Only the proper level of physical fitness enables a person to fulfill everyday duties. The symptoms of civilization diseases occur among constantly younger people and proceed definitely faster than it was with previous generations [14].

Physical activity performed in appropriate duration and intensity influences the reduction of civilization diseases incidence. Thus, it is important to widespread the knowledge on the positive impact of physical exercises on the human organism. Unfortunately, in spite of higher consciousness, only 10% of adult society admit to active lifestyle. This problem concerns either the people who did not turn 20, as well as the old ones [15].

Experts dealing with health, such as among others, doctor, PE teachers, psychologists etc, unanimously agree that in order to counteract this state, the programs physically activating all social and age groups should be designed [16–18].

The period of studies is a very special moment in the young person's life and simultaneously the last time when he or she can develop positive habits connected with taking care of one's body. That is why, physical activity in high schools should stimulate further psycho-physical development and be the continuation of previously gained movement and pro-health habits. Due to the fact that in contemporary times the students are faced with high expectations in terms of either specialist preparation, availability as well as engagement, it must be supported by increased physical activity in order to balance stress and psychical tiredness of an organism [19]. The aim of the research was to assess physical activity and fitness of Physical Education students on Physical Education and Sport Faculty in Biała Podlaska.

Materials and research methods

The study covered a group of 95 students studying Physical Education on Physical Education and Sport Faculty in Biała Podlaska, with 39 of them being sportspeople training, among other things, football and handball, volleyball, basketball, athletics, MMA, taekwon-do and swimming. By evaluating the somatic characteristics, it was stated that body height equals M=178.4 ± 5.21 cm and body weight M=77.13 ± 5.37 kg. Additionally, the work used the HBUSQ questionnaire by [20] to assess physical activity as well as Test of Physical Fitness developed by the International Committee on the Standardization of Physical Fitness Tests. ICSPFT [21] was used to evaluate physical fitness level.

Results

One of the key elements of healthy lifestyle is physical activity. The analysis of research material showed that all the respondents prefer an active way of spending leisure time, which can be connected with the faculty they attend. Slightly fewer than every third student (29.4%) are the people attending trainings systematically in sections of AZS AWF Biała Podlaska sports club as well as other sports clubs. The remaining 70.6% of them attend trainings individually or in organized groups on the university's premises and outside them (Fig. 1).

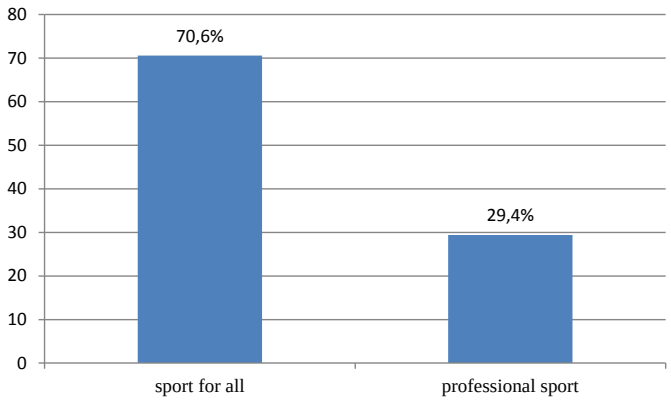

Fig. 1: Type of physical activity of students on Physical Education and Sport Faculty in Biała Podlaska (n=95).

Slightly fewer than two third (66%) of the respondents engage in activities classified as intensive, almost every third (29%) of moderate intensity and the remaining ones of low (Fig. 2).

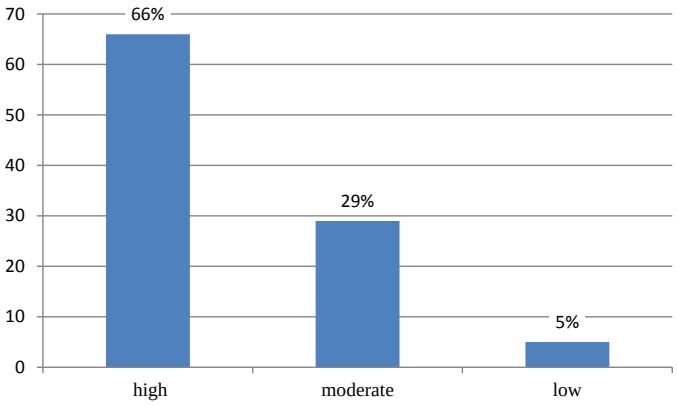

Fig. 2: Physical activity type in terms of intensity of exercises performed by the students on Physical Education and Sport Faculty in Biała Podlaska (n=95).

