Kazimierz Wielki University in Bydgoszcz
Faculty of Physical Culture, Health and Tourism

ACTIVITY & EDUCATION – PHYSICAL CULTURE IN THREE EUROPEAN COUNTRIES

Edited by

Bartłomiej Niespodziński
Alicja Kostencka
Rafał Gotowski

BYDGOSZCZ 2015

SERIES
Monografia

REVIEWERS

prof. nadzw. dr hab. Radosław Muszkieta

doc.PaedDr. Elena Bendíková, PhD.

prof. Naoki Suzuki

COVER PROJECT

Przemysław Marchwant

PUBLISHING

Ośrodek Rekreacji, Sportu i Edukacji w Poznaniu
Wydawnictwo Naukowe - Akademia Sportu i Nauki

PRINTING

Perfekt Gaul i wsp. sp.j.
60-321 Poznań, ul. Świerzawska 1
www.perfektdruk.pl

ISBN 978-83-62750-23-8

DOI: 10.5281/zenodo.31803

CONTENT

PREFACE

Physical activity (AF) is a term which is very broad and defined differently. According to Drabik (2009), when we consider physical activity in relation to physical culture (in many countries, generally called a sport) should be define as the work of skeletal muscle characterized by specifically targeted and effective in energy expenditure for the participants of various divisions of physical culture. In this context, it is not sufficient to identify it with each body movement triggered by skeletal muscle resulting in energy expenditure higher than resting metabolism (Caspersen, Powell and Christenson, 1985; Anshel et al., 1991), that is any kind of activity in the form of physical load which is subjected to a person everyday life. AF in physical culture has primarily a specific purpose and is usually identified with the pro-health activity, recreation or sport, which is scheduled workout.

To undertake such activity, physical education in a particular way should prepare, which is one of the most important aspects of not only in sport, but comprehensive education of person. It is intended to equip with knowledge and skills as well as personal and social competences indicating how to stay healthy and to enable active and conscious participation in various forms of physical culture, among others by selecting the appropriate physical activity.

At each stage of education, physical education and sport should be a continuous and comprehensive process, adapted to the needs and abilities of the participants of physical culture, regardless of whether it happens in Poland or another country. Despite similar needs of people in the field of physical culture in different countries, it poses a similar, but also specific to the community, area or region aims of physical education, also called in some countries, sports education. There is also different terminology in use, in relation to activities within the physical education dividing it into physical activity and sport activity, due to the nature of its pro-health and pro-sport objectives. Thus, we can observe the different methods of implementing similar demands, and their analysis can enrich the knowledge and experience of the conditions never seen before in our daily lives.

Therefore, this monograph aims to familiarize the reader with selected issues relating to physical education, physical activity and sport and the overall lifestyle of examples from the Polish, the Czech Republic and Slovakia.

The authors of individual chapters want to show bothering researchers in this field current research problems in the matter of the process of physical education, expectations of students and adults, their attitudes towards physical activity, preferred its forms, as well as current research on sports education of the young man and its impact on motor skills of developing organism. One of the important aspects of physical culture-related physical activity is also adequate nutrition, since the concept of physical education cannot be divorced from the totality of human lifestyle. Physical education must recognize the person integrally as active configuration, in a comprehensive, coherent and complementary. Such an approach to physical culture seems to be at the moment, "a fast-paced society of consumerism" a very important scientific problem, a problem that requires not only the "theorizing" but the exchange of experience and implementation in practice of physical education of a person, regardless of his age, a country or existing practices in this area.

This monographic book is a collection of current issues and the content of culture, education and physical activity in terms of specialists from Polish and two neighboring countries.

Drabik J., Aktywność fizyczna czy aktywność ruchowa?(Physical activity or motor activity?). *Antropomotoryka*. 2009, 46 pp. 119-123.

Caspersen C.J., Powell K. E., Christenson G.M.: Physical activity, exercise and physical fitness: definitions and distinctions for health-related research. *Public Health Reports*. 1985, 100(2): pp.126-131.

Anshel M.H., Freedson P., Hamill J., Haywood K., Horvat M., Plowman S.A.: *Dictionary of the Sports of Exercise Sciences*. Human Kinetics Books, Champaign, Illinois 1991.

Bartłomiej Niespodziński, Alicja Kostencka

PHYSICAL ACTIVITY IN BOYS ATTENDING THREE TYPES OF SECONDARY SCHOOLS IN THE CZECH REPUBLIC

Jana Juříková, Martina Pluháčková

Department of Kinesiology, Faculty of Sports Studies, Masaryk University, Brno, Czech Republic

Key words: young boys, leisure time, physical activity, cycling, ball games, fitness gym

Abstract

Physical activity is suggested to be an essential part of everyday life, especially during growth and rapid development of school-aged children.

The aim of this paper is to find out whether and how often students – boys who attend three types of secondary schools (which differ in the level of difficulty) – are devoted to physical activities in their free time.

The research set was composed of students who attend three different types of secondary schools: secondary grammar school - 46 “Grammar students”, automobile secondary school (study programmes finished with national secondary school exam) – 48 “Students” and apprentices of the study programme not finished with the national school leaving exam – 50 “Apprentices”. In total, 144 boys participated in the research.

A standardized questionnaire was used to find out about the physical activities of the above informants. This paper assesses only the responses to questions related to physical activity and some questions concerning the assessment of one’s own health.

The informants assessed their physical activity subjectively according to its intensity using a scale from 1 (very low) to 7 (very high). Grammar students and Students assess their physical activity rather higher (value 5 on the 1-7 scale) and apprentices assess it as average (value 4 on the 1-7 scale).

The majority of Grammar students are devoted to walking in their leisure time; the majority of Students to volleyball; and the majority of Apprentices prefer cycling.

Differences were found in the area of physical activities performed by students from three types of secondary schools. Most time was devoted to physical activities by Grammar students, slightly less by Students of secondary school finished by a final school-leaving exam and the least by Apprentices without the final exam.

Introduction

Physical activity is suggested to be an essential part of everyday life, especially during growth and rapid development of school-aged children. The benefits of physical activity are numerous: it has a positive effect on the prevention of various diseases in schoolchildren (Rankinen et Bouchard, 2002) and on their cognitive development, it increases self-esteem and controls the levels of anxiety and stress, normalizes the state of mind (Burdette et Whitaker, 2005) and certainly affects the level of physical fitness (Dencker et al., 2006). It is suggested that physical fitness is an integrated dimension of most, if not all, functions of the organism related to physical activity (Ortega et al., 2008).

Physical activity plays an important role in the prevention of becoming overweight and obese in children and adolescents, reducing the risk of obesity and positively influencing health status in adulthood (Matton et al., 2006). Puberty and the following adolescent period are acknowledged as particularly vulnerable times for the development of obesity due to sexual maturation and, in many individuals, a concomitant reduction in physical activity (Hills et al., 2001; Maciulevičienė et al., 2013).

The numerous health benefits of physical activity have been scientifically determined (Blair et Morris, 2009). Physical inactivity, on the other hand, is a serious health risk factor considered to be the major public health problem of the 21st century (Blair, 2009). Unfortunately, the most alarming are the worldwide trends of high prevalence of physical inactivity among children and adolescents (Curie et al, 2012). Furthermore, the assessment of the physical activity level and the nutritional status are today considered to be the first stage of the implementation of interventional measures which can contribute to the health at the population level (Dishman et al, 2004; Petrić et al., 2014).

The regular practice of physical activity in adolescence may contribute to a healthy lifestyle both in this period and in adulthood, reducing the incidence of non-communicable diseases (Downey et al., 1987; Hayman et al., 2004; Twisk et al., 2000). Several diseases in adults are associated with conditions or behaviours that began during youth, including the lack of physical activity (Hallal, 2006; Nakamura et al., 2013).

Aim

The aim of this paper is to find out whether students – boys who attend three types of secondary schools (which differ in the level of difficulty) – are devoted to physical activities in their free time. Furthermore, the aim of this paper is to find out which physical activities are their favourite and how often they are devoted to such activities.

Material and methods

The research set was composed of students who attend three different types of secondary schools. General grammar school is the school with the highest demands consuming the most leisure time. Randomly selected boys

were approached at two schools: General Grammar School in Vysoké Mýto (21 informants) and General Grammar School of Božena Němcová in Hradec Králové (25 informants). Altogether, 46 students participated in the research; together, they shall be called Grammar. Slightly less difficult is studying at a secondary school. The Automobile Secondary School in Holice provides education both in study programmes finished with national secondary school exam and in programmes without the national exam. Students of this school formed the second group of informants; there were 48 students in this group who shall be together called Students. The last group contains students who are required to devote the least amount of their leisure to studying – apprentices. For this reason, the third approached school was vocational school. The informants were also selected from the Automobile Secondary School in Holice; they were apprentices of the study programme not finished with the national school leaving exam. Fifty apprentices participated in the research hereinafter referred to as Apprentices. Tab. 1 shows the proportion of students and apprentices in the research.

Tab. 1. Number of students of individual schools and their average age

	Grammar	Students	Apprentices	Total
Number of students	46	48	50	144
Average age [years]	17.04	17.84	17.30	17.40

A standardized questionnaire which was elaborated at the Department of Preventive Medicine, Masaryk University, Brno (Brázdová et Fiala, 1998) was used to find out about the physical activities of the above informants. The questionnaire was quite extensive; it was composed of several sections of sub-questions such as personal anamnesis, family anamnesis, the understanding and observing of one's own health, nutrition habits, alcohol consumption, physical activity, smoking or psycho-social load. The questionnaire was adjusted for the needs of this research (Šitinová, 2013); only some questions related to nutrition habits and physical activity were selected. This paper assesses only the responses to questions related to physical activity and some questions concerning the assessment of one's own health.

In the Czech Republic, Physical Education is compulsory at all types of secondary schools and vocational schools in the scope of two lessons per week. Questions asked in this questionnaire focused on physical activity which is conducted by the informants in their leisure time, i.e. outside school lessons.

The informants were asked to assess their physical activity in their leisure time during the previous month. They assessed their physical activity both qualitatively and quantitatively within offered categories of activities (walking, running, fitness etc.). They also had the possibility to state all other physical activities which were not offered. The duration of exercising in sports which was performed by the students at least once per week was recorded apart.

The students for the research were selected at random and the questionnaire was anonymous. Acquired data were assessed in a computer using Libre Office Calc software; tables were created in Microsoft Word and graphs in Microsoft Excel.

Results

The informants assessed their physical activity subjectively according to its intensity using a scale from 1 (very low) to 7 (very high). Tab. 2 shows the assessed results.

Tab. 2. Subjective assessment of physical activity in students from three types of secondary schools

Groups of informants	Physical activity assessment							Median
	1	2	3	4	5	6	7	
Grammar (n = 46)	2	3	3	6	12	8	11	rather higher
Students (n = 48)	0	2	5	12	15	7	7	rather higher
Apprentices (n = 50)	3	0	2	23	13	6	4	average
Total (n = 144)	5	5	10	41	40	21	22	

Key
Physical activity assessment:
1 – very low
2 – low
3 – rather low
4 – average
5 – rather high
6 – high
7 – very high

The table makes it clear that Grammar students and Students assess their physical activity rather higher (value 5 on the 1-7 scale) and apprentices assess it as average (value 4 on the 1-7 scale). In total, the median of subjective assessment of physical activity is rather high, which is in compliance with the findings made by Kučera et al. (2011), who conducted a research of nutrition habits and physical activity of students at elementary schools. He found out that students of younger school age have a great need of movement.

Only two Grammar students and three Apprentices assessed their physical activity as very low. None of Students used this assessment. Three Grammar students, two students and no Apprentice consider their physical activity as low. On the contrary, eight Grammar students, seven Students and six Apprentices regard their physical activity as very high. Eleven Grammar students, seven Students and four Apprentices consider it to be very high.

Fig. 1 is a comparison of the subjective assessment of physical activity of all informants.

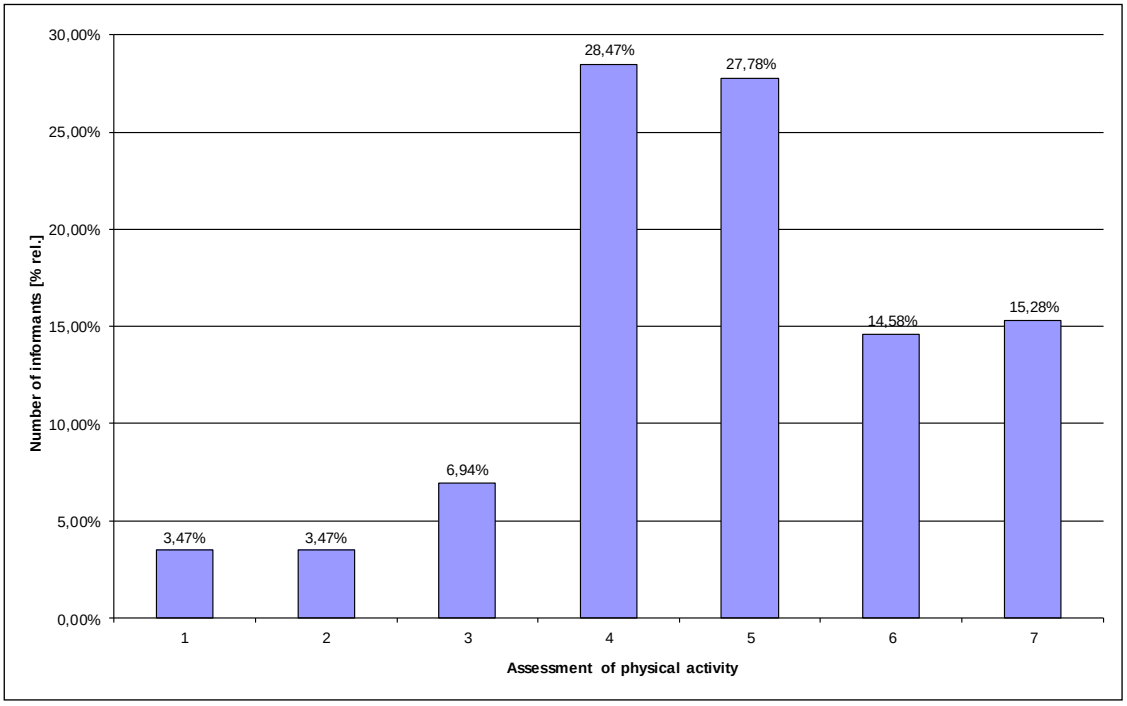


Fig. 1. Subjective assessment of physical activity of students from three types of secondary schools

It results from the graph that more than half of the informants (56.25% in total) assessed their physical activity to be average (28.47) or rather high (27.58). Only less than 7% of adolescents stated that their physical activity is very low (3.47%) or low (3.47 %). On the contrary, 14.58 % of informants assessed their physical activity to be high and 15.25 % to be even very high.

Another questions focused on the preference of individual sports among the informants from three different types of secondary schools. The frequency of practicing the individual sports was found out using a table with nine sports categories (walking, running, cycling, aerobics, bodybuilding, racket sports, ball games, swimming and others); for each sports, the informants were asked to mark their response using a seven-point scale: number one meaning that the informant is not devoted to the sport at all; number seven meaning that the informant is devoted to the sport on a daily basis. Tab. 3 shows the most favourite sports in individual groups of students.

Tab. 3. Most favourite sports in individual groups of informants

Kind of sport	Groups of informants		
	Grammar	Students	Apprentices
Long fast walks, hiking	23	1	3
Running, jogging	1	1	3
Cycling (including exercise bike)	13	14	26
Aerobics, fitness aerobic work-out	0	0	0
Bodybuilding	1	14	3
Tennis, squash, badminton etc. (= racket sports)	1	1	3
Volleyball, handbal, soccer etc. (= ball games)	6	16	10
Swimming	1	2	2
Total	46	48	50

The table makes it clear that the majority of Grammar students are devoted to walking in their leisure time; the majority of Students to volleyball; and the majority of Apprentices prefer cycling. Aerobics as a physical activity was selected by nobody. This may be caused by the fact that the informants were boys and aerobics is a physical activity usually preferred by girls.

Fig. 2 states how often – how many days per week – the informants perform their favourite sports.

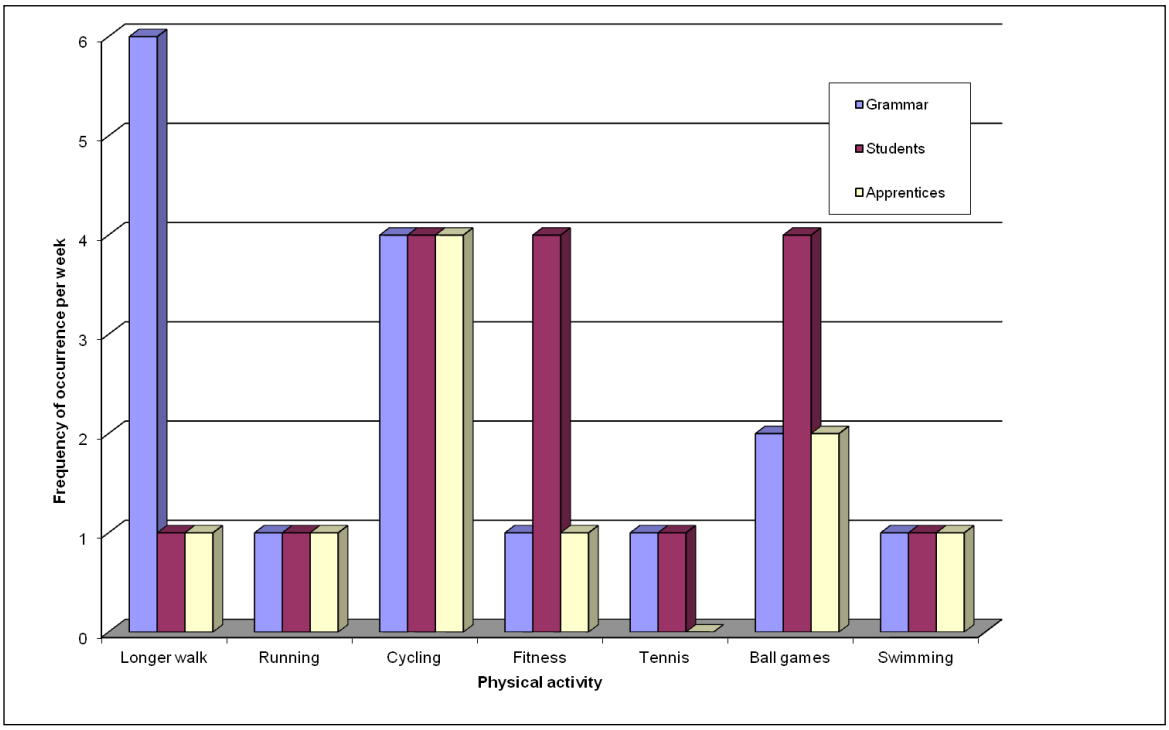


Fig. 2. Frequency (how many times per week) of occurrence of favourite sports activities in individual groups of informants

The graph shows that the Grammar students are devoted to their favourite physical activity most frequently. Their favourite physical activity is long walks which they perform six times per week. One of the most favourite activities is also cycling which occurs four times per week in all groups of informants on the average. Students also stated that they do bodybuilding four times per week as well as playing ball games. The majority of apprentices stated that they do cycling four times per week as well; they also like ball games which occur two times per week. In a study which compares young boys and girls, del Valle at al. found out that the majority of young boys are devoted to playing ball games and cycling while most girls are devoted to walks (Fernandéz del Valle et al., 2009).

Discussion

Physical activity is very difficult to measure and there is no gold standard measurement for daily physical activity (Sirard et Pate, 2001; Trost, 2001; Maciulevičienė, 2013).

The results show that the informants devote their leisure time to physical activities. It is not only the attractiveness of individual physical activities that is crucial in their preference by the informants; it is also the opportunity to be involved in the activity. For instance, the Automobile Secondary School offers the possibility to attend volleyball leisure-time course which is attended by both many Students and Apprentices. On the contrary, there is no such possibility for the students at the General Grammar School. The Automobile Secondary School in Holice also offers the possibility for commuting students to stay in a boarding house which is located right in the premises of the school. On the contrary, the General Grammar School does not have a boarding house which means that the Grammar Students have to walk at least five times per week (while walking from home or from public transport station) to get to school. They have to walk regularly whether it is their favourite physical activity or not.

A human should be involved in physical activity for a certain time period. Children and young people aged 5 – 18 need to maintain a basic level of health practicing at least 60 minutes of physical activity every day. Physical activity should be moderate in intensity, which means working hard enough to raise heart rate and break a sweat (Sabau, 2014).

The recommendations of WHO are similar: Children and young people aged 5-17 should practise at least 60 minutes of physical activity of moderate or high intensity per day. It is not necessary to perform all the activity at one time; it can be divided for instance in two periods of 30 minutes per day. Physical activity which exceeds 60 minutes in duration per day has some other advantages concerning health. Most of daily physical activity should be of aerobic character. Physical activity which strengthens muscles and bones should be included at least three times per week (it can be a part of playing games, running etc.). Young people who are physically inactive are recommended to increase their activity (www.who.int, 2013).

Conclusion

Differences were found in the area of physical activities performed by students from three types of secondary schools. Most time was devoted to physical activities by Grammar students, slightly less by Students of secondary school finished by a final school-leaving exam and the least by Apprentices without the final exam. There were frequent differences among individual students regarding their nutrition habits and physical activities. Some physical activities were directly related to the type of school, however not with the difficulty level of the school as it had been originally expected. They were more related to the equipment and opportunities to participate in the activities offered by the schools.

References

BLAIR, S.N. Physical inactivity: the biggest public health problem of the 21st century. *British Journal of Sports Medicine*. 2009, 43(1), pp. 1–2.

BLAIR, S.N., MORRIS, J.N. Healthy hearts- and the universal benefits of being physically active: physical activity and health. *Annals of Epidemiology*. 2009, 19, pp. 253–256.

BRÁZDOVÁ, Z., FIALA, J. Dietary Guidelines in the Czech Republic. Sborník prací lékařské fakulty v Brně, 115. Brno: LF MU. 1998.

BURDETTE, H.L., WHITAKER, R.C. Resurrecting free ply in young children. Looking beyond fitness and fatness to attention, affiliation, and affect. *Archives of Paediatrics & Adolescent Medicine*. 2005, 159, pp. 46–50.

CURRIE, C., ZANOTTI, C., MORGAN, A., CURRIE, D., DE LOOZE, M., ROBERTS, C. et al. eds. Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey. Copenhagen, WHO Regional Office for Europe. 2012.

DENCKER, M., THORSSON, O., KARLSSON, M. Daily physical activity and its relation to aerobic fitness in children aged 8 – 11 years. *European Journal of Applied Physiology*. 2006, 96(5), pp. 587–592.

DISHMAN, R.K., WASTIBURN, R.A., HEATH, G. W. Physical activity epiedemiology. [in:] *Champaign H. Human Kinetics*. 2004.

DOWNEY, A.M., FRANK, G.C., WEBBER, I.S., HARSHA, D.W., VIRGILIO, S.J., BERENSON, G.S. Implementation of “heart smart” . A cardiovascular school health promotion program. J Sch Health. 1987, 57(3), pp. 98–104.

FERNANDÉZ DEL VALLE, A., CAYERO ALKORTA, R., OTERO PARBA, M., CÁMARA TOBALINA, J. Informal physical activities in young people. Ovidius University Annals, Series *Physical Education and Sport*/*SCIENCE, MOVEMENT AND HEALTH*. 2009, 1, pp. 33–35.

HALLAL, S.C., VICTORA, C.G., AZEVEDO, M.R., WELLS, J.C. Adolescent physical activity and health: a systematic review. *Sports Med*. 2006, 36(12), pp. 1019–1030.

HAYMAN, H., WILLIAMS, C.I., DANIELS, S.R., STEINBERGER, J., PARIDON, S., DENNISON, B.A. et al. Cardiovascular health promotion in the schools: a statement for healt and education professionals and child health advocates form the commitee on atherosclerosis, hypertension, and obesity in youth of the council on cardiovascular disease in the young. American Heart Association. Circulation. J Am Heart Ass. 2004, 110, pp. 2266–2275.

HILLS, A.S., ANDERSEN, I.B., BYRNE, N.M. Physical activity and obesity in children. *British Journal of Sports Medicine*. 2011, 45(11), pp. 866–870.

http://www.who.int (cit: 2013.03.04).

KUČERA, M, KOLÁŘ, P., DYLEVSKÝ, I. Dítě, sport a zdraví. Praha: Grada Publishing, a. pp. 2011.

MACIULEVIČIENÉ, E., SADZEVIČIENÉ, R., RUTKAUSKAITÉ, R. Objectively measured weekly physical activity among adolescent boys and its relation to health-related physical fitness. *Ugdymas, kuno kultura, sportas*. 2013, 4(91), pp. 16–21.

MATTON, L., THOMIS, M., WIJNDAELE, K. Tracking of physical fitness and physical activity from youth to adulthood in females. *Medicine and Science in Sport and Exercise*. 2006, 38(6), pp. 1114–1120.

NAKAMURA, S.M., TEIXIERA, I.P, PAPINI, C.B., DE LEMOS, N., NAZARIO, M. E.S., KOKUBUN E. Physical education in schools, sport activity and total physical activity in adolescents. *Brazilian Journal of KINANTHROPOMETRY and Human Performance. Rev Bras Cineantropom Desempenho Hum*. 2013, 15(5), pp. 517– 526.

ORTEGA, F.B., ARTERO, E.G., FUIZ, J.R. Reliability of health-related physical fitness tests in European adolescents. The HELENA Study Reliability of fitness assessment in adolescents. *International Journal of Obesity*. 2008, 32, pp. 49–57.

PETRIĆ, V., NOVAK, D., BLAŽEVIĆ, I, ANTALA, B. Physical activity and nutritional status among secondary school girls and boys. *Research in Kinesiology*. 2014, 4(1), pp. 3–8.

RANKINEN, T., BOUCHARD, C. Genetics and blood pressure response to exercise, and its interactions with adiposity. A review. *Preventative Cardiology*. 2002, 5, pp. 138–144.

SABAU, E. Young people and leisure-time sport activities. *Science, Movement and Health*. 2014, 14(2), pp. 191–195.

SIRARD, J.R., PATE, R.R. Physical activity assessment in children and adolescents. *Sports Medicine*. 2001, 31, pp. 439–454.

ŠITINOVÁ M. Výživové zvyklosti a pohybová aktivita adolescentů – mužů studujících různé typy středních škol. Bachelor thesis. Brno: FSpS MU. 2013.

TROST, S.G. Objective measurement of physical activity in youth. Current issues, future directions. *Exercise and Sport Science Review*. 2001, 29, pp. 6–32.

TWISK, J.W.R., KEMPER, H.C.G., MECHELEN, V. Traking of activity and fitness and the relationship with cardiovascular disease risk factor. *Med Sci Sports Exerc*. 2000, 32(8), pp. 1455–1461.

PREFERENCES OF PHYSICAL ACTIVITIES OF YOUNG AGE CHILDREN IN THE CZECH REPUBLIC

Petr Reich, Ludmila Miklánková

Faculty of Physical Culture, Palacký University in Olomouc, Czech Republic

Key words: physical activity, interests, children, young age, primary school

Abstract

The aim of the survey was to describe and analyze the preferences in children's interest at young age, focusing on physical activities. Children's interests in facultative forms of physical education offered by primary schools (clubs) was made in the form of a survey. This survey was based on a modified version of the standardized questionnaire in order to find the interests of primary school pupils (Fromel, 1991, 1994). The surveyed sample was composed of 10711 children aged 6-12 (out of which 5350 were boys and 5361 were girls) from primary schools in the Czech Republic in the Olomouc Region. All grades of primary school were included in the sample. In total, 39% of children from the surveyed sample attend clubs focusing on physical activities. The results were processed by the method of incidence of answers, in percentage and graphically. Children in the surveyed sample prefer sports games, physical games, floorball, and clubs focused on movement with music (dancing clubs, aerobic). 42% of surveyed children prefer clubs which are not focused on physical activities. Almost one fifth of the surveyed sample (19%) does not take advantage of the offer of the primary schools to participate in free-time activities. That is why it is necessary to focus on this group of children and motivate them to active passing of their free time.

Introduction

Recent researches in the Czech Republic point out to the increase in the proportion of obese boys by 2.6% and by 1.7% in the case of girls, especially at the age between 7 and 11. Tláskal (2006) states that children who are obese at the beginning of their lives (up to the age of 6) are less often obese in their adulthood (26%) than is the case of children who are obese after the age of six. The obesity of seven-year-old children lasts till the age of 36-47 in the case of approximately 51% of adults. In a similar research the obesity of 9-18-year-old children lasted till the age of 23-33 in 48-75% of researched cases. If the obesity is not dealt with in the childhood it is supposed that eight out of ten children will remain obese in their adulthood. Based on the results of the research by Kunešová (2006) and Cabrnochová (2008) it was found out that there are

approximately 20% of 6-12-year-old children in the Czech Republic who are overweight, out of whom 10.3% are obese. The highest percentage of obese children (18%) was found between seven-year-old children and it can be assumed that there is a relationship between the change of physical activity regime after the beginning of compulsory school attendance. In order to lower the occurrence of obesity of children between the age of 8 and 16, Kučera and Golebiowska (1994) recommend the involvement of the whole organism in the physical activity, focusing on the circulatory, respiratory and locomotive system, while creating a positive attitude of the child to the physical exercise. According to them, the creation of positive attitude of the obese individual to the physical activity and understanding of the function corresponding to the daily regime is more important than immediate fast loss of weight. But the *Výživa* consulting centre (2008) states on the basis of the results of a questionnaire survey(16,000 respondents) in the years 2006 and 2007, that 62% of children at primary school age in the Czech Republic do not do any physical activity in addition to the compulsory two lessons of physical education at schools (http://www.vyzivadeti.cz/pohyb/sportovni-aktivity-podle-veku/#skolaci).

Participation of a child in the sports activities in the sports organisations has positive impact on the development of their personality in the sense of independence and self-reliance, as well as in the field of creating social relations and bonds. Children who participate in sports activities are more self-confident, more adaptable, and they manage failure and stressful situations better than hypoactive children. Sports activity strengthens the will and develops self-control, self-confidence and rids the child of fear from the unknown (Perič, 2004; Vališová Kasíková, 2007). The impact on physical, intellectual and emotional aspects of the personality, as well as social development and mechanism of the creation of social relations has been proved (Fürstová, 1997; Belej, 2001; Vágnerová, 2005). Matějček and Dytrych (1994) mention the importance of some physical skills, e.g. swimming, skiing, or riding, which help clumsy children to get self-confidence and integrate into the children's collective. According to Dvořáková (2006b), movement is linked to the whole personality of the child; it makes its integral part and is a means to fulfil other needs. It is one of the most important determinants of the future ability to learn new skills and knowledge.

It is generally recommended that the share of physical activities in their daily regime be approximately 25% in the case of children aged 4-6, 20.8% in the case of children aged 7-11, 16.6% in the case of children aged 12-14, and 12.5% in the case of adolescents aged 15-18 (http://www.vyzivadeti.cz/pohyb/ sportovni-aktivity-podle-veku/#skolaci). In all the cases, 50% of the above stated figures are the essential minimum for the life of the child. The extent of physical activities of children in hours per day is as follows: 6 hours in the case of children aged 4-6, 5 hours in the case of children aged 7-11, 4 hours in the case of children aged 12-14, and 3 hours in the case of adolescents aged 15-18 (http://www.vyzivadeti.cz/ pohyb/sportovni-aktivity-podle-veku/#skolaci). The intensity of physical load is also discussed by Haskell and al. (2007). He suggests executing physical activities 5 times a week with 60-74% maximum heart frequency and 3times a week 20 min of physical activities with a high level of load intensity.

Contemporary conception of the didactic process in the field of acquiring physical skills, raising the level of physical skills, and acquiring knowledge in the field of education for health is being built on new principles in the Czech Republic when the pupil is put in the focus in the process of didactic interaction. The starting

point of the pedagogues' effort at schools should be the use of the knowledge of the so-called teaching with understanding or teaching of problem solving (Adamus & Tomajko, 1994; Karger, 1996; Tomajko & Adamus, 1995; Tomajko, 1996; Velenský, 1997; Dietrich, Dürrwächter & Schaller, 1994). A serious didactic problem is how to secure an adequate physical education of pupils, physical condition, physical skills capacity, and sports interest on the one hand, and creativity, enjoying the experience, freedom of decision-making, and other features of contemporary conception of education on the other hand.

Aim

The aim of the survey was to describe and analyze the preferences of physical activities of young age children in the Czech Republic.

Material and methods

The sample consisted of 10711 probands (5350 boys; 5361 girls) aged 6-12 from 70 elementary schools in the Czech Republic. The probands attended the 1st - 5th grades of the primary schools in the Olomouc Region (Fig. 1).

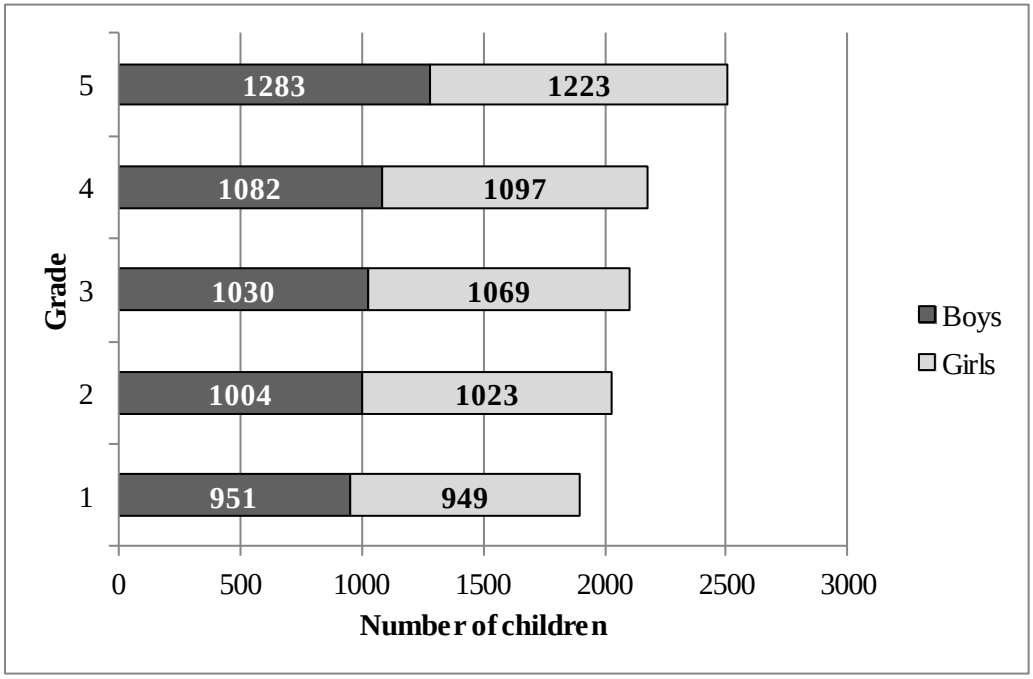


Fig. 1. Number of children according to the grades of the primary school, n = 10711 (nB = 5350; nG = 5361)

Legend: 1 - 5... grade of compulsory school attendance; 0-3000... number of children in the grade

In view of the low age of the children, the condition of their participation in the survey was the approval from their legal representatives. The data collection was carried out by empirical investigation of a qualitative character. A modified

version of a standardized questionnaire was used in the data collection in order to investigate pupils' interests in physical activities (Frömel, 1991, 1994) (Appendix 1). The modification consisted in the elimination of physical activities intended for older age groups, e.g. shot put, windsurfing, motor sport, biathlon etc. (Tab 1). Another condition was the active participation of the surveyed child in this physical activity. The selection of elementary schools was premeditated; it was dependent on the approval of the children's parents, and of the management of the schools. Representativeness was not required. 39% city schools, 44% village schools, 11% small schools, 1% church schools, 1% sports schools and 4% special schools participated in the research. (Fig. 2). An electronic form of distribution of questionnaires to the probands (their teachers) including 5 questions was used. The questions were based on the aim of the investigation. Obtained data were evaluated in percentage and graphically, and summarized in tables and graphs.