The results analysis of Test of Physical Fitness developed by the International Committee on the Standardization of Physical Fitness Tests (ICSPFT) show that the level of the general physical fitness is at a fairly good level, either

summary results as well as the individual ones from the trials assessing the components of physical fitness look promising (Table 1, Fig. 3 and 4).

After conducting further analysis of the research material, it was observed that the average, the highest and the lowest point values illustrate a considerable variety of the physical fitness levels of particular motor skills (Fig. 3) as in the summary approach (Fig. 4).

It can probably result from the fact that, as we have already mentioned, either the level of physical and leisure fitness of the studied group was varied as were their height and weight and this, according to us, could be a decisive factor for the obtained results in ICSPFT trials.

On the other hand, the results analysis (Fig. 4) prove that almost all the respondents (92.64%) reached the physical fitness level described as high and the rest as medium. Between the status of a sportsman student and not as well as the level of physical fitness, the significant statistical correlation was established ($G=6.91$ for $p<0.05$). The total values ranged from 468 to 667 points, however, for the PE students and sportsmen the results should be slightly higher. Therefore, it is recommended to correct the content (training means) and training loads where low individual results were detected in physical fitness tests, especially among the persons who perform trainings in sports clubs, in particular among sportsmen students but also the average ones. Current training plans in sports clubs and students who train for pleasure should also be taken into account.

On the basis of the results included in Table 2, it was determined that the last assumption of the research was to look for the correlation by means of Pearson linear correlation coefficient between the level of general physical fitness elements diagnosed by ICSPFT and somatic characteristics of the researched students. It was determined that no statistically significant correlations were detected. We can only assume that if only the people training in sports clubs were the subject of the analysis, such correlations should be found. However, the analysis was conducted on the whole researched group.

Discussion

In recent years, the constantly growing interest in the assessment of particular elements of students' lifestyle can be observed. Either healthy or risky behaviors of academic youth are analyzed. Up to now, in higher education institutions, various observations took place, among others, regarding the health condition, physical activity, fitness and physical development as well as various selected sociological and psychological aspects.

The commonly known studies are the ones indicating that human health predominantly depends on his or her lifestyle, which is composed of a set of behaviors, customs and healthy habits. Lifestyle as a factor determining health constitutes a significant indicator of the health culture level as well as physical culture of an individual and the society as a whole. In the process of ontogenesis, regularly performed physical activity not only has a considerable significance for fulfilling everyday duties, but can also, to a wide extent, contribute to slowing down the aging processes [22, 23].

In the light of new civilization achievements but also health hazards, the need for engaging in various forms of physical activities in natural surrounding and away from highly urbanized and polluted environments is constantly more often discussed. Examples of correlations between health and widely understood physical activity of a human being can be traced not only in Polish literature [15, 24].

In the available publications, physical activity of students is not a frequent subject undertaken by researchers, but it is considered to be the most important modifier of motor development, which is in line with our research results [25].

It is relatively little known about the physical activity and fitness of the students from various types of universities as the current research has very often been carried out by means of different methods and tools, partly elaborated individually and not by standardized ones at the international level [26, 27].

Therefore, in the context of the conducted research, the postulate on 'education for life-long physical activity' raised by PE theoreticians becomes particularly important. However, it should be kept in mind that the effects caused by the impact of physical activity can be adjusted, thus reversible and inconstant. It is therefore very important to maintain physical activity of students at an appropriate level not only during the course of studies, but also in further stages of their lives either in working age as well as the post-productive one. The students as a future intelligence (graduates) should be role models for the rest of the society. A considerably lower physical activity is being observed among students examined by the researchers at different types of universities and faculties. It leads to a conclusion that in the future it can negatively influence their health condition, which is proven by the studies conducted on various social groups that are inactive physically and this phenomenon is documented by medical environments and observed in different countries. Due to this, physical education in high schools should most importantly play the role of a stimulus for further physical and motor development and constitute a permanent pattern of pro-health behaviors [28, 29].