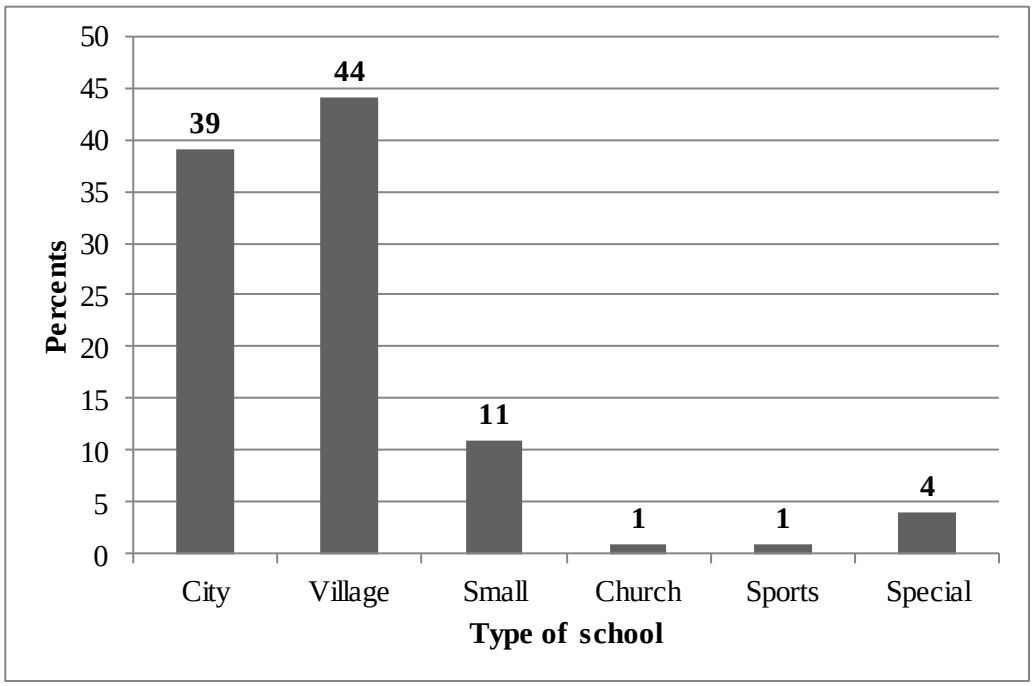


Fig. 2. Types of participating schools; n = 70

Results

At the beginning of the survey a short review of participating schools was carried out. Based on the results, it can be observed that the number of activities other than sports exceeds the number of sports clubs at the schools surveyed. The schools in the Olomouc Region offer 226 sports clubs and 413 clubs related to other activities (Fig. 3). We found out that that the number of clubs related to other than sports activities is higher by 187 in the Olomouc Region. When expressed by percentage, it is obvious that the percentage of clubs related to other activities is higher than of clubs related to sports.

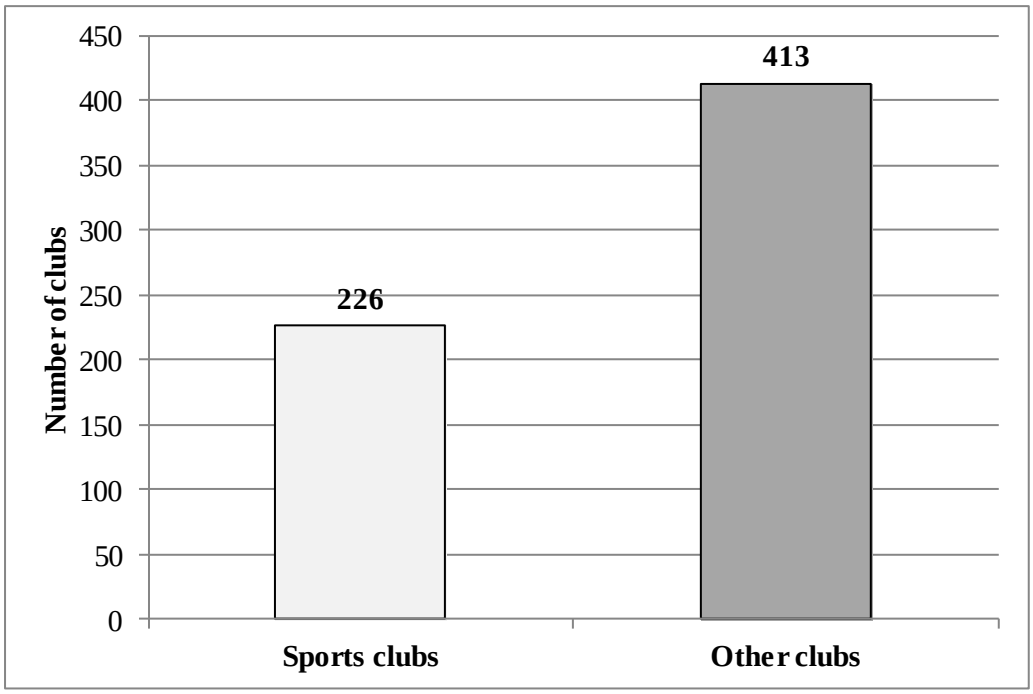


Fig. 3. Incidence of clubs organized by the elementary school, n = 70

4141 children (i.e. 39% of the surveyed sample) actively participated in sports clubs. Other clubs (i.e. clubs not related to sports) were attended by 4547 children (42% of the surveyed sample). It is alarming that 2023 children (19% of the surveyed sample) are not interested at all in active spending of free time in any of the activities offered by a particular elementary school (Fig. 4).

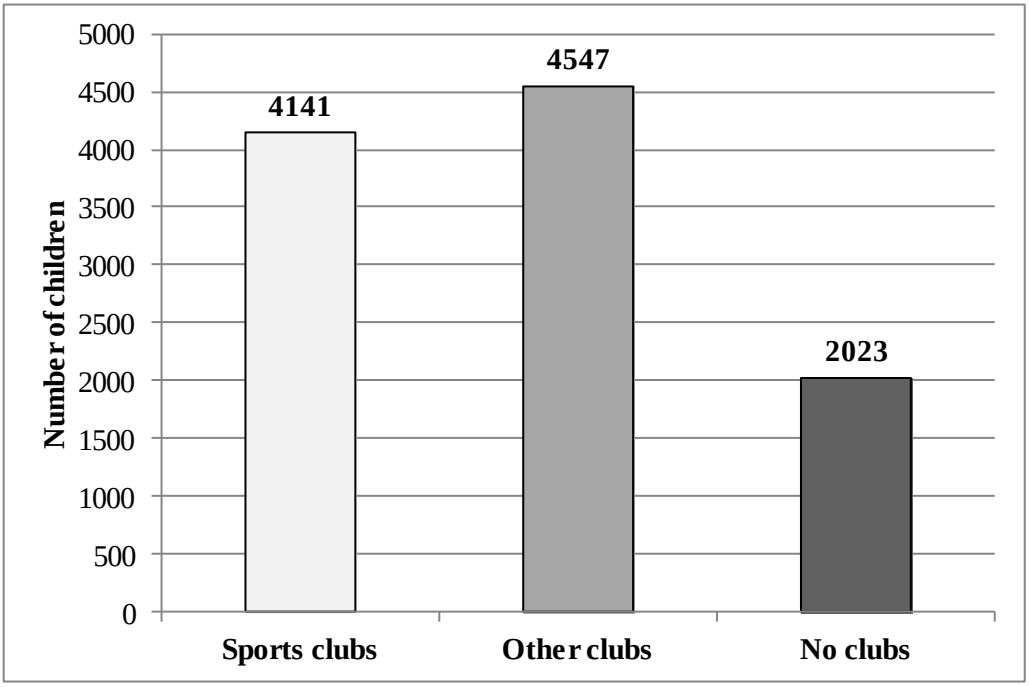


Fig. 4. Incidence of participation of surveyed children in the clubs organized by the elementary school; n = 10711

Surveyed schools offer a wide spectrum of optional subjects - clubs, whose focus is influenced by space, material, and personal possibilities of the school, and by the interests of their pupils. Children's preference of individual sports or physical activities offered by the surveyed primary schools by way of optional physical education varies (Tab. 1). Most out of the 4141 children enrolled in the sports clubs at schools were interested in sports games. Clubs focusing on sports games, physical games, floorball, dancing clubs, aerobic and tourism are preferred the most.

Tab. 1. Active participation of girls and boys in optional physical education, n = 10711(n B =5350 ;n G = 5361)

Focus of the clubs	1st GRADE		2nd GRADE		3rd GRADE		4th GRADE		5th GRADE		Total	%
	b	g	b	g	b	g	b	g	b	g		
sports games	70	66	100	79	100	105	134	126	167	191	1138	27.5
physical games	55	61	69	64	50	55	34	42	33	41	504	12.2
tourist activities	22	27	37	28	18	23	21	33	24	33	266	6.4
floorball	0		6	4	38	28	66	46	87	60	335	8.1
dance	12	39	25	44	20	56	17	56	15	51	335	8.1
volleyball	0	0	0	0	0	0	0	0	85	95	180	4.3
ball games	8	9	8	9	2	2	0	0	0	0	38	0.9
five-a-side football	3	0	7	0	6	0	11	0	10	0	37	0.9
fencing	0	0	0	0	0	0	0	0	5	3	8	0.2
ice skating	0	0	0	0	0	0	0	0	0	0	0	0
majorette	0	9	0	10	0	11	0	11	0	14	55	1.3
karate	0	0	0	0	0	0	0	0	10	6	16	0.4
BMX	0	0	0	0	0	0	0	0	1	0	1	0.02
table tennis	0	0	5	3	13	17	19	18	18	14	107	2.6
football	21	0	19	0	31	0	25	0	33	0	129	3.1
exercise of parents with children	6	8	2	1	2	1	0	0	0	0	20	0.5
aerobic	0	43	0	43	0	65	0	72	0	83	306	7.4
basketball	0	0	0	0	0	0	5	6	70	93	174	4.2
frisbee	0	0	0	0	0	0	0	0	0	0	0	0
shooting	0	0	1	0	12	10	15	11	17	14	80	1.9
athletics	0	0	3	2	14	13	21	16	21	18	108	2.6
tennis	0	0	0	0	0	0	0	0	0	0	0	0
swimming	0	0	0	0	0	0	4	5	17	17	43	1.0
gymnastics	7	5	8	12	8	15	9	16	21	16	117	2.8
handball	0	0	0	0	0	0	4	4	6	13	27	0.6

judo	0	0	0	0	0	0	4	3	4	5	16	0.4
ice hockey	0	0	0	0	3	0	5	0	4	0	12	0.3
canoeing	0	0	0	0	0	0	0	0	9	0	9	0.2
equitation	0	0	0	0	0	0	0	0	0	5	5	0.1
skiing	0	0	2	3	2	1	1	4	10	9	32	0.8
health physical education	4	2	2	3	0	0	0	0	0	0	11	0.3
yoga					2	5	4	4	3	7	25	0.6
orienteering	0	0	0	0	0	0	0	0	4	3	7	0.2
rhythmic gymn.	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	208	269	294	305	321	407	399	473	674	791	4141	

Legend: nB - boys, nG - girls; 1st grade, 2nd grade, ...etc. - grade of compulsory school attendance; g - girls, b - boys; rhythmic gymn. - rhythmic gymnastics; total - number of persons actively participating in the optional subject/club; % - percentage of surveyed sample of children

Discussion

The number of other clubs (clubs not offering physical activities) exceeds the number of sports clubs at schools of the Olomouc Region by 30%. The schools offer 226 sports clubs and 413 clubs not focusing on sports. Children's participation in clubs focused on sports is 39% of the surveyed sample. The results thus correspond to the findings of the project “Životní styl a obezita 2005” (ČSL JEP & ČOS JEP, 2006b), according to which Czech children do not have enough PA (young age children as well as adolescents). The group of primary school children approach the weekly recommended level, but they do not meet it. Children aged 6-12 spend on average 6 hours and 20 minutes on more demanding PA. However, specialists in the prevention of civilization illnesses recommend the minimal length of more demanding physical activity at least 7 hours per week (i.e. at least 1 hour per day). Similarly to the above-mentioned project, our survey shows that this recommended value is only met by 40% of children in the Czech Republic. In the group of secondary school children, however, the situation is much worse, as they only devote 4 hours and 40 minutes per week to an intensive physical activity.

The survey *European Health Heart Initiative* (Logstrup, 2001) showed that in all EU member states most 11-year-old children do physical exercise on average twice a week, but there are substantial differences between individual countries. This average level is met e.g. by 54% girls in France, 89% girls in Northern Ireland, 76% boys in Norway and 93% boys in Northern Ireland. In Belgium, the survey of PA and inactivity resulted in the finding that in the case of girls, the inactivity is bigger than in the case of boys. For example, 6.3% 12-year-old boys did PA for less than 1 hour per week, but in the case of girls it was 16.5% (Lefevre, Bouckaert, Duquet, & van der Aerschot, 1999). In Denmark, boys and girls at the age of 7 - 15 are active on average 36 minutes a day. Approximately 71% of all children attend some sports club with organised PA and 17% pursue non-organised PA. While 90% of 12-year-olds state in the survey that they participate in sport, it is only 46% at the age of 17 (Wedderkopp, 2001). In England, 61% of boys and 42% of girls at the age of 7-18 met

the recommended PA of one hour per day with minimally moderate intensity of physical load. According to Salmon, Telford a Crowford (2002), parents of children aged 5-6 state watching television as the most frequent activity. Boys are more active than girls in all countries and time spent on PA decreases with age in most of the countries. In our sample, children in higher grades (4th - 5th grades of primary schools) participated in free-time physical activities much more than children from lower grades (Table 1).

The results of the survey prove the share of PA on creating the human personality. An extensive number of authors deal with the problems of relations between PA and some aspects of human personality, including the relation towards sports activity or temperament features. Some authors refer to the indirect relation between the organization in physical education and presence of youth criminality, to the positive supporting effect when treating drug addictions, and analysed children's and youth's sports practice as a prevention of drug abuse (Slepičková, 2001; Suchomel, 2002; Zapletalová, 2003; Hrčka, Bartík, Michal, & Krška, 2005). Rychtecký et al. (2006) evaluate the integration of sports and physical activities in children's and youth's lifestyle as relatively important. Nevertheless, in the age category of 9-11, children prefer spending their time by watching television (70%), playing cards, video games, computer games, listening to music, or reading a book. In their research, they state recreational, organized, and unorganized sport as the way of spending the free time of cca 40% children.

Some specialists (Matějček, 2000; Kraut, Melamed, Gofer & Froom, 2003; Zimmer, 2004; Měkota & Cuberek, 2007) see in the participation of a child in the activity in the organizations an important socializing benefit. The child has to cooperate with other members of the children's collective, s/he has to obey the rules of the games of competitions and respect them. S/he learns to respect the interests of the group, acquires the ability to take up the role of a member of such a group, and this can facilitate taking up other social roles in his/her future life. Participation in organized PA can contribute to the development of abilities and adapt better to the environment which is not pleasant to the child. Šimíčková-Čížková (2004) see positive asset of PA in in the selected group in the creation of other social bonds, in the extension of social contacts, and confirmation of one's own self-conception. Approximately since the age of 4, children have the need of bigger social contact, and that is also why they incline to group physical activities rather than individual ones. Thanks to the physical activities it is possible to integrate children with problems in the social sphere into the collective, because verbal and non-verbal communication and physical contact is happening completely spontaneously. Physical activities enable the child to be acquainted with social groups in the sense of looking for role models, because they usually offer positive role models.

From the point of view of environmental particularities, it is possible to observe that the child requires as much emotionally positive and safe environment as possible. Integrating the child into organized PA is up to a large degree influenced by the place and way of living, parents' education, completeness of the family, economical aspects, level of external stimulation to the PA by the school and family, and other factors. In order to support PA at pre-school children, it usually suffices to create favourable conditions (they do not have to be economically demanding) and not restrict physical activities.

Maturing of central nervous system and genetically given biological time of maturation cause in primary school age approximately 25% variances among

children, which influences different ability to cope with given physical tasks in the given period (Branta, 1982; In Dvořáková, 1998). At the age of 4-6, it is recommended to extend so far acquired skills (e.g. jumping, throwing, catching, etc.) by other modifications and start teaching swimming, cycling, skiing, etc. Acquisition of these skills is often the gateway to the collective of coevals (Matějček & Dytrich, 1994).

The content of free time of young age children is decided by the family. Miklánková (2001) surveyed information on physical activities of 538 parents in the lifestyle of the family. The questionnaire was completed by 279 fathers and 259 mothers, parents of pupils of the 3rd and 4th grades of primary schools in the Czech Republic. According to the results of this survey, approximately one quarter of respondents (26.21%) completely abandoned physical activities after establishing a family. Gradual decrease of intensive PA in the lifestyle of contemporary people, despite proved positive effect on health, are confirmed by other specialists (Slepičková, 2001; Šimonek, 2004; Frömel et al., 2004; Sigmund, Frömel, & Neuls, 2005). Physical activities should eliminate negative phenomena and have positive influence on the health of an individual. Education towards correct and effective physical behaviour is indispensable so that human society can function properly (Hošková, B. & Matoušová, M., 2005, 18).

Conclusions

Physical activity at surveyed schools is on a fairly high level, in view of the proportion of clubs focused on sports and other clubs. As they grow up, children prefer sports activities they would like to pursue when they are older.

Focus and variety of clubs at schools in the Czech Republic (Olomouc Region) is high, it offers a wide range of physical activities and various sports out of which children have the opportunity to choose. These optional subjects are usually led by primary school pedagogues teaching at the schools themselves. Their work gives children the opportunity to increase the time spent on a physical activity in the course of the week in their free time by 1-2 hours.

Children from the surveyed sample are most interested in sports games, physical games, hockey and dance workshops.

The percentage of children who do not participate in physical activities offered by surveyed primary schools is rather high. There is an evident necessity of development of a strategy for their motivation to PA and support of education for health. In order to be successful, it is necessary to develop and respect healthy lifestyle (i.e. life in which physical activities make an integral part) already in the youngest age groups of children.

References

ADAMUS, M. Aplikace problémového vyučování při nácviku basketbalu ve školní tělesné výchově. Olomouc : Univerzita Palackého, 1997, 144 pp. ISBN 80-7067-751-1.

ADAMUS, M., TOMAJKO, D. Vyučovací postup při nácviku basketbalu [Videokazeta]. Olomouc : Univerzita Palackého, 1994.

BELEJ, M. Motorické učenie. Prešov: Prešovská Univezita, 2001.
CABRNOCHOVÁ, H. Výskyt nadváhy a obezity u českých dětí (online). [cit. 1. 12.2008]. Dostupné z: http://www.cabrnochova.cz/prednasky.html
DIETRICH, K., DÜRRWÄCHTER, G. SCHALLER, H.J. Die grossen Spiele. Aachen : Meyer und Meyer, 1994.
DVOŘÁKOVÁ, H. Pohybové činnosti pro předškolní vzdělávání. Praha: Raabe, 2006B
FRENCH, K.E., THOMAS, J.R. The relation of knowledge development to children's basketball performance. In Journal of Sport Psychology, 1987, 9, pp. 15–32.
FÜRSTOVÁ, M. Psychologie. Praha: Votobia, 1997.
HASKELL, W.L. - LEE, I.M. - PATE, R.R. - Powell, K.I. - Blair, S.N. - Franklin, B.A. Physical activity and Public health. Medicine and Science Sports and Exercise, 2007, 39, pp. 1923-1934.
Výživa dětí. Sportovní aktivity podle věku [online]. 2011 [cit. 10. 9. 2011]. Dostupné z: http://www.vyzivadeti.cz/pohyb/sportovni-aktivity-podle-veku/#skolaci fórum zdravé výživy[online]. 2011 [cit. 1. 9. 2011]. Dostupné z: http://www.fzv. cz/files/images/mladsi%20deti%20FINAL.ppt
KARGER, J. Jak trénovat? In Bulletin ČABT, 1996, 5, pp. 15–18.
KUČERA, M. - GOLEBIOWSKA, M. Evaluations of physical activity in obese individuals. Časopis lékařů českých, 1994, 133(4), pp. 116-119.
KUNEŠOVÁ, M. Životní styl a obezita. Děti 6-12 let. Závěrečná zpráva pro MZ ČR a Českou obezitologickou společnost. stem/mark, a. s. 2006, [online].[cit. 30. 6. 2011].
MATĚJČEK, Z., & DYTRYCH, Z. Děti, rodina a stres. Praha: Galén, 1994.
PERIČ, T. Sportovní příprava dětí. Praha: Grada Publishing, 2004.
TLÁSKAL, P. Obezita dítěte (tuková tkáň, rizikové faktory, prevence). *VOX PEDIATRIAE*, 2006, 6(3), pp. 15-19.
TOMAJKO, D. Dynamický přístup k výuce sportovních her. In Tomajko, D. (ed.) Didaktický proces v současném pojetí tělesné výchovy. Sborník z mezinárodního vědeckého semináře. Olomouc : Univerzita Palackého, 1996, ISBN 80-9676-923-5.
TOMAJKO, D., ADAMUS, M. Využití problémového vyučování při nácviku basketbalu. In Hra v životě člověka. Sborník referátů z mezinárodní vědecké konference. Plzeň : Západočeská Univerzita, 1995.
VÁGNEROVÁ, M. Vývojová psychologiel. – dětství a dospívání. Praha: Portál, 2005.
VALIŠOVÁ, A. - KASÍKOVÁ, H.Pedagogika pro učitele. Praha: Grada Publishing, 2007.
VELENSKÝ, M. K problematice basketbalu ve školní TV. In Basketbal & trenér, učitel, 1997, 1, pp. 5–6.

ATTITUDES OF PUPILS TO SPORTS ACTIVITIES

Pavol Bartík

Matej Bel University, Faculty of Arts, Department of Physical Education and Sport, Banská Bystrica, Slovakia

Key words: attitudes, physical and sports activities, pupils

Abstract

The aim of the research was to determine what attitudes to physical and sports activities primary school pupils have. Studied group consisted of 621 students 4th year primary schools and 1,606 students of 9th grade elementary schools. Research has found that up to 73.75% 4th year students had a positive attitude. In contrast, only 45.21% of 9th year students had a positive attitude to physical and sports activities, and to 52.55% of the students showed indifferent attitude.

Introduction

Fulfillment of specific educational objectives of physical education to generate positive pupil attitudes to sport creates interest in different kinds of sports and physical education sectors in an effort to achieve adequate performance in their own motion assumption.

Problems of students' attitudes to physical education in primary schools were explored in the past by Chromík et al. (1993); Antala -Dorošová (1996); Gorner - Srarší (2001); Bartik (2005, 2006, 2007), Vladovičová - Novotná (2005), Prusik et.al (2013) and others.

On the issue of attitudes toward school's physical education for students at 6 and 8 years of elementary school consider interesting results in selected elementary schools of the Central region, which presented by Gorner – Starší (2001).

These authors found that the students and schoolgirls of 6th and 8th grades of elementary selected schools have largely positive attitudes toward school physical education and sport.

In addition to the good work of PE teachers, authors attributed the positive views on school physical education and sport in particular to the fact that the sport has become their celebrity generated media (especially television) - important social phenomenon.

Bartik (2005) found the first grade of primary school pupils in selected elementary school in eastern Slovakia in Stará Lubovňa and Jakubovany showed predominance of very positive and positive attitudes in comparison to indifferent,

negative and very negative attitudes. Very positive and positive attitudes towards physical education and sport showed 75% of students, indifferent attitudes had 12% of students and negative and very negative attitudes had 13% of students. Author considers important positive influence on the relationship of children to physical education at all, shaping his knowledge, education for active care of their health, increase knowledge useful in later life, and in particular the need to create a positive attitude to physical education, student activity and physical culture.

Further research, Bartík (2005) addressed this same issue in other parts of eastern Slovakia. Research conducted in primary schools in Kežmarok and villages in the vicinity found that second grade students of elementary schools have a positive attitude to physical education. Research has found that 5th grade students had more positive attitudes toward physical education than 9th grade pupils. Bartik (2007) examined the attitudes to physical education of 1st grade elementary school students in the six selected primary schools in Banska Bystrica. Very positive and a positive attitude expressed by 72.35% students, indifferent attitude attracted 26,4% of students and negative attitude was presented only by 1,17% of students. Boys had more positive attitudes toward physical education than girls, 79,22% of boys expressed a positive attitude while girls only 66.66%. In one of the latest research Bartík - Mesiarik (2009) investigated the level of attitudes of primary school pupils in the Banska Bystrica region to physical education and sport. They found that the students prevailed indifferent attitude.

Changes from above average attitudes to physical education in the high school to substandard was studied by Antala - Dorošová (1996), which examined the 15 year olds in high school in Bratislava investigating the popularity of physical education, and confirmed previously known studies which pointed out still high level of popularity of this subject and corresponded with research of psychologists. Gorna (1997) conducted research in this field of school physical education and sport in secondary schools in the Olomouc region (Czech Republic) and Katowice region (Poland), where among other things, she determine prevailing positive attitude to physical education classes of selected high school students from 59.84% to 77.07% in the Olomouc region and from 59,40% to 84,62% in Katowice region. Between this two regions when comparing the results of the research author did not find substantial differences.

Aim

The aim of our research was to determine attitudes to physical and sports activities of the students and schoolgirls from fourth and ninth grade of selected urban and rural primary schools of Central region in Slovakia.

Material and methods

Characteristics of the surveyed sample: in total, 621 4th grades of primary schools students participated in the research of Central Region (303 boys and 318 girls) and 1606 pupils of 9th grades of primary schools (826 boys and 780 girls).

To determine the intensity of the attitudes of students of 4th year of primary school to physical and sports activities, we used a questionnaire according to Sivak (1997).

The questionnaire is divided into three dimensions, each containing six items - statements that monitor cognitive, emotional attitude and its capacity component. Students express their opinion on each item.

Cognitive component of attitude - closely related to the general adoption of specific and general knowledge of physical culture, sanitation, hygiene, i.e. elementary theoretical foundations of sports education.

Emotional component of attitudes - this component is considered in this age as a very important in creating attitudes towards physical education.

Capacity component of attitude - this is a practitioner's activity, his active involvement in physical activities. This is particularly the willingness to implement locomotor activity and participation in active operations.

Quality of overall attitude is expressed as follows: 0-7 points - very negative attitude, 8-14 points - negative attitude, 15-22 points - indifferent attitude, 23-28 points -positive attitude, 29-36 points - very positive attitude.

To determine the attitudes of students ninth grade of primary school to physical and sports activities, we used a questionnaire according to Sivak et. al. (2000).

Questionnaire for 9th grade students of elementary school is designed to detect specific declarative approach to physical education activities. The questionnaire contains 51 items and focuses on cognitive, emotional attitude and its capacity component. For each of these components is designated 17 items.

Student interested in an opinion on each item in the record sheet answers by underlining one of the options.

The maximum number of points in each item attitude is 34 points. The maximum number of points for the full questionnaire is 102 points.
Intensity of attitudes towards physical education determines the overall gain points and: negative attitude - 0-34 points, indifferent attitude - 35-68 points, a positive attitude - from 69 to 102 points.

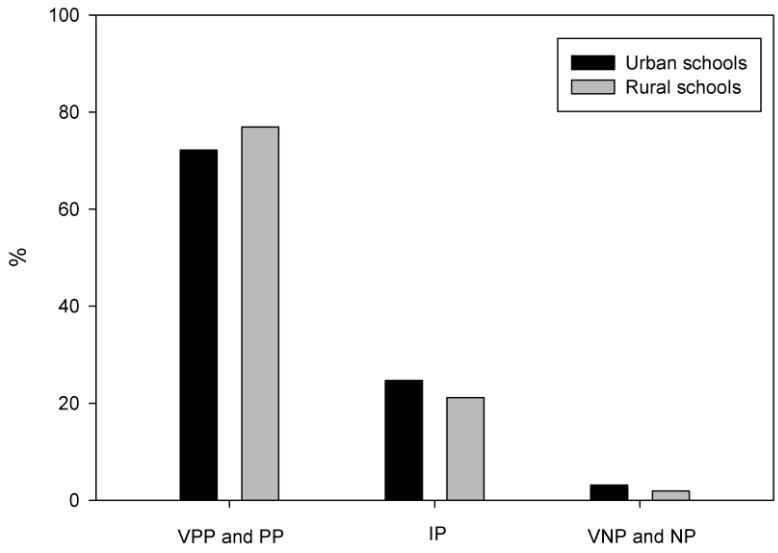
Differences in attitudes were tested in chi-square test for independence, result was consider significant for $p < 0.05$.

Results

Summary of results of the pupils of 4th grade at primary schools and their attitudes to physical and sports activities**:**

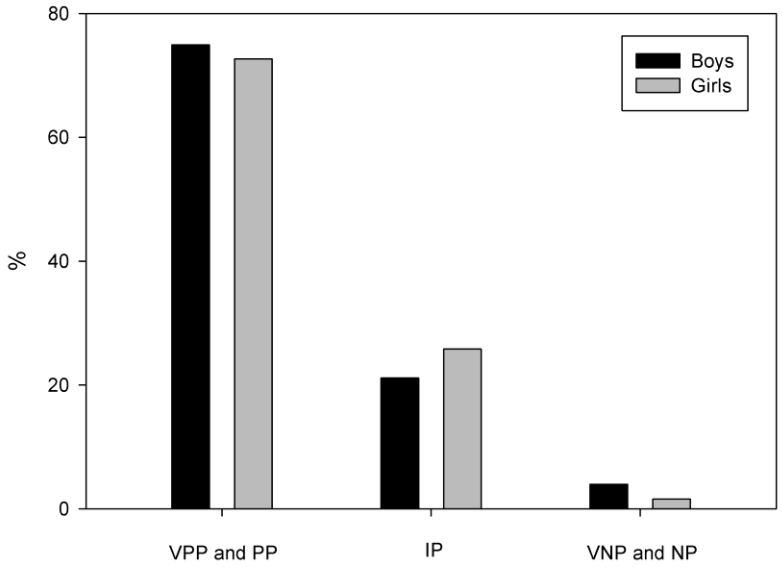
1. Research was attended by a total of 621 pupils, of which 303 were boys and 318 were girls. There were 413 pupils from urban primary schools and 208 were from rural primary schools.
2. Intensity of attitudes to physical and sports activities for boys was as follows: total 227 boys – 74.92% showed a positive attitude. Indifferent attitude had 64 boys – 21.12%. Only 12 students had a negative attitude (3.96%).

3. Intensity of attitudes to physical and sports activities for girls was as follows: total 231 girls – 72.64% showed a positive attitude. Indifferent attitude had 82 girls – 25.79%. Only 5 girls had a negative attitude (1.57%).
4. Intensity of attitudes to physical and sports activities for pupils from urban schools was as follows: total 298 pupils – 72.15% showed a positive attitude. Indifferent attitude had 102 pupils -24.70%. Only 13 students had a negative attitude (3.15%).
5. Intensity of attitudes to physical and sports activities for pupils from rural schools was as follows: total 160 pupils – 76.92% showed a positive attitude. Indifferent attitude had 44 students – 21.15%. Only four students had a negative attitude (1.93%).
6. Total of 621 respondents showed a positive attitude motion and sports activities 458 pupils – 73.75%. Indifferent attitude had 146 pupils – 23.51% and a negative attitude attracted only 17 pupils – 2.74%.
7. Boys had on average more positive attitude to physical and sports activities than girls, but the difference was not statistically significant. Pupils from rural primary schools had more positive attitudes than pupils from urban elementary schools, but the difference was not statistically significant.



Legend: VPP - very positive attitude; PP - positive attitude; IP - indifferent attitude; VNP - very negative attitude; NP - negative attitude

Fig. 1. Attitudes of pupils of 4th grade of primary school to physical and sports activities, differences by place of residence



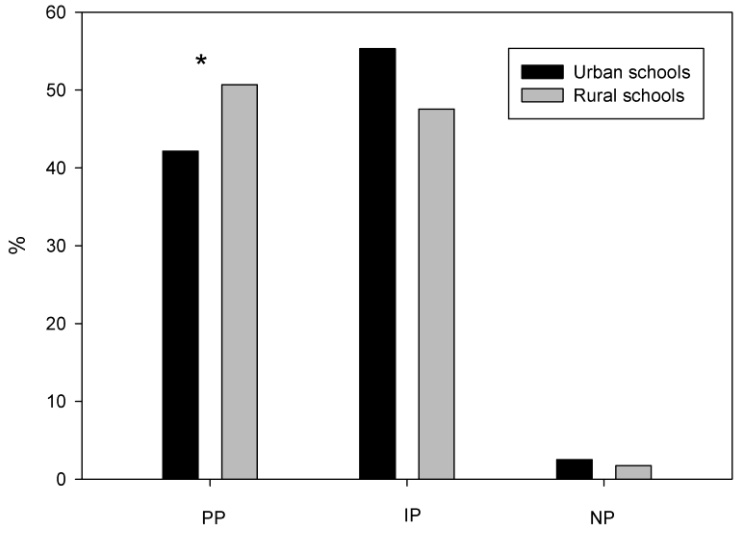
Legend: VPP - very positive attitude; PP - positive attitude; IP - indifferent attitude; VNP - very negative attitude; NP - negative attitude

Fig. 2. Attitudes of pupils of 4th grade of primary school to physical and sports activities, differences by gender

Summary of the results of the pupils of 9th grade at primary schools and their attitudes to physical and sports activities:

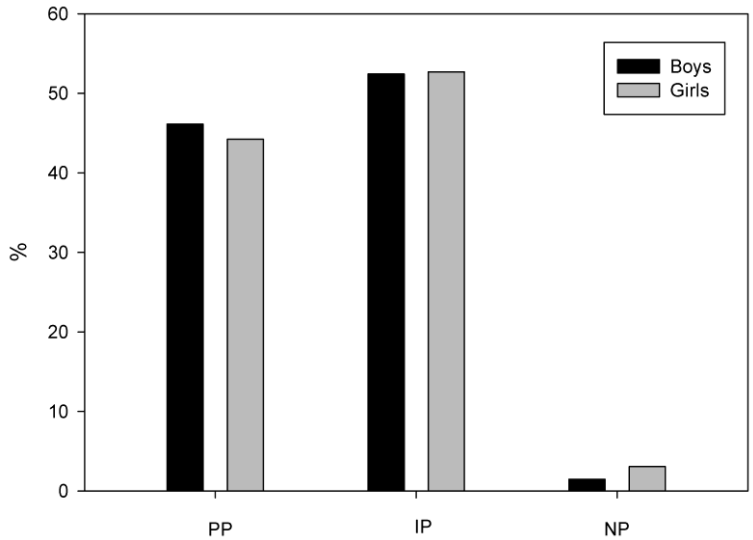
1. Participants were a total of 1606 students, of which 826 were boys and 780 were girls.
2. Intensity of attitudes to physical and sports activities for boys was as follows: total 381 boys – 46.12% showed a positive attitude. Indifferent attitude had 433 boys – 52.42%. Only 12 students had a negative attitude (1.46%).
3. Intensity of attitudes to physical and sports activities for girls was as follows: Total 345 girls – 44.23% showed a positive attitude. Indifferent attitude had 411 girls -52.69%. Only 24 girls had a negative attitude (3.08%).
4. Intensity of attitudes to physical and sports activities for students from urban schools was as follows: total 436 students – 42.16% showed a positive attitude. Indifferent attitude had 572 students -55.32%. Only 26 students had a negative attitude (2.52%).
5. Intensity of attitudes to physical and sports activities for students from rural schools was as follows: total 290 students – 50.69% showed a positive attitude. Indifferent attitude had 272 students – 47.55%. Only 10 students had a negative attitude (1.76%).
6. The total of 1606 respondents showed a positive attitude to physical and sports activities 726 students – 45.21%. Indifferent attitude to have 844 students – 52.55% and a negative attitude attracted only 36 students – 2.24%.

7. Boys had on average more positive attitude to physical and sports activities than girls, but the difference was not statistically significant. Students from rural primary schools had more positive attitudes than students from urban primary schools, and the difference was statistically significant at the 5% level of statistical significance.



Legend: PP - positive attitude; IP - indifferent attitude; NP - negative attitude; ** significant difference for p < 0,05.*

Fig. 3. Attitudes of pupils of 9th grade of primary school to physical and sports activities, differences by place of residence



Legend: PP - positive attitude; IP - indifferent attitude; NP - negative attitude

Fig. 4. Attitudes of pupils of 9th grade of primary school to physical and sports activities, differences by gender

Conclusion

The aim of our research was to determine attitudes to physical and sports activities of the students and schoolgirls fourth and ninth of selected urban and rural primary schools. We can conclude that the research implementation achieved the tasks that we have set.

Surveyed fourth and ninth grades boys of primary schools had more positive attitudes than girls.

We assumed that students from urban elementary schools will have more positive attitudes to physical and sports activities such as pupils from rural schools. The results of our research, showed that the hypothesis was not confirmed. Boys of fourth and ninth grades of the surveyed urban elementary schools had less positive attitudes to physical and sports activities than students from rural primary schools. Particularly evident this was reflected in pupils of ninth grades of which 50,69% students from rural schools had a positive attitude and urban schools it was only 42,16% of students.

For the needs of practice, author suggest to improve the educational process in school physical education and sports, to introduce non-traditional physical and sports activities, modernize teaching content, forms and methods of work. Improve material equipment of schools. Mobilize cooperation with parents and school sports clubs to improve pupils' attitudes to school physical education and regular physical activities and sports, particularly in the 2nd stage of primary school.

References

ANTALA, B. DOROŠOVÁ, S. Postoje žiakov pohybovo podpriemerných a pohybovo nadpriemerných ku školskej telesnej výchove. [in:] *Telesná výchova a šport*. 1996, 6(4), pp. 8 -10. ISSN 1335-2245.

CHROMÍK, M. et al. *Didaktika telesnej výchovy*. Bratislava: Univerzita Komenského Bratislava, 1993. 200 pp. ISBN 80-224-0349-6.

BARTÍK, P. Postoje žiakov 2. stupňa základnej školy k telesnej výchove. In *Acta Universitatis Matthiae Belii, Zborník vedeckovýskumných prác*. Banská Bystrica: PF UMB, 2005. 9, pp. 158 – 164. ISBN 80-8083-161-0.