On the other hand, if we treat physical fitness as a research subject, the following tests are being utilized as research tools: Pilicz test, Eurofit and rarely ICSPFT as a standardized test, which norms are updated to age and sex

Table 1: Statistical summary of the points obtained in ICSPFT by the researched students of the Physical Education and Sport Faculty in Biała Podlaska (n=95).

Statistic. parameter	50 m dash (s.)	Long run 1000 m (s.)	Standing broad jump (m)	Hand grip (kg)	Relative strength: pull-ups on a bar (n)	4x10 m shuttle run (s.)	Sit ups done within 30 s. (n)	Bend trunk (cm)
Mean	64,39	62,42	61,55	64,55	63,74	62,28	62,85	67,01
S.D.	5,50	8,22	6,95	9,15	9,01	4,74	6,21	8,14
MIN.	56	52	53	52	52	53	53	56
MAX.	94	96	95	100	97	87	88	89
V(%)	8,03	12,86	12,89	17,03	13,56	6,41	11,52	11,91

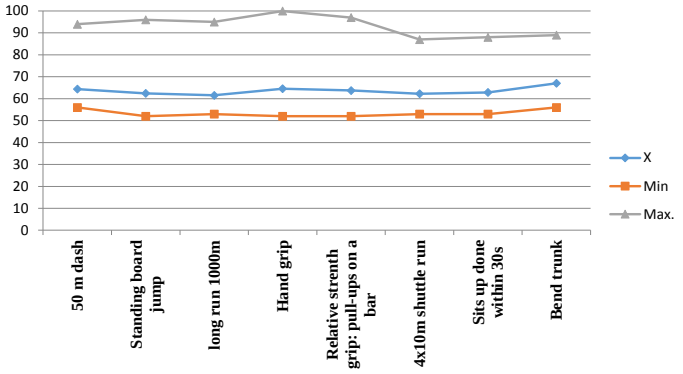

Fig. 3: Selected statistical parameters (average, minimum and maximum) of the results obtained in ICSPFT by the students of Physical Education and Sport Faculty in Biała Podlaska (n=95).

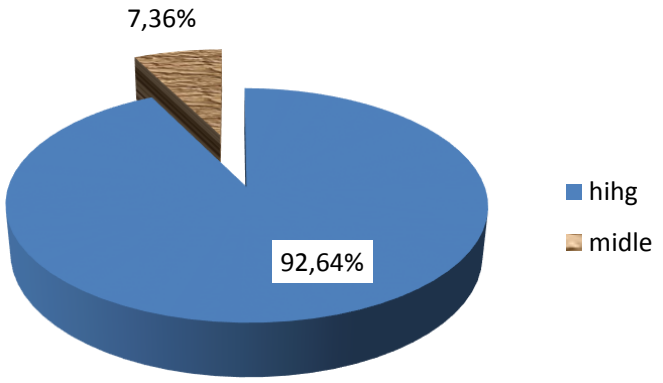

Fig. 4: The level of physical fitness diagnosed by ICSPFT of the students on Physical Education and Sport Faculty in Biała Podlaska (n=95).

every other decade. Due to this, it is difficult for us to discuss research results of other authors [30].

According to numerous experts, taking care of the proper physical fitness not only promotes well-being and maintains organism in good health, but it has a significant influence on character shaping, gaining habits of an active way of spending leisure time and healthy lifestyle. Physical activity should be one of the most crucial elements of a contemporary student's lifestyle and it should be performed

Table 2: The level of physical fitness diagnosed by ICSPFT of the students on Physical Education and Sport Faculty in Biała Podlaska (n=95).

I C S P F T	Somatic features	
	Body hihgt [cm]	Body weight [kg]
50 m dash	-0,09	-0,05
Long run 1000 m	-0,13	-0,11
Standing broad jump	-0,06	-0,14
Hand grip	0,16	0,03
Relative strength: pull-ups on a bar	0,15	-0,10
4x10 m shuttle run	0,23	-0,06
Sit ups done within 30 s.	0,13	0,21
Bend trunk	0,19	0,08

every day and possibly throughout their lifetime, according to the current WHO recommendations [31].