BARTÍK, P. Postoje žiakov 1. stupňa ZŠ k telesnej výchove a pohybovým aktivitám v regióne Čadca. [in:] *Sborník referátú z 6. Medzinárodního vědeckého semináře „Efekty pohybového zatížení v edukačním prostředí tělesné výchovy a sportu“.* Olomouc: FTK UP. 2006, pp. 46. ISBN 80-244-1366-3.

BARTÍK, P. Úroveň plnenia vzdelávacích štandardov z telesnej výchovy na 1. stupni ZŠ na vybraných školách v Banskej Bystrici. [in:] *Telovýchovný proces na školách, Recenzovaný zborník vedecko - výskumných prác*. Banská Bystrica: PF UMB. 2007, pp. 25-45.ISBN 978-80-8083-501-9.

BARTÍK, P. Postoje žiakov k telesnej výchove na 1. stupni ZŠ na vybraných školách v Banskej Bystrici. In *Telovýchovný proces na školách, Recenzovaný zborník vedecko - výskumných prác*. Banská Bystrica: PF UMB. 2007, pp. 46-56. ISBN 978-80-8083-501-9.

BARTÍK, P. Postoje žiakov 5. a 9. ročníkov na vybraných ZŠ k telesnej výchove. In *Optimální pusobení tělesné záteže a výživy. Sborník příspevku ze XVI. Ročníku*

interdisciplinární konference s medzinárodní účastí. Hradec Králové: PF UHK. 2007, pp. 210-216. ISBN 978-80-7041-513-9.

BARTÍK, P. – Mesiarik pp. Postoje žiakov deviateho ročníka základných škôl v stredoslovenskom regióne k školskej telesnej výchove a športu [in:] Tel. Vých. Šport, 19. 2009, 1, pp. 4-6. ISSN 1335-2245.

GÓRNA, K. Vztah chlapcú a dívek středních škol olomouckého a katowického regionu k vyučovacím jednotkám tělesné výchovy [in:] *Telesná výchova a sport mládeže,* roč. 63, 1997 5, pp. 41-43. ISSN 0323-0449.

GORNER, K – Starší J. *Postoje, vedomosti a názory žiakov II. stupňa ZŠ na telesnú výchovu*. Banská Bystrica: UMB, Fakulta humanitných vied. 2001, pp. 162. ISBN 80-8055-565-6.

PRUSIK, K. et.al. Ocena poziomu rozwoju somatycznego i sprawności fizycznej ogólnej dziewcząt w wieku 10-14 lat. [in:] Journal of health sciences / ed. Antoliy Gozhenko [et al.]. - Radom: Radom University in Radom. 2013, 3(10), pp. 401-418. ISSN 1429-9623.

SIVÁK, J. Vzdelávací štandard z telesnej výchovy pre 1. stupeň základných škôl [in:] *Pedagogické spektrum*, roč. 6. 1997, 1/2, pp. 65-72. ISSN 1335-5589.

SIVÁK, J. et al. *Vzdelávací štandard z telesnej výchovy pre 2. stupeň základných škôl.* Bratislava: MŠ SR. 2000, pp. 31.

VLADOVIČOVÁ, N. – Novotná N. Športové záujmy rómskych žiakov 1. stupňa základnej školy. In *Acta UniversitatisMatthiae Belii, Zborník vedeckovýskumných prác,* 9. Banská Bystrica:PF UMB. 2005, pp. 173 – 179. ISBN 80-8083-161-0.

EXPECTED EFFECTS OF PHYSICAL EDUCATION TEACHERS' WORK VERSUS THE ACTUAL NEEDS OF PUPILS

Małgorzata Ostrowska

The University of Economy in Bydgoszcz, Poland

Key words: effects, needs, physical education, pupil, teacher

Abstract

The article is an attempt to confront the expected results of physical education teachers posed by the educational authorities versus the actual needs of . Its purpose is to analyze the requirements for PE teachers compared to declared needs of pupils. The methods used in own studies were document analysis and dialogue with pupils from Bydgoszcz. School is an area where didactic and educative exercises are realized towards particular results. Physical education teachers are also expected to achieve high numbers of medals which, as shown in studies, is contradictory to pupils' needs, for whom fun and various forms of recreation are the most significant aspects. The conclusion drawn from this comparison is that a teacher who realizes the actual interests of pupils is not able to meet the expectation stated by the principal and the educational authorities. The article also contains examples of specific changes.

Beneficiary work is always tacit and invisible
Lew N. Tołstoj

Introduction

In accordance with the modern trends of school physical education the teacher shapes pupil's personality to pursue a lifelong physical activity for the sake of the body and facilitates various forms of activity for pupils.

The teacher in his professional career is subjected to a constant evaluation by the authorities, parents and pupils. The headmaster of the school when assessing the physical education teacher pays special attention to their sporting achievements, parents expect good grades for their children, and the pupils themselves wish to follow their individual interests.

The teacher's responsibility for the level of education of children and young people makes the effects of his work always subject to social critique. The current assessment is made on the basis of the criteria set by the institutions that govern and supervise schools, as well as by the general public, whose opinions are a set of subjective feelings (Madejski, Węglarz, 2008).

Supervising educational authorities primarily expect from the physical education teacher high medal positions. The situation is dictated by such legal documents as the Minister of National Education and Sport of 2 February 2005 concerning extra remuneration to the base salary and a remuneration for overtime and the regulations concerning the granting of merit increase of pay. As many as three points of the regulation determine the position of a physical education teacher against the performance of his pupils. These include:

1) Documented educational achievements of pupils.
2) Achievements of pupils, confirmed by competitions, tournaments and contests, and other areas of activities related to the carried out teaching experience.
3) Pupil's learning achievements by pupils confirmed by the results in competitions, tournaments and other subject, artistic and sports contests (Dz. U. z 2005r. Nr 22, poz. 182).

Therefore, another legal document edited by members of the school board in the form of Regulations concerning incentive grants may not be in harmony with the supreme regulations and is guided primarily by the results achieved by pupils - in the case of a physical education teacher - in sports events. In addition, each teacher is required to fill twice a year (semester sheets) own work sheet analysis, 'self-praise' in colloquial speech, in which they should describe sports successes of his pupils. Such a 'self-praise' becomes the guarantee of a gratification in the form of higher incentive pay, as well as the nomination of a teacher to prestige departmental awards like the following: the President's Award, the Superintendent's Award, and even the Award of the Minister of Education. This very gratification of physical education teachers is also confirmed by H. Grabowski who illustrates it with such an example: 'it is sufficient that a school is provided with a diploma for a victory of its representatives in sports competitions from time to time' (Grabowski, 2000).

Therefore, the professional activities of a physical education teacher involves a higher than average risk of internal conflict between the desire to demonstrate the success of the best pupils, and a conscious need to take a special care of the weakest. The research shows that there is only one way to encourage physical activity of average and physically challenged children: to arrange classes in such a way that they are able to succeed by their own standards. The success of the pupils by their own standards may not satisfy the aspirations of the sports teacher's superiors. So, sometimes one has to choose between external recognition for their work, and the inner conviction of a well fulfilled duty (Grabowski, 1999).

There are two reasons why physical education is ineffective then: 1) as an ideologically appropriated field of activity for selected pupils with a sham care over a an ordinary and physically frail pupil and, 2) as a very causative-simplified procedure of a motor breeding and training of a pupil - according to the author - a reduction of a pupil to a reactive puppet (Pawłucki, 2013).

But in the age of universal computerization and acquiring information through the internet, one can easily find the definition of physical education, which should provide a valuable guidance to teachers and those who exercise a pedagogical supervision.

Physical Education prepares for a lifelong care of your body by physical activity, taking care of one's own physical fitness and health. During a physical education lesson a pupil should develop knowledge, acquire skills and develop desirable attitudes (pro-somatic, pro-health and pro-social). Physical education is health-promoting. Sport in physical education is merely a means to achieve the objectives of physical education. Sports achievements are not a supreme goal of physical education (http://pl. wikipedia.org/wiki/wychowanie_fizyczne_19.08.2014).

Despite this, the physical education counselor tends to be more associated with sports, as a means of action, rather than with the child as a subject (Grabowski, 1999).

Summing up the above statement we can conclude with a question: who actually contributes for the teacher to earn a merit-based incentive benefit?

Working goal and methodological assumptions

The main goal of the undertaken pedagogical intention is to analyze the requirements for physical education teachers in comparison with the declared needs of the pupils. In our study, a document analysis method was used and the method of dialogue with pupils of Bydgoszcz schools. Documents were analyzed using basic legal acts regulating issues concerning physical education teacher's work effects reporting and sheets of self-analysis of teacher's own work in six secondary gymnasium schools in Bydgoszcz. On the other hand, in order to gather information about the needs of pupils in physical education a dialogue method was used.

During the lessons of health education in the school year of 2013/14, author touched upon various topics relating to school physical education in groups of gymnasium school pupils in selected schools. From individual pupil's speeches author wrote down their statements, creating a quantitative summary of the answers. The element of the dialogue method was included in the in initiating a discussion or free expression. What is of great importance in this method is the ability to carefully and patiently listen to the interviewee. It involves 'enabling them to independently and spontaneously speak on different topics. Thus, a priority rule is given to them to express themselves in a entirely free, unconstrained, and spontaneous manner' (Łobocki, 2003).

During a free exchange of thoughts on various issues concerning real needs of the pupils, the moderator recorded answers to questions (issues) that were incorporated into the theme of the dialogue. The questions were closed, that is of the yes or no type. The two-field response field was verified by a chi-square test of the following formula:

$$\chi^2 = \sum \frac{2 \cdot (n_0 - n_e)^2}{n_e}$$

χ^2 - test value, n_0 - the actual number; number representing the greater part of the interesting elements for the researcher (in a two-fold take), n_e - theoretical number; the number of all elements (responses), divided in half.

Based on the above findings, the research issues are as follows:

- Do the PE lessons make it easy for you to develop diverse skills?
- Does the teacher take into consideration your needs during the PE class?
- Do you enjoy the PE lessons?

Research findings and discussion

Tab. 1. The PE lesson in terms of diverse skills development

1) Question	Do the PE lessons enable you to develop diverse skills?
2) Number of responses	The PE lessons enable you to develop diverse skills N=45 The PE lessons do not enable you to develop diverse skills N=45
3) Test value	$\chi^2 = \frac{2 \cdot (n_O - n_e)^2}{n_e} = 7{,}5$
4) Statistical and pedagogical interpretation	Since $\chi^2_{obl.}=7.5 > \chi^2_{\alpha=0,05}=3.841$ declarations of pupils show statistical superiority of the option highlighting the lack of development of a variety of skills during physical education lessons.

(Data in natural numbers; N=120). Source: own study

Based on the discussion, and the data obtained during lessons the following pupil's opinions are listed below:

- the physical education teacher focuses on the preparation of selected pupils to sporting events, and the rest of the group plays football,
- we have too little time for the actual workout, because we share a classroom with another group and there is no space in the gym,
- we train for 30 minutes the so-called 'abs' and 'backs', because the teacher believes it is safer for us this way,
- teacher often tells us that he or she must 'stay up to date' with the curriculum and there is no time for our 'whims',
- the school does not keep up with the latest developments, so I attend a fitness club.

Pupils' opinions raise many doubts as to the physical education implementation of core curriculum, which defines the educational requirements in using proper effects feasible for a pupil with average abilities at every level of education. In addition, the teacher who follows the curriculum should be guided primarily by the capabilities and interests of their pupils. This raises the need to replace the teacher acting unilaterally by a teacher who is able to develop a variety of skills of their pupils in terms of their individual capabilities and proposals.

Tab. 2. Taking into account the needs of pupils in the implementation of physical education classes

1) Question	Does the physical education teacher take into account your needs when conducting lessons?
2)Number of answers	The physical education teacher takes into account your needs when conducting lessons N=42 The physical education teacher does not take into account your needs when conducting lessons N=78
3)Test value	$\chi^2 = \frac{2 \cdot (n_O - n_e)^2}{n_e} = 10{,}8$
4) Statistical and pedagogical interpretation	Because $\chi^2_{obl.}=10.8 > \chi^2_{\alpha=0,05}=3.841$ pupils' declarations show statistical superiority of the option that concerns ignorance of their needs, during lessons.

(Data in natural numbers; N=120). Source: own study

In their free statements pupils emphasize that during physical education classes various forms of activity and exercise should be introduced. Satisfaction stemming from participation in lessons is triggered by play and team games that are of interest and are liked. Pupils would like to use some gear like ball, jump rope, bike, skateboard, roller skates more often. They would also like the teacher to take into account their requests and proposals concerning the lesson.

Physical education in such form supports a comprehensive development of pupils and prepares them for a lifelong physical activity and maintaining good health. Consequently, the teacher should choose such forms of movement and training as to stimulate the development of pupils' interests. In order to execute this task the teacher must be primarily guided by the developmental and life needs of his or her pupils.

Teachers - on the basis of the amended Teacher Charter - are required, in addition to their normal working hours, to work for at least one hour a week with pupils to meet their individual needs - helping them to overcome difficulties, develop capacity and deepen their interests (*Podstawa*…, 2009).

Moreover in physical education not enough emphasis is put on those forms of physical activity and fitness aspects that are related to health. Rarely is the principle of individuality, intellectualization, prospectiveness, and preparing the pupil to self-education observed, which greatly hinders or prevents independent physical activity and participation in physical culture in adulthood (Bielski, 2012). Meanwhile, numerous studies conducted in different provinces, years and school levels, indicate that in the field of physical education school children are not properly developed and their needs are not appreciated (Lachowicz, 1995).

Tab. 3. PE lessons as a source of satisfaction of pupils

1) Question	Do you consider the PE lessons to be fun?
2)Number of answers	I consider the PE lessons to be fun. N=38 I do not consider the PE lessons to be fun. N=82
3)Test value	$\chi^2 = \frac{2 \cdot (n_O - n_e)^2}{n_e} = 10{,}8$
4) Statistical and pedagogical interpretation	Since $\chi^2_{obl.}=16.1 > \chi^2_{\alpha=0,05}=3.841$ pupils' declarations show statistical superiority of the lack of satisfaction option

(Data in natural numbers; N=120). Source: own study

As the main reason for the lack of satisfaction with physical education pupils enumerate:

- we feel evaluated and compared to others,
- I got C from running and the teacher did not select me to represent the school in the individual cross-country race,
- we pass fitness tests, instead of playing volleyball,
- I'm afraid to tell the teacher I cannot do something for fear of being laughed at.

Therefore, pupils should be provided with the right to autonomy, activity and independence (Bielski, 2012).

It is hard to assume that a child who has to wait until the end when the players are selected for the team, and who handles individual disciplines the worst, will learn something more than the fact that life is hard and he or she are good for nothing (Jarvis, 2003).

The physical education teachers should be more sensitive at work towards their pupils and recognize their individual efforts and progress.

Children (especially boys) from the earliest years of age receive positive reinforcement for their interest or talent in sports. At the same time we all get indirect feedback, when the player wins or benefits from a victory. As parents and coaches we should bear in mind the fact that developing a taste for sports in young age requires from us providing many positive experiences with this area of life. If, which unfortunately is the usual case, teachers give positive feedback only to a small group of talented pupils, it comes as no surprise that the ignored children do not develop a taste for a fitness lifestyle (Jarvis, 2003).

Mastery in the profession is reached by the one who is able to harmoniously carry out tasks striving for the quality of school physical education, the most important determinants of which are: participation of pupils in the PE classes, measured in terms of pupils' attendance, the activity level of pupils in the class, against their individual capabilities, pupil achievements assumed in the education curriculum implemented by the teacher, measured by the level and progress of knowledge and skills (Frołowicz et al., 2004).

Who else but a physical education teacher is responsible for the proper attitude of their pupils towards physical activity now and in the future. It is therefore important that the physical education classes offer was based on new and attractive forms of activities that will equip pupils with a set of skills and knowledge to enable them to function effectively for their own health, in accordance with the changing needs and interests of pupils. Only such organization of activities may result in satisfaction on both sides and contribute to improving the efficiency of school physical education.

Conclusions

The school is a space for upbringing and didactic tasks to yield specific effects. A physical education teacher is expected to produce highly valued medals, which as research has shown, contradict the needs of pupils who believe fun and varied forms of recreation are key. This comparison brings us to a conclusion that the teacher who meets the actual interests of his or her pupils is not able

to properly carry out the tasks assigned by the principal and the education authorities. In our efforts to meet the expected by pupils changes in school physical education we should strive for a spontaneous participation of all pupils in various forms of activity. Thus it is necessary to modify the regulatory framework to motivate teachers to work effectively when teaching and educating. Moreover, the measurable sports effects should be replaced with an inner sense of satisfaction for a well-done work for others.

According to a new project the PE teacher is needed more for the pupil with the ability to view his or her post-candidate future, than as it has been so far only - for a myopic perception of the present school reality. The PE teacher, who is traditionally accustomed to shaping pupil's body with training, this time was expected to rise to a higher level of self-understanding of the new role (Pawłucki, 2002).

The new role and tasks of the PE teacher are closely related to the need of taking into account the development of the needs of each pupil in the classroom and is associated with the formation of the atmosphere based on the acquisition of positive experiences in the field of physical culture. Based on the above, the effective work of a teacher can be determined by: a sufficient number of situations encouraging to gain skills, taking into account the individual level of maturity, opportunity to experience fun and experience the joy of being active, social and emotional relationships based on firm acceptance and kindness, transferring a sufficiently large number of experiences relating to self-responsibility (Speck, 2005).

From a physical education teacher, pupils expect a partnership in the implementation of their ideas and proposals, e.g.: running a warm-up, allocating a large amount of time to a game itself if it is in a sports-games class. pupils welcome a teacher who devotes his/her time to the whole group, and runs lessons taking into account the current needs of pupils. He or she is an organizer of extracurricular activities, sports and recreation events and trips.

According to pupils a physical education class should include various sports and exercises. Participation in lessons is more satisfactory when interesting and likable physical play and team games are promoted. Pupils would more often like to take part in various sports competitions in which not the result, but participation is the most important. Consequently, the sports events calendar, which takes into account the points based on the results, should be replaced with the calendar of sports and recreation events (events for everyone), in which participation would be awarded as a form of activity, and the score would have no reason to exist for a simple reason: how to quantify satisfaction since "physical education, meant to make a man happy, should be such as anyone could make use of it" (Śniadecki, 2002).

References

BIELSKI, J. *Podstawowe problemy teorii wychowania fizycznego*. Kraków. Impuls. 2012, pp. 170-181.

FROŁOWICZ, T., LEWANDOWSKI, M., MADEJSKI, E., MUSZKIETA, R., POŚPIECH, J., Ocena i stymulacja jakości wychowania fizycznego w szkole – propozycje rozwiązań systemowych. [in:] Koszczyca T., Lewandowski M.,

Starościanka W. (ed.) *Wychowanie i kształcenie w reformowanej szkole*. Wyd. WTN. Wrocław. 2004, pp. 112.
GRABOWSKI, H. *Teoria fizycznej edukacji*. Warszawa, WSiP. 1999, pp.15,109.
GRABOWSKI, H. *Co koniecznie trzeba wiedzieć o wychowaniu fizycznym*. Oficyna Wydawnicza „Impuls". Kraków. 2000, pp. 18.
JARVIS, M. *Psychologia sportu*. Gdańskie Wydawnictwo Psychologiczne. Gdańsk. 2003, pp. 31-79.
KRZYSZTOFIAK M., URBANEK D. *Metody statystyczne*. PWN. Warszawa.1977, pp. 254.
LACHOWICZ, L. *Metodyka wychowania fizycznego. cz. I.* Wydawnictwo Uczelniane AWF. Gdańsk.1995, pp. 25.
ŁOBOCKI M. *Metody i techniki badań pedagogicznych*. Oficyna Wydawnicza „Impuls". Kraków. 2003, pp. 276.
MADEJSKI, E., WĘGLARZ, J. *Wybrane zagadnienia współczesnej metodyki wychowania fizycznego*. Oficyna Wydawnicza „Impuls". Kraków. 2008, pp. 51.
Oficjalna strona domowa (http://pl.wikipedia.org/wiki/wychowanie_fizyczne_ 19.08.2014).
PAŁWUCKI, A. *Osoba w pedagogice ciała*. Wydawnictwo OSW. Olsztyn. 2002, pp. 71.
PAWŁUCKI, A. *Nauki o kulturze fizycznej*. Wydawnictwo Akademii Wychowania Fizycznego. Wrocław. 2013, pp. 127.
Podstawa programowa z komentarzami. Wychowanie fizyczne i edukacja dla bezpieczeństwa w szkole podstawowej, gimnazjum i liceum. MEN, T.8. Warszawa. 2009, pp. 13.
Rozporządzenie Ministra Edukacji Narodowej i sportu z dnia 2 lutego 2005 r. w sprawie dodatków do wynagrodzenia zasadniczego oraz wynagrodzenia za godziny ponadwymiarowe i godziny doraźnych zastępstw dla nauczycieli zatrudnionych w szkołach prowadzonych przez organy administracji rządowej. Dziennik Ustaw z 2005r. Nr 22, poz. 182.
SPECK, O. *Być nauczycielem*. Gdańskie Wydawnictwo Psychologiczne. Gdańsk. 2005, pp. 242.
ŚNIADECKI, J. *O fizycznym wychowaniu dzieci*. Wydawnictwo AWF. Kraków. 2002, pp. 9.

LEISURE PHYSICAL ACTIVITY OF PERSONS WITH SEDENTARY LIFESTYLE

Jana Juříková

Department of Kinesiology, Faculty of Sports Studies, Masaryk University, Brno, Czech Republic

Key words: officers, men, women, body height, body weight, BMI, physical activity

Abstract

This papers monitor physical activity in persons working in administration, which means persons with sedentary employment. Body height and body weight were first measured in the participants of this research. Then body mass index (BMI) was calculated and the participants were divided according to BMI in categories: underweight, normal weight, overweight and grades of obesity. 20 people (10 men and 10 women) were put into this research. It was found that the majority of the subjects have a normal body weight. Only 3 men and 2 women were overweight. None of the participants were found to be either overweight or underweight. The amount of their physical activity was detected using the questionnaire method. The respondents answered questions about whether and how often they perform physical activities in their leisure time, which sports activities they do and how expensive their physical activities are. The final question focused on time spent dedicated to daily sport.

The majority of respondents answered that they don´t do sports in their leisure time. According to the responses, all women walk min. about 5 – 15 minutes daily. Ten per cent of men said that they don´t walk every day, and if they do walk it is for a maximum of 5 minutes per day. Forty per cent of women and 25 per cent of men said that walking takes them more than 60 minutes every day.

Introduction

Physical activity represents an integral part of a healthy lifestyle. From birth man is equipped to move easily and, especially for children, movement brings joyous feelings and pleasures. However, recently there has been an increase in more sedentary pastimes, not only in adults but in children as well. The moments of adventure children previously experienced during their games and outdoor physical activities, are now provided virtually through their computers or television screens. Thus children spend more time sitting, with no desire for physical exertion. Lack of movement and a steady increase in the popularity of unhealthy "fast food" snacks have a great impact on the prevalence

of overweight, obesity and associated diseases. This is not only a cosmetic problem, but a serious health hazard.

Despite the fact that genetic dispositions obviously play a major role, recent studies have discovered the connection between overweight and intense and frequent stress, lack of exercise and poor dietary habits. One of the most important prerequisites for maintaining reduced weight is physical activity. Stimulation and motivation for proper self-esteem and self-control are essential not only in obesity prevention, but in the prevention of health risks in general. Healthy lifestyle education can have a significant impact on life quality from childhood to old age (Krejčí, 2007). Quality of life is limited by genetic dispositions, environment, way of life, standard of living, life satisfaction. Feeling good is closely related to physical fitness, personal habits, positive attitude to life, dealing with stress, nutrition and weight control (Křivohlavý, 2001).

Physical activity is a crucial factor for human health. It helps build bone structure and supports muscles and joints. It also helps to maintain body weight and to reduce body fat (Ganiats et al., 1998). Studies show that physical activity is beneficial to maintaining good mental health, and reducing symptoms of depression, anxiety and stress generally (Dunn et al., 2001). Physical activity contributes to the prevention of and, in some cases, also the reduction of high blood pressure.

Sport and physical activity represent one of the basic phenomena of human existence and it takes place in all aspects of modern society. It represents one of the basic elements contributing to the quality of life and health. This process involves a harmoniously balanced entity of each individual within the aspects of bio-psycho-socio-spiritual well-being (Blahutkova, Dvořáková, 2005).

Quality of life

Each person attempts for a good quality of life, to live without scarcity, worries and in comfort. The criteria to assess whether life is or is not good can be very diverse. Quality of life is related to the fulfilment of human needs, to satisfying the wishes and desires of the individual (Häyry, 1991). Subjective needs fulfilment is desirable and at the same time sufficient condition for a man to consider his life of a high quality, from his personal point of view. What matters is that quality of life is very subjective and depends upon and varies with each particular individual.

From a social point of view, the satisfaction of the individual, the favourable perception of his quality of life by himself is without any doubts of the highest importance. Society ought to support this personal positive statement by creating such living conditions which facilitate a positive personal attitude (sufficient food production, protection from violence, crime, etc.). The society, on the other hand, needs useful individuals to contribute to overall prosperity. It is therefore necessary to somehow influence the quality of people's lives. In general, the life of every human is of the same value, even if these people vary in their level of education, social status, age or other characteristics. Nowadays materialism and consumption, together with individualism leads to the fact that nearly everything, life included, is evaluated in terms of money. However, this approach also has its merits because it is necessary to consider the efficient use of resources. Financial costs for health care, insurance, raising children in the family and study are being expressed in numbers. This measure of quality of life

further also addresses the financial value of human beings - that the life of one person is more expensive, and thus may also be financially valued over the life of another.

Personal satisfaction is the result of the interaction of individual characteristics and objective conditions. At the most general level, we can say that man is satisfied up to the extent that his needs are fulfilled, and his wishes - current, short or long term - are fulfilled. Quality of life is a multidimensional issue which combines subjective and objective conditions and capabilities. It depends not only on the degree of satisfaction induced by both internal and external factors, but also on its importance in a particular person‘s (and his social and cultural environment) hierarchy. Sport offers a possible way to attain personal satisfaction. It is more than just a form of recreation either in an active or a passive form. Sport relates to both individual and objective characteristics and greatly exceeds the area of recreation. It enhances the level of psychological indicators, since it enables the building of new friendships, reinforces family relationships, provides space for self-realization etc. When engaging in a new sports experience, a person enriches his life with a series of adventures and experiences. All the processes take place in a social environment. It is important that society creates the conditions for sufficient free time and starts to present positive role models of free time usage, including active sport performed by the general public. Promoting sport to the general public is often considered to be an indicator of the level of cultural and societal development. When assessing quality of life we are working with a large number of indicators and a number of various specializations. Indicators of a similar character occur among both subjective and objective conditions. To simplify the view of the issue it is reasonable to categorize the subjected factors according to the information they provide and which concern living standards, lifestyles, environment and health. Sport, according to the European charter, is defined as physical activity, and fundamentally affects lifestyle, or way of life, and health (Slepičková, 2005). Biological movement has its own special characteristics. We can say that quality of life is contingent on movement. Movement enables development and strengthening of individual body functions, development of the organism as a whole, adjusted reaction to external environment, etc. Movement is not only the most natural expression of a living organism, but it is the very elementary prerequisite for life in general. Progressive changes in movements were influenced by a diversity of conditions in which a living organism occurred. In the course of historical development, there was a strong differentiation of human and other animal movement. Loco motor activity (movements) of man evolved from inherited foundations in accordance with the conditions of his life, along with the development of man as a species. Human locomotion can be considered as the full scale of physical activities and movements he is theoretically capable of making during his lifetime. Therefore it is all potential of human motion. Physical activity is, however, the sum of all physical activities actually implemented. Currently, we can recognize the following aspects of human motor skills: basic motor skills, working motor skills, martial motor skills, cultural and artistic motor skills and motor skills. Each of these areas has its own specific characteristics. Motor skills are becoming a part of general education. It represents a potential, a sum of physical activities potentially performed by a man, the sum of all possible physical exercises. On the other hand, the sum of physical exercises which are actually realized is called physical activity. These are truly performed activities in

the area of motor skills. It does not consist only of a person's potential, but also of a level of his own effort in this specific area. Considering its content, which is applied in a variety of specific activities, physical activities area might be regarded as the elementary one, affecting the whole area of physical culture. Particular movement activities carried out within the physical activities are referred to as physical exercises. Currently, physical exercises can be characterized as intentional, volitional, specifically motivated and purposeful movement which has a positive impact on the human body (physical, psychological and social) under certain specified conditions. Unlike other areas of physical activities, the subject of physical exercise is a person himself. Physical exercise, as systematically repeated activity, becomes the main means of physical education, recreation and sport. All physical exercises are manifested both as a form and a method. Their social and individual usability is given by particular individual and societal needs which are historically based. Methods of application and use of physical exercises are differentiated in accordance with the target. On this basis, the whole area of physical activities, as the sum of all physical exercises, are divided into the following categories: physical education, recreation and sport (Hodaň, 1997).

Lifestyle

Lifestyle is one of the fundamental factors which affect quality of life. It is created in the course of living when a person interacts with his environment. Various influences of educational character, social environment, economic conditions, culture, and many other factors meet, interact and collide. Innate characteristics and personality traits obviously play their roles too. Lifestyle is thus a manifestation of a human identity in the broadest sense. Lifestyle can be characterized as a variety of virtually all human activities, from thinking through behaviour, to acting, particularly those that take a permanent place in one's life, and are usually repetitive, typical and predictable. It is typically judged by the views, attitudes and behaviours. Behaviour usually reflects the intrinsic motivation and value hierarchy of the individual. It is important to note, however, that people might also be forced to behave in a particular manner. When external pressures cease to act, behaviour can very quickly revert. The lifestyle is reflected by attitudes and opinions. However, they may be inconsistent with the behaviour of man, e.g. a majority of the Czech population considers sport as an important part of life, but only a small percentage incorporates it into their regular program. A smoker knows that smoking is bad for his health, but this simple knowledge can hardly make him quit.

Lifestyle varies over time because human needs and the environment also undergo various changes over time. For example, a young man is full of energy and desire for learning new things. He prefers contacts with peers with whom he spends a lot of time. In the next stage of life, when an individual goes to work, builds his career and cares for family and children, he is forced to change his habits from youth, at least partially, to manage his new responsibilities. Another significant change in lifestyle, namely in relation to the movement activity, can be seen when an individual purchases a car and begins to use it for his daily commute. He then has no need to walk, even the shortest distance to the nearest bus stop. When our man no longer performs any physical exercise and is engaged in sedentary employment we see a model of a man whose minimal physical

activity, walking, has completely disappeared from his life. In relation to the social environment, which is of great importance, lifestyle not only relates to that of individuals but also to the lifestyles of different-sized teams up to the entire population. The lifestyle reflects cultural and historical development. Many different life habits and opinions exist – rural differs from urban, and women in Arab countries differ from those in Western Europe or North America.

Health takes very important place in the quality of life. The need to seek ways to improve the health of the population was also one of the motivations for the development of sport in the general public in the 60s and 70s. There is no doubt about the existence of the bonds between health and sports. Health is a matter for the individual. However, it is also a matter of society. Therefore it depends on the approach of a man himself and on the conditions a society arranges for a healthy life (see above). These two lines are also followed by health promotion activities in economically developed countries. The North American approach focuses on the personal initiative of the individual, his active approach to his own health and the health insurance system. The European approach is more focused on improving environmental conditions and the accessibility of the health system. At the current stage of societal development (especially for economically developed countries), the causes which have a negative impact on health have significantly changed. Since the 19th and 20th century, living conditions have improved and infectious diseases have gradually vanished. At the same time health systems and health care began to develop. Mortality was reduced and life expectancy began extending. The population was also aging as a result of a lower birth rate. The focus has shifted from active diseases to chronic ones, preventive care and health education. Health has become a subject of research and interaction with other spheres such as social care, education, family care and, last but not least, sport. Good health is no longer a goal but has become a prerequisite for a good and happy life.

Understanding of health has changed significantly over the last 50-60 years. It is difficult to define the concept of health. The reasons lie in different cultural habits, degree of development in a society, the development of medicine, the perspective of different disciplines etc. Křivohlavý (2001) summarized an overview of theories concerning health. Health appears to go beyond the of limits medicine which applies a negative approach to health. Health is considered to be the contrary to illness or an absence of disturbance. Individuals are then given a rather passive role to wait for outside help. This negative concept of health has its limitations. One does not have to be sick, but still does not feel well, does not feel healthy. Conversely, the physically handicapped can intensely live their lives, to be satisfied with them. The World Health Organization (1948) extended the original negative definition of health. Health has been defined as a state of complete physical, mental and social well-being. It is not only the absence of disease. Health has become one of the means leading to life satisfaction. This concept defines health as the ability to lead a socially and economically productive life. Man is thus on one hand able to realize his desires, and on the other hand to adapt to his environment or overcome it. This approach to health allows us to talk about individual health as well as the health of families and society as a whole.

Factors that support health

Lifestyle has a special status both in factors of life quality and the health predetermining factors. It is within a person's ability to affect it with the substantially greater chance of shaping it more than any of the other factors named above. An appropriate choice of lifestyle enables a person to reach fulfilment in life, at least partially, and thus positively influence their health. For good health and long life, it is important to observe the following:

1) Adequate amount of sleep. People who sleep six hours or less a day do not have as good health status as those who relax their body by 7-8 hours sleeping at night. Medium physical exertion helps to achieve better quality sleep.
2) Regular breakfast. People who eat breakfast every day have better health. Breakfast comes about 12 hours after the evening meal and it is important for energy supply and cellular metabolism.
3) Regular and rational diet:
    a) decrease in the average energy intake - so as to achieve a balance between the energy input and output to maintain optimal body weight within BMI range 20-25,
    b) reduce the consumption of fat - so that the total proportion of fat in the energy intake does not exceed 30% of the optimum energy value (i.e. for adults with light work of about 70 g per day),
    c) achieve an optimal proportion between saturated, monounsaturated and polyunsaturated fatty acids - so that saturated fatty acids account for less than 10%, and trans-isomers less than 1% of daily energy intake (Brát et al., 2005; Dostálová et al., 2005),
    d) reduce intake of cholesterol - so that its maximum daily consumption is 300 mg (Dostálová et al., 2005),
    e) reduce the consumption of simple sugars - so that their consumption is not more than 10% of the total energy intake, i.e. in light work adults about 60 g per day (Dostálová et al., 2005),
    f) reduction in consumption of cooking salt - so that consumption of salt is about 5-7 g per day, preferably salt fortified with iodine,
    g) increase intake of ascorbic acid - so that the daily ingestion of about 100 mg given its antioxidant function (Turek, 2005),
    h) increase intake of indigestible fibres – to a quantity of at least 30 g per day,
    i) increase in other protective agents - so as to increase the volume of both mineral and vitamin preservatives as well as other natural nutrients that ensure adequate antioxidant and other protective processes in the organism: Zn, Se, Ca, I, Cr , carotenes, vitamin E, preservatives contained in vegetables etc.,
    j) lower alcoholic drinks consumption - so that a daily intake of alcohol in men does not exceed 30 g (about 300 ml of wine or 0.8 litres of beer or 70 ml of spirit), and 20 g in women (about 200 ml of wine or 0.5 l beer or 50 ml of spirit).
4) Maintaining an appropriate body weight. Both high (more than 20% overweight) and low body weight (by more than 10%) occur in people with worse health status.

5) Non-smoking is clearly a protective factor. E.g. 90% of people who die from lung cancer in the Czech Republic are smokers.
6) Regular physical activity, primarily in the form of active sport is reported in people with better health status. However, extreme exertion of the body is not desirable. It is essential to take a reasonable amount of activity, frequency and intensity (Cooper, 1990; Blair et al., 1992; Teplý, 1995; Slepičková, 2005).

The habits mentioned above represent important parts of a health-promoting lifestyle. A way of life that favours these and other habits which positively affect our health is called a healthy lifestyle. Poor health in both in our country and the world is caused mainly by the reluctance to change an unhealthy way of life. A human is the only being on the Earth who knows how to deliberately undermine his health.

A hierarchy of factors critical to health and long life has also been determined (Šimonek, 1991). These are as follows:

1. Daily systematic mental activity. This maintains the required tonus of the central nervous system.
2. Hobbies and interests (gardening, etc).
3. Leisure sport activity.