The examined students, as compared to the students of different universities, are characterized by a considerably greater level of physical activity. It is very alarming that the students of different faculties prefer a passive way of spending their leisure time [32–35].

The period of studies is the last moment in the life of a young person when he or she can develop positive habits connected with taking care of one's body. It seems extremely important to conduct further research on the role of physical activity and fitness in processes of morphological and functional development of the academic youth.

The data presented in this article constitutes a part of a wider research with the use of more research tools and should serve as a material for comparative analyses for other authors.

Conclusions

1. All the respondents prefer an active model of spending leisure time and engage in activities of either high, moderate and low intensity, what in the light of the newest health standards adopted by WHO means that they fulfill the recommendations connected with the amount of physical activity beneficial for the health.
2. It was determined that almost all the researched students achieved high results in ICSPFT, but no sta-

tistically significant correlations between the results obtained in particular MTSF trials assessing physical fitness and their body weight and height were observed.

3. The PE students as future teachers, instructors and sports trainers are well prepared to fulfill the role of health promoters and animators and to popularize healthy behaviors among their mentees by acquiring throughout the studies the proper physical abilities and methods of shaping physical fitness.
4. The current research can contribute to even better lifestyle diagnosis of students on various faculties in Poland and Europe and can serve as a comparative material. The research results can also contribute to a more complementary insight into students' lifestyle and be the basis for the students' leisure time organization as well as preventive activities in terms of risky behaviors for the health of students on other faculties.

Acknowledgements

This study was supported by the research project conducted by the Faculty of Physical Education in Biala Podlaska, J. Pilsudski University of Physical Education in Warsaw – No. DS. 141, financed by the Polish Ministry of Science and Higher Education.

Literature

[1] Karski J.B., editor. *Promocja zdrowia.* Ignis, Warszawa, 1999.

[2] Kuński H. *Promowanie zdrowia.* Wydawnictwo Uniwersytetu Łódzkiego, Łódź, 2000.

[3] Raczyński G., editor. *Wybrane zagadnienia z higieny i promocji zdrowia.* AWF, Warszawa, 2001.

[4] Sheridan CH., Radmacher S.A. *Psychologia zdrowia. Wyzwanie dla biomedycznego modelu zdrowia.* Instytut Psychologii Zdrowia PTP, Warszawa, 1998.

[5] Drabik J. *Aktywność, sprawność i wydolność fizyczna jako mierniki zdrowia człowieka.* AWF, Gdańsk, 1997.

[6] Bouchard C., Blair S., Haskell W. *Physical activity and health. Human Kinetics.* Champaign, 2007.

[7] Sallis J., Patrick K. Physical activity guidelines for adolescents. *Pediatric Exercise Science*, 6:302–314, 1994.

[8] Malina R. Wpływ ćwiczeń fizycznych na niektóre tkanki, rozmiary i funkcje organizmu w trakcie rozwoju osobniczego. *Wychowanie Fizyczne i Sport*, 1:9–16, 2002.

[9] Leblanc A., Janssen I. Systematic review of the health benefits of physical activity in school-aged children and youth. *Int J Behav Nutr Phys Act.*, 7:40, 2010.

[10] Drozd S. Analiza porównawcza oceny sprawności fizycznej dokonana testami denisiuka, pilicza, eurofit z uwzględnieniem budowy somatycznej. *Przegląd Naukowy Kultury Fizycznej*, 8:1–2, 2005.

[11] Drygas W., Kwaśniewska M., Kaleta D. Ruszkowska-Majzel J. Increasing recreational and leisure time physical activity in Poland – how to overcome barriers of inactivity. *Journal Public Health*, 16:31–36, 2008.

[12] Lalonde M. A new perspective on the health of canadians (ang.). in: Isbn 0-662-50019-9 [on-line], www.phac-aspc.gc.ca, 2008.

[13] Global recommendations on physical activity for health. Geneva, World Health Organization 2010. http://www.who.int/dietphysicalactivity/factsheet - recommendations/en/index.html

[14] Osiński W. *Antropomotoryka.* PWN, 2003.