Longevity is related to these habits and activities. Regular and adequate physical activity takes its place here as well. Implementation of a relevant program that provides adequate physical load can slow the aging process by 6-9 years. The human organism is designed to cope with physical strain. Physical activity stimulates the activity of various organs and systems of the body and slows the aging process. The difference between calendar and biological age may reach nearly ten years. People who have achieved a long life prove to have some typical signs of a life-style in which healthy habits naturally have their place (Sharky, 1990):

- Moderation (or adequacy) is the ability to control oneself, not to live in an extreme way. It means to be "moderate" in nutrition, in bad habits such as drinking alcohol or smoking, in work and physical activities.
- Psychological flexibility allows these people to accept changes without problems and avoid rigid habits. They do not avoid challenges and obstacles. However, if the obstacles are too much, these people are able to get over them, and find other alternative solutions.
- The health habits of these people are strong. But they do not monitor their health anxiously.
- They are not closed to themselves; they do not live in isolation from the surrounding social environment. They keep relationships with other people. They enjoy other people’s company, maintain friendly contacts with them, and are interested in them and their affairs.
- Long-lived people keep their target prospects and future visions permanently. They keep planning the next stages of their lives, they continue to live. Their lifestyle is active. They have it filled with all sorts of activities, they mentally, socially and physically engage every day (Slepičková, 2005).

The influence of sport on working operations

A large portion of human life is occupied by work. People spend 8-9 hours per day at work, 5 days a week for 40 years on average. It is necessary to conform to the demands of the social and working environments and to achieve at least satisfactory results. Work operations take place in an environment where physical, natural and social conditions affect a person's health. Many jobs expose people to frequent or permanent stress. Many professions, especially those in heavy industry, are performed in a dusty and noisy environment. In other economic sectors workers are not so excessively burdened by the physical environment, but they have to deal with demands of a completely different character. For example, they need to keep focused, intentional attention for long periods of time, without error (aircraft operators, tram drivers), they have to come up with quick and flexible solutions to problems (managers) or to work flexibly with a high level responsibly for several hours in standing position (surgeons) (Slepičková, 2005; Novák, 2011).

One pastime option is sport. Compared with other activities, sport has two advantages. It offers a wide range of various activities and its effect can be very versatile. A wide variety of sport options exist, and the variety of choices is multiplied by the diversity of organizational and social forms. This versatility distinguishes sport from other leisure activities quite significantly. To perform a sport activity you do not need solely good physical condition and power. Mental and social skills also take their place in sport (Slepičková, 2005).

The amount of free time in different population groups

Leisure time is an objectively phenomenon which is manifested to different degrees. A series of papers was devoted to its research. All of them report relatively close values (around 20%) of the total time a man has at his disposal. Certain differences between men and women are recorded; on average men have about 11 more hours of free time a week than women. The total amount of free time shows some differences that are caused by different conditions. Differences in conditions occur in the evaluation of leisure time on weekdays and weekends. According to research (Hodaň, 1986) the amount of free time on weekdays is subjected to the following factors: number of children, work, age, sex, marital status, income, education, work commute. On weekends these are as follows: workplace, number of children, commuting to work, marital status, place of residence. The number of conditioning factors is slightly higher than it is usually reported in surveys. Some of the noted conditioning factors are relatively stable, others change and they influence emerging differences in the amount of free time, particularly number of children and age. In fact, entire population works as conditioning agents, even though obtained values are close to average levels, we can note certain differences across the main groups.

Interest in and needs for physical activities in different population groups

To create a conception of activities for different social groups it is crucial to identify particular interests. Identified interests, nevertheless, do not have to necessarily reflect real needs. While interests may be affected by various, sometimes even random factors, the needs are determined objectively, because they arise from lifestyle, health, profession demands, etc.

A wide range of conditions must influence the intensity and content of the sport mode. Since the actual needs may sometimes be in conflict with subjectively pronounced interests, it is necessary to adjust them to the needs. At this point, it is, however, necessary to correctly recognize the interest in physical activity. In case of interest, whose detection is necessary to develop physical culture, certain differentiation on the basis of particular criteria are provided. One of the most serious and often discussed issues is the steadily fixed schedule of workout days and steady training programs for very large and thus diverse groups of people. These traditions do not always seem to have a positive impact due to current lifestyle (organization, load diversity, differentiation of objective needs etc.). Examining this issue, it becomes clear that a majority of respondents from the ranks of the administration, technical and economic staff, researchers, teachers, medical workers and managers are in favour of having a free choice of exercise programs. For blue-collar and agricultural professions, half of the respondents said they would pursue this option. Provided that physical culture should become an inseparable part of the lifestyle, it is necessary that the physical activity is integrated in weekend activities. Participation in organized physical activities does not differ by gender and age, but some differences occur between individual groups. About half of both women and men of blue-collar occupations approved of these activities. For administrative and technical-economic professions, it is 70-80%. The highest values were obtained among researchers, teachers and health workers: about 80% of the members of the management system report lower values - two-thirds of women and more than half of men. The lowest approval was found in agricultural workers: half of women and less than a half of men.

The logical culmination of year-round physical activities is the workout during the holidays. Even in this case, a significant difference among socio-professional groups was found. The worst situation was reported with the executives - almost half of both women and men from this group strictly rejected gym activities during their holidays. A similar situation was found with blue-collar workers, where positive responses were very vague, while clear rejection was expressed by a vast majority of women and nearly half of men. Forty percent of male and female office workers agree that exercising during their holidays is important and welcome activity.

Half of both women and men in technical and economic professions, and two-thirds of male and half of female researchers, teachers and medical workers perform any kind of sport activity. The best results are achieved by agricultural workers: almost three quarters of women and men perform a gym activity on their holidays. The above mentioned results suggest that in the range of physical activities the scope is not very extensive, but it is, to some degree, differentiated on the basis of socio-professional groups, and in some cases even within them. Despite the fact that manifested interests may not always correspond

with objective needs, it is necessary to take them into account when working on a conception. To achieve the goals of physical culture, the objective needs of individuals should be fulfilled either in response to identified interests, or within their scope. However, this is further connected with the creation of relevant material and personnel conditions (Hodaň, 1997).

Aim

The aim of this study was to find out whether and to what extent the administrative staff of Military University of the Ground Forces in Vyškov, who are engaged in sedentary employment, devote their leisure time to physical activities.

Material and methods

The research group was comprised of administrative staff of Military University of the Ground Forces in Vyškov, with sedentary jobs and no daily physical activities required. This groups of respondents has been examined for their nutrition habits and the physical activities they perform in their leisure time.

First, the anthropometric parameters of respondents were collected. Respondents gave their age and consequently their body height and weight were measured. On the base of these data body mass index (BMI) was calculated. Afterwards the respondents were given anonymous questionnaire to fill in.

Body weight was measured on medicine scale by Soenhle Company, with the accuracy to 0.1 kg. The examined person entered the scale in underclothes, barefoot. The weight of underclothes was not taken into account.

Body height was measured by anthropometry which was the part of medicine digital scale, accuracy to 0.1mm. The examined person stood straight, heels together, tips slightly apart, arms along the body, head vertically upward (Juříková et al., 2001). Body mass index was calculated according to following relation:

$$BMI = \frac{\text{body weight [kg]}}{(\text{body height [m]})^2}$$

Obesity classification according to BMI is given in Tab.1.

Tab. 1. BMI categories, obesity classification (in accordance with WHO) and links to health risks

BMI	Categories according to WHO	Health risks
≤ 18.5	underweight	malnutrition, anorexia
18.5 – 24.9	normal	minimal
25.0 – 29.9	preobesity (overweight)	25 – 26.9 slightly increased
30.0 – 34.9	obesity of 1st grade	medium high
35.0 – 39.9	obesity of 2nd grade	high
≥ 40	obesity of 3rd grade	very high

Source: Gauner, 2001

World Health Organization defines obesity when BMI exceeds 30, BMI higher than 40 stands for the term of morbid obesity. Not only the amount of fat itself, but also its distribution within the body represents important factors to assess the risks properly. Body mass index categorization as well as categorization of other biological characteristics shows the importance of natural variability. Such terms as “overweight” and “obesity” are used for particular specification of BMI values (col., 1998; Gailiūnienė et al., 2002). For population of people living in the Czech Republic, BMI ranges for males and females were recommended as shown in Tab. 2.

Tab. 2. Categories of BMI range for males and females

Category	Males	Females
Thin	< 18.0	< 17.0
Lean	18.0 – 23.0	17.0 – 22.0
Relevant	23.1 – 25.0	22.1 – 24.0
Chunky	25.1 – 30.0	24.1 – 30.0
Obese	> 30.0	> 30.0

Source: Brázdová et KleinwÄchterová, 2001

Results and discussion

The research involved the administrative staff of Military University of the Ground Forces in Vyškov. There were 10 males and 10 females. Respondents’ classification according to BMI is given in Tab. 3 and Fig. 1.

Tab. 3. Respondents according to BMI categories (numbers of persons)

Group of respondents	BMI categories					
	Under-weight	Normal weight	Over-weight	Obesity Ist grade	Obesity IInd grade	Obesity IIIrd grade
Administration males	0	7	3	0	0	0
Administration females	0	8	2	0	0	0

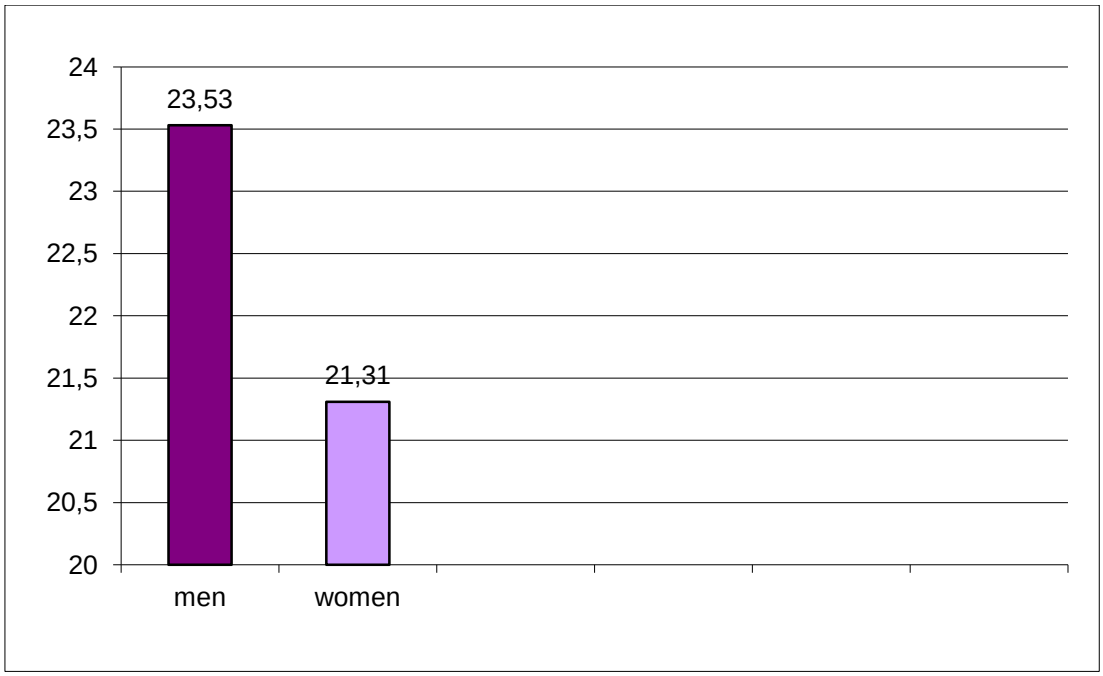


Fig. 1. Average BMI values in respondents (% rel.)

In the Fig. 1 we can see that the vast majority of respondents were of normal body weight. Three males and 2 females were overweight. None of the people under examination suffered from obesity. The given results indicate that females mind their body weight more than males.

Physical activity in respondents was determined by first asking respondents to subjectively assess their activity on a scale from very low (1) to very high (7). Results are given in Fig. 2.

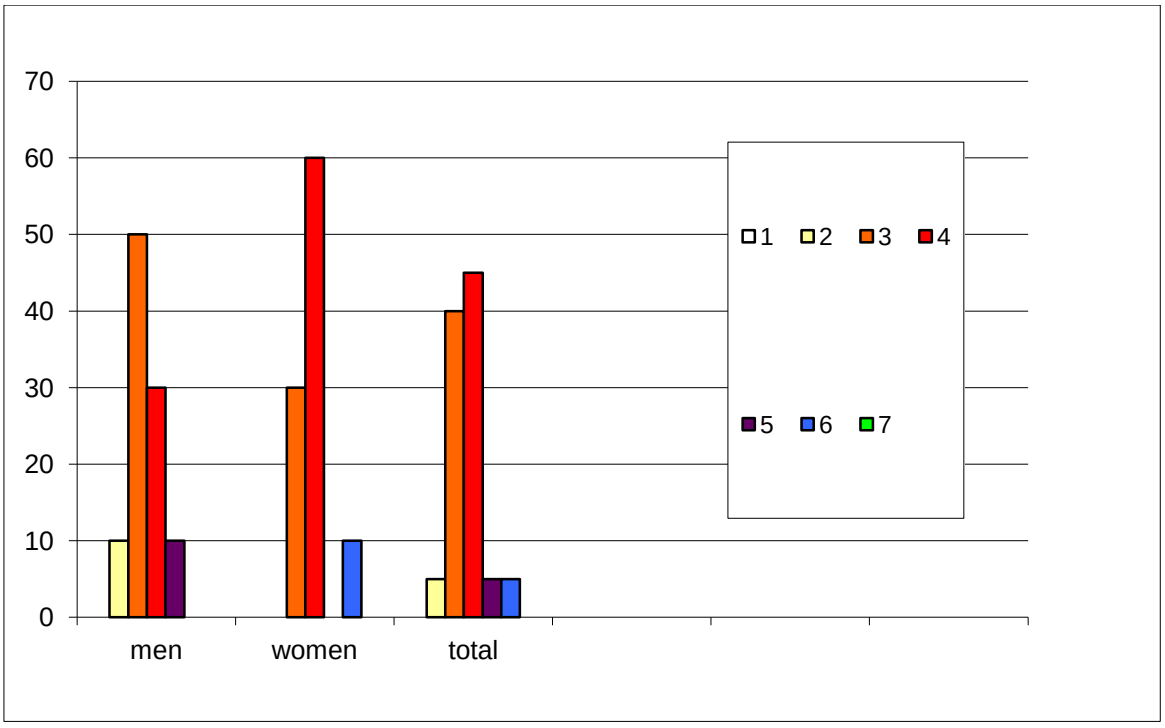


Fig. 2. Subjective self-assessment of respondents' physical activity (% rel.)

The Fig. 2 shows that 50% of men evaluated their physical activity as 3 on the scale, 60% of women as 4 on the scale.

In the next question respondents were offered a selection of sport activities and they were asked to tick the sport they perform and also to give the frequency. Women most often reported: running, hiking, cycling. Men most often reported: running and body building. Body building was the favourite sport activity among the respondents, which is partially influenced by the fact that going to gym is now a popular trend in the general population.

The question asked about frequency was how often respondents perform their physical activities. The answers are given in Fig. 3.

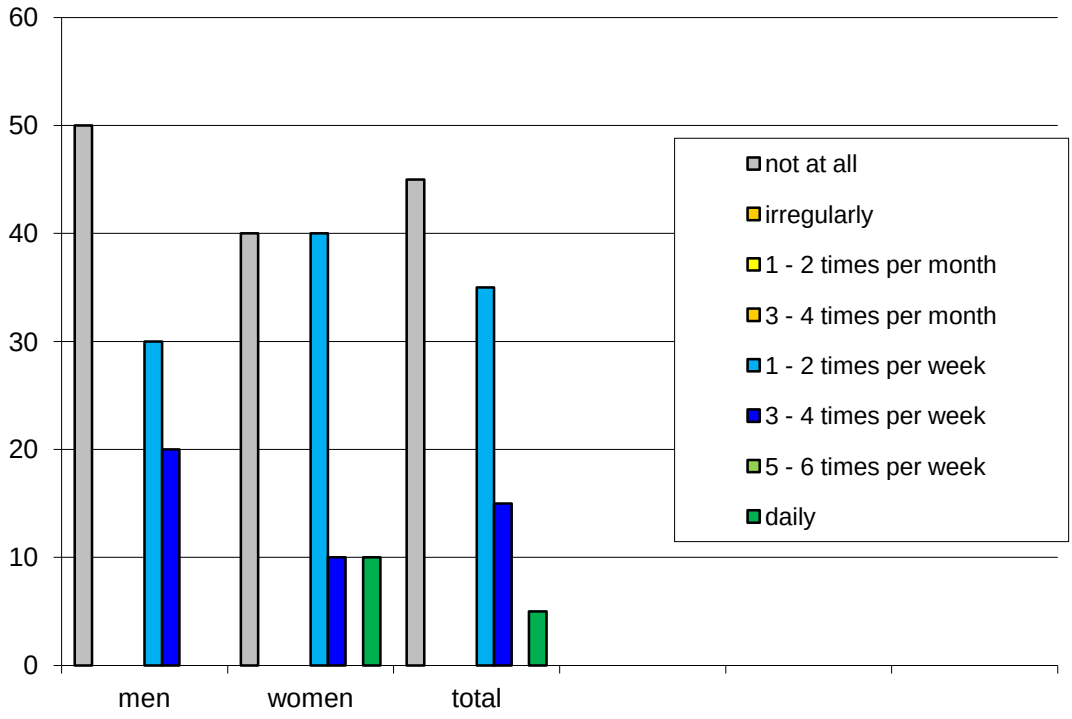


Fig. 3. Frequency of physical activity in respondents (% rel.)

It is obvious that most administrative employees do not devote their time to physical activity at all (this answer is relevant to 50% of males and 40% of females). On the other hand there is 1 woman who reported daily physical activity of intensity 5 MET lasting for 60 mins. MET – intensity of physical activity (exertion). Respondents were asked to assess the exertion within the scale 2 (very low) to 10 (very high) (Brázdová, Fiala, 1998).

The next question was to find out how many minutes a day respondents spend in regular walking. Respondents' answers are shown in Fig. 4.