[15] Biernat E., Tomaszewski P. Association of socio-economic and demographic factors with physical activity of males and females aged 20-69 years. *Ann Agric Environ Med.*, 22(1):118–123, 2015.

[16] Narodowy Program Zdrowia. 2015.

[17] Woynarowska B. *Edukacja zdrowotna.* PWN, Warszawa, 2007.

[18] Martinez-Gonzales M.A., Varo J.J., Santos J.L. Irala J. Gibney M. Kearney J. Martinez J.A. Prevalence of physical activity during leisure time in the European Union. *Med Sci Sports Exerc.*, 33:1142–1145, 2001.

[19] Barabasz Z., Zadarko E. *Aktywność przez całe ż ycie. Zdrowie i sprawność studentów pod kontrolą.* PWSZ, Krosno, 2011.

[20] Litwiniuk A., Grants J. Health behaviour of university students questionnaire (hbusq). physical activity and sport in changing society: Research, theory, practice and movement. In *3rd Baltic Sport Sciences Conference. Latvian Academy of Sport Education*, Riga, 2010.

[21] Przewęda R., Dobosz J. *Groeth and physical fitness of Polish Youth.*, volume 103. AWF Warszawa. Studia i Monografie, 2006.

[22] Blair S., Cheng Y., Holder J. Is physical activity or physical fitness more important in defining health benefits? *Med. Sci Sports Exerc*, 33(379), 2001.

[23] Haskell W.L., Lee I.M., Pate R.R., Powell K.E., Blair S.N., Franklin B.A. et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc.*, 39(8):1423–34, 2007.

[24] Warburton C.W., DER Nicol., Bredin S.S.D. Health benefits of physical activity: the evidence. *CMAJ*, 174:801–809, 2006.

[25] Nowak O. *Aktywność przez całe ż ycie. Zdrowie i sprawność studentów pod kontrolą.*, chapter Sprawność fizyczna studentów Uniwersytetu Przyrodniczego w Poznaniu., pages 117–134. PWSZ, Krosno, 2011.

[26] Pilicz S. *Kultura fizyczna studentów w okresie transformacji szkolnictwa wyż szego w Polsce.*, chapter Kierunki zmian w rozwoju fizycznym i sprawności fizycznej studentek i studentów Politechniki Warszawskiej. Politechnika Warszawska, Warszawa, 2000.

[27] Grzesiak J. *Doniesienie z badań sprawności fizycznej studentów I, II, III roku w wyż szej Szkole Pedagogicznej w Zielonej Górze. Wychowanie Fizyczne i Sport w Badaniach Naukowych.*, volume 331. AWF Poznań. Monografie, 2002.

[28] Januszewski J., Mleczko E. Ewolucja sprawności fizycznej krakowskich studentów; założ enia teoretyczne, implikacje praktyczne. a. *ntropomotoryka*, 39, 2007.

[29] Jopkiewicz S. *Antropologiczna i społeczna charakterystyka studentów Akademii Świętokrzyskiej.* Kielce, 2005.

[30] Mleczko E., Januszewski J. Long-term trends of changes in physical and motor development observed among cracovian students. *Kinesiology*, 46:65–79, 2009.

[31] Oja P. Dose response between total volume of physical activity and health and fitness. *Med. Sci. Sports Exerc.*, 33(428), 2001.

[32] Litwiniuk A., Huk-Wieliczuk E., Cynarski W.J. Physical activity students of physical education on the background of other types of healthy. *Annales Universitastis Mariae Curie-Skłodowska, Lublin, Sectio D Medicina*, LIX:414–417, 2004.

[33] Tuszyńska-Bogucka V., Bogucki J. Styl ż ycia a zdrowie. lublin. *UMCS*, 185, 2005.

[34] Dencikowa S., Drozd S., Czarny W. *Aktywność fizyczna jako czynnik wspomagający zdrowie.*, volume 246. Uniwersytet Rzeszowski, 2008.

[35] Saczuk J., Wasiluk A., Czeczelewski J., Długołęcka B. The prevalence of metabolic syndrome among students with different levels of physical activity. *Archivos Latinoamericanos de Nutrición*, 66(1):52–59, 2016.

Received: 2016
Accepted: 2016