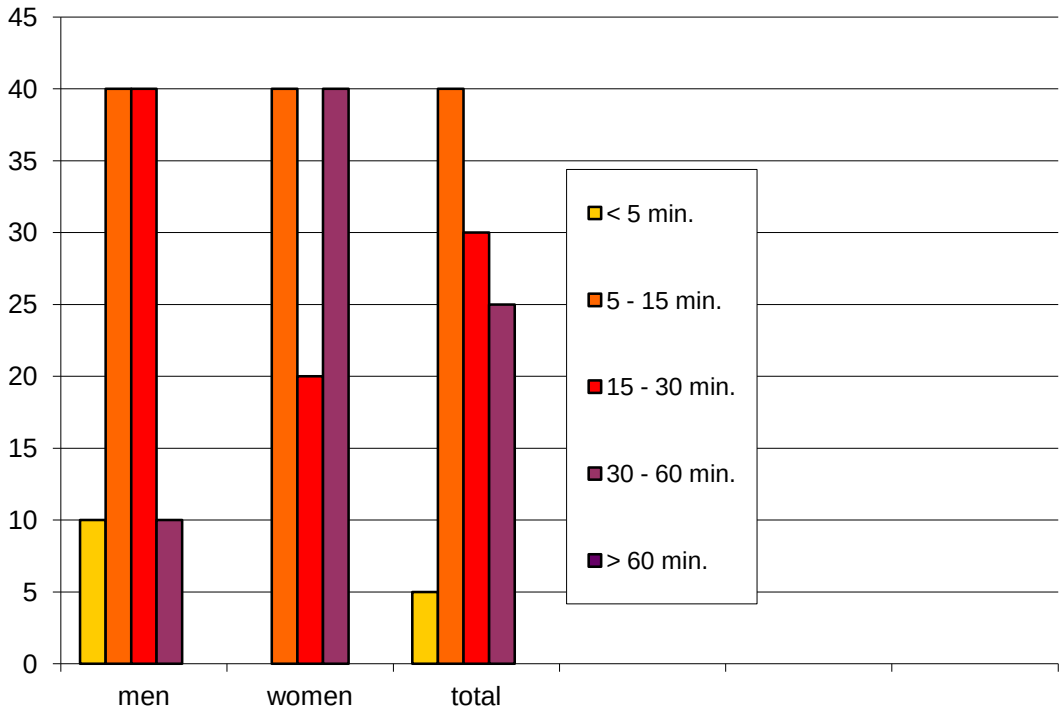


Fig. 4. Time spent in daily regular walking (% rel. respondents)

The graph shows that most administrative employees spend 5-15 mins walking daily (this answer applies to 40 % of males and females).

Conclusions

Assessment of questionnaires concerning sport activities in people with sedentary employment has revealed that a vast majority of respondents working in administration do not perform any physical activity at all. On self-assessed questions, when given a scale 1-7, they marked the exertion of performed activity at level 3 for males and 4 for females. Most administrative workers devote 5-15 min. to walking daily. This fact might nevertheless be affected either by their strong will not to use public transport and their willingness to walk, or to the distance between their homes to workplaces as well as transport facilities in the particular area.

References

BLAIR, S.N. et al. How much physical activity and contributions to health and function. [in:] *Annu. Rev. Publ. Health* .1992, 13, pp. 99–126.

BLAHUTKOVÁ, M., DVOŘÁKOVÁ, Š. Význam pohybových aktivit pro zlepšení kvality života u seniorů. [in:] *Schola gerontologica*. Brno. Masarykova univerzita, 2005, pp. 123 – 125. ISBN 80-210-3838-1.

BRÁT, J., DOSTÁLOVÁ, J., POKORNÝ, J. Výživová doporučení pro příjem lipidů a jejich plnění v České republice. [in:] *Výživa a potraviny*, 2005, 6, pp. 156–157.

BRÁZDOVÁ, Z., KLEINWÄCHTEROVÁ, H. Výživový stav člověka a způsoby jeho zjišťování. 2. přepracované vydání. Brno. Institut pro další vzdělávání pracovníků ve zdravotnictví. 2001, pp. 102. ISBN 80-7013-336-8.

COOPER, K.H. Aerobický program pre aktívne zdravie. *Šport*. Bratislava. 1986.

DOSTÁLOVÁ, J., HRUBÝ, S., TUREK, B. Konečné znění Výživových doporučení. [in:] *Výživa a potraviny*. 2005, 1, pp. 25–26.

DUNN, A., TRIVEDI M., O´Neal H. Physical activity dose – response effects on outcomes of depression and anxiety. „*Medicine & Science in Sports & Exercise*". 2001, 33, pp. 597.

Expert Panel on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults: the Evidence Report. [in:] *Obesity Research*.1998, 6. (Supplement 2).

GAILIŰNIENÉ, A., VISAGURSKIENÉ, K, SIDERAVIČIŰTÉ, S. Body mass index, total cholesterole and triglycerides in blood of overweight and normal weight adolescent girls. [in:] *Education, Physical training,* Sport. 2002, 3(44), pp. 15-18. ISSN 1392-5644.

GANIATS, T.G. et al. Expert Panel on the Identification, Evaluation and Treatment of Overweight and Obesiy in Adults: the Evidence Report. *Obesity Research*, 1998, 6, pp. 51-179 (Supplement 2).

GAUNER, V. *Obezita, minimum pro praxi*. 1.vyd. Praha, Triton. 2001. pp. 118. ISBN 80-7254-168-4.

HÄYRY, M. Measuring the quality of life: why, how and what? [in:] *Theoretical Medicine*. 1991, 12, pp. 97–116.

HODAŇ, B. *Úvod do teorie tělesné kultury*. Olomouc: Univerzita Palackého. 1997, pp.108. ISBN 80-7067-782-1.

HODAŇ, B. Poznání životního způsobu pracujících jako předpoklad rozvoje a řízení tělesné kultury. *Výzkumná zpráva*. Praha: ČÚV ČSTV, 1986.

JUŘÍKOVÁ, J., KOMÁR, A., KREUZIGER, J. BMI jako prostředek posouzení přiměřené tělesné váhy a zdraví. [in:] *Vojenský profesionál*.1-2-3/2001, pp. 108–111. ISSN 1210-3179.

KREJČÍ, M. Health Education and Quality of Life. *Úvodní referát*. Mezinárodní konference „Výchova ke zdraví a kvalita života", Hluboká nad Vltavou, 4. – 6. 10. 2007.

KŘIVOHLAVÝ, J. *Psychologie zdraví*. Praha: Portál. 2001. pp. 280. ISBN 80-7178-551-552.

NOVÁK, P. Surgal clinic Brno, *Medicínský ředitel*, ústní sdělení, 2011.

ŠIMONEK, J. Může človek bojovat o svoje zdravie a dlhý aktívny vek? [in:] *Těl. vých. a šport*. 1991, 2, pp. 19–21.

SHARKEY, B.J. Physilogy of Fitness. 3rd ed. Champainn (Illinois): *Human Kinetics Books*.1990.

SLEPIČKOVÁ, I. *Sport a volný čas. Vybrané kapitoly*. Praha: Univerzita Karlova v Praze – Nakladatelství Karolinum. 2005, pp. 115. ISBN 80-246-1039-6.

TEPLÝ, Z. *Zdraví, zdatnost, pohybová režim*. Praha: ČASPV a HAK, 1995.

TUREK, B. Nové poznatky pro inovace výživových doporučených dávek. [in:] *Výživa a potraviny*, 2005, 2, pp. 51.

EDUCATIONAL AND FAMILY DETERMINANTS OF PHYSICAL ACTIVITY DEVELOPMENT OF YOUNG PEOPLE IN THEIR LEISURE TIME

Karol Görner[1], **Adam Jurczak**[2], **Janusz Zieliński**[3]

Faculty of Arts, Matej Bel University, Banska Bystrica, Slovakia & UEK, Department of Tourism, Krakow, Poland[1]
Institute of Social Sciences, Academy of Physical Education, Krakow, Poland[2]
Department of Physical Education, University of Rzeszow, Poland[3]

Key words: attitude, physical activity, youth, leisure time

Abstract

The aim of this researches was to know the impact of attitudes towards physical culture on the development of physical activity in leisure time. The researches included the youth of Cracow chosen randomly high schools. The research method was a diagnostic pool. Young people were tested with the standardized questionnaire to testing attitudes toward physical education and with a standardized survey for testing physical activity in the leisure time.

The attitude of young people towards physical culture influenced the level of physical activity in leisure time. The increase the level of physical activity in the furthest degree was dependent on cognitive component, and in the least from behavioral component of attitude. Independent from the level of physical activity, the median values were in moderately positive attitudes range (2.0-2.7). The increase in the median attitudes towards different areas of physical culture between lowest and the highest category of level of physical culture was significant in 9 of 10 researched areas, with the largest in the area: own physical fitness, physical development, self-evaluation, self-control and cognitive activity in the physical culture.

Introduction

The research issues are included in the process of supporting the life style, in which voluntarily taken up in free time physical activity is present (Bailey, 2009; Mandingo, Fox, 2008). The cognitive area in the research of physical activity may be its biological basis (energetic processes, sources of energy), but most of all psychological (aims, motivation, thinking processes, awareness) and structural (special exercises, techniques) basis and the evaluation tools. Physical activity in the presented research results will be understood as the type of intentionally oriented activities, most often taken up for health purposes, and rather rarely for sport ones (Bouchard, Shephard 1994; Nilsson, Andersen,

Ommundsen et al. 2009; Sas-Nowosielski, 2003). In the survey data collection done among young people, the questions were directed to potential participants of individual physical culture branches, while omitting practical, life or accidental activity (Bronikowski, 2008; Larson, Verma, 1999). That is why the best definition of physical activity is the following - “physical activity is a work of skeletal muscles characterized by an energy expense, specifically oriented for participants of individual branches of physical culture” (Connor, 2003; Osiński, 2011).

Mainly the results of physical education in the activities of teachers and parents were taken into consideration in the research (Brennan, Bleakley 1997; Guszkowska, 2005). There were also attempts to test the personality results of these activities visible in the effectiveness of physical education process, which could contribute to development of aim competences of pupils. The influence of family environment on preparation of children for taking up physical activity was tried to be defined by testing parents (Baranowski, 1988; Grabowski, 1999; Twisk, 2001).

Methodological dilemmas, choices and decisions must be intentional and basing on knowledge explaining about what and why. Quantitative research methods have been used in the research, using humanistic notional category. Using quantitative strategy (which is still popular) has been described in various methodological works (Eckes, Six 1994; Krawczyk,1983; Strzyżewski,1990).

Aim

The research subject was the process of physical education in the process of physical education in school and in family environment and its results. The research aim was cognition and detection of determinants connected with operational aims of physical education and the influence of family, which are the basis for explanation and understanding of mechanisms steering the development of physical activity of young people in their free time, during their last educational stage. Personal interest in problems of school has caused the author to look for any problems that hinder the development of physical activity in physical education, and his conviction that the family is the most important cultural source in physical education and also in family environment.

Hypotheses and variables

H1. Physical activity level of young people is low, and depends on the following: type of tested school, class grade and social and economical status of families of the tested youths.

H2. Institutionally organized activities gather a small part of young people. It causes a bigger participation of young people in individually (by themselves) organized physical activity which causes the lowering of physical activity level in their free time.

H3. Realization of orientation aims in the process of physical education is ineffective. The result is a low level of attitudes (prosomatic) of young people for physical culture and the lack of progress in shaping the youth’s (pupils) attitudes by physical education teachers in their realization of physical education programme.

H4. Level of physical activity of young people depends on their individual predispositions for taking up physical activity in their free time, which influence the attitudes (prosomatic) of youth for physical culture. Wrongly shaped attitudes (prosomatic) toward physical culture while showing a positive relationship with physical activity level cause the lowering of its level.

H5. The attitude of parents toward physical activity is positive. However, physical activity level of parents is low. Still, family environment of tested young people, physical activity level of parents and their way of spending free time show positive relationship with: physical activity level of young people (children), attitudes of young people for physical culture and their individual predispositions for taking up physical activities in free time.

The space of variables has been subordinated to individual research aims. The whole of material has been analyzed in three areas:

1) First area referred to: description of physical activity, measurement of attitudes (prosomatic) toward physical culture and measurement of individual predispositions for taking up physical activity. Operands for this area were : social and economical status of families; class grade (1, 2, 3); forms and ways of organizing physical activity; attitudes (prosomatic) for physical culture and individual predispositions for taking up physical activity. Dependent variables were: physical activity level of young people, and intervening variables - sex and types of tested school.
2) Second area referred to continuous research - operand was : realization of orientation aims as a result of three-year education; dependant variable - attitude (prosomatic) for physical culture. The sex of tested young people belonged to intervening variable.
3) Third area was the family environment. Operands were: influence of family environment and physical activity level of parents. Dependable variables were: physical activity level of young people and their attitudes (prosomatic) toward physical culture. The sex of tested young people belonged to intervening variable.

Methodological assumptions

Operationalization of variables - choice of measurement model

While working out the results, we looked for relationship and links between the following types of variables, which have been operationalized: sex (P); class grade (PK); type of tested school (RBS); social and economical status (SSE) ; physical activity level (PAF); spending free time (SCW); way of organizing physical activity (SOAF); forms of physical activity (FAF); individual predispositions (PI); prosomatic attitude (PP); influence of family environment (WSR); attitude of parents toward physical activity (SR-AF); realization of operational aims (RCK).

Material and methods

Research results presented in this work are the continuation of previous scientific interests. The experience in performing such research has been improved by pilot studies the aim of which was refining the usefulness of research tools and checking their diagnosis values.

1st research stage - school year 2008/09

The research included young people from 5 public secondary schools drawn from among 40 school, functioning in Krakow. Out of these drawn schools 3 classes were drawn out of each grade (class 1, 2, 3), altogether 45 classes, which gave the total number of 1,300 pupils with a single parent each. 1,206 surveys, filled in by young people, were qualified for analysis. In the drawn schools the method of diagnostic survey was used for tests of young people and parents. Surveys in each secondary school were conducted using auditory method in a classroom. Surveys were conducted by a teacher - class headmaster that had been trained by the research coordinator teacher. The surveys were repeated in a two-month period of time. Each survey after filling in was anonymously coded. Coding gave the possibility of connecting surveys into one set, identified with one person.

Through the first period of research, we tried to reach the most numerous group of parents. Testing parents was quite difficult, lasted the whole school year and finally we managed to gather only 800 surveys out of 1,300 planned, and we qualified for analyses 762 persons.

2nd research stage - school year 2010/11.

The research included young people from grade 1 from first research stage - 2008/09. These young people attended 3rd grade in school year 2010/11. Altogether in the 2nd research stage 364 pupils out of 15 classes took part, which earlier had participated in the 1st stage. 310 surveys that had their equivalent in the 1st research stage were qualified for analysis (2008/09).

Statistical analysis methods

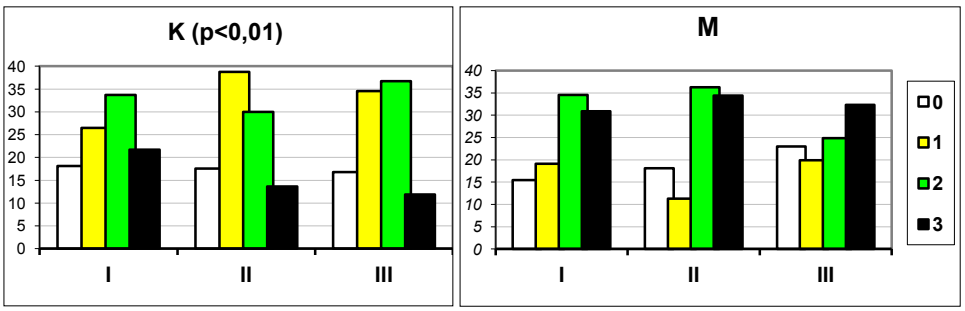
Basic statistics and cross tabulations were used for evaluation of dependence between quality variables. The research was done with non-parametric chi-squared Pearson's test (Chi^2), and the correlation power of variables with a Kendall's tau (0 to +1). Non-parametric statistics were used measuring the influence of quality data on quantity variables. Analyzed data had a skewed distribution, that is why non-parametric tests had been used, where the measure of central tendency was median enabling a more adequate evaluation of medium parameter in case of significant range of results. Measure test was the Spearman's correlation rank and Mann and Whitney's test, and also the method of single-factor variance analysis (ANOVA) for numerous independent tests and repeated measurements. In case of independent tests the test of Kruskall-Wallis (K-W test) and additionally : median test, tests (post-hoc)

of multiple comparisons of mean ranks for p values (the test was conducted if the variance analysis showed significance, and then it was tried to establish which means varied between themselves and which did not). In case of the second method for repeated measurements the Friedman's test (test F) was used, and the Kendall's coefficient of concordance (from 0 to +1), describing correlation between numerous variables (Stanisz, 2006).

In order to illustrate percentage data, column graphs and box plot have been used in the chapter on results analysis. Column graphs show the level of significance, if the correlation between variables at least $p<0,05$ has been established. The main ANOVA was placed in the lower part of box plot, in the medium one - post-hoc analysis, and the upper one - additional ANOVA between sexes. Figures were marked with *,**,***, if the tests of differences showed significant diversification with probability - respectively: 0.05; 0.01; 0.001. The following shortenings were used for statistic measurements markings in box plots: R - mean of rank; df - degrees of freedom; H - ANOVA value of Kruskal-Wallis test (K-W); F - ANOVA value of Friedman's test; N - number; p - level of significance.

Results

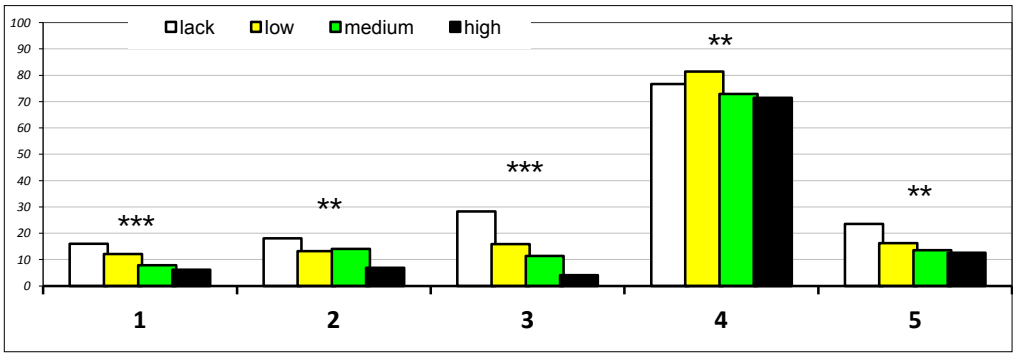
While analyzing the gathered material, we tried to make such a classification which would present the character of physical activity that is the result of an intentional behaviour in physical culture, taken up in accordance to adopted model with exercises with a proper movement structure. The results were evaluated rather by looking for valuation at the side of form than its intensiveness measured with objective coefficients. Taking into account the physical activity taken up by young people we singled out the sport and recreation form (without singling out competitive sport) and the tourist one. From the point of view of organization, we have made a division between institutionally and individually organized physical activity. Institutionally organized activity was divided for these organized by after-school institutions and organized by schools after regular classes. All year and seasonal individually organized recreational activity were analyzed separately. The profile of such physical activity level shows that there is the smallest quantity of inactive young people (18.2%). On other levels the proportion grows - low: 26.1%, medium: 32.6 %, and after that the proportion is getting lower to 22.7% with a high physical activity level.



Markings: 0, 1, 2, 3 – physical activity level : 0 - none, 1 - low, 2 - medium, 3 - high, I, II, III – class grade I – first grade, II – second grade, III - third grade of secondary school

Fig. 1. Physical activity level of girls (K) and boys(M) depending on grade level (%)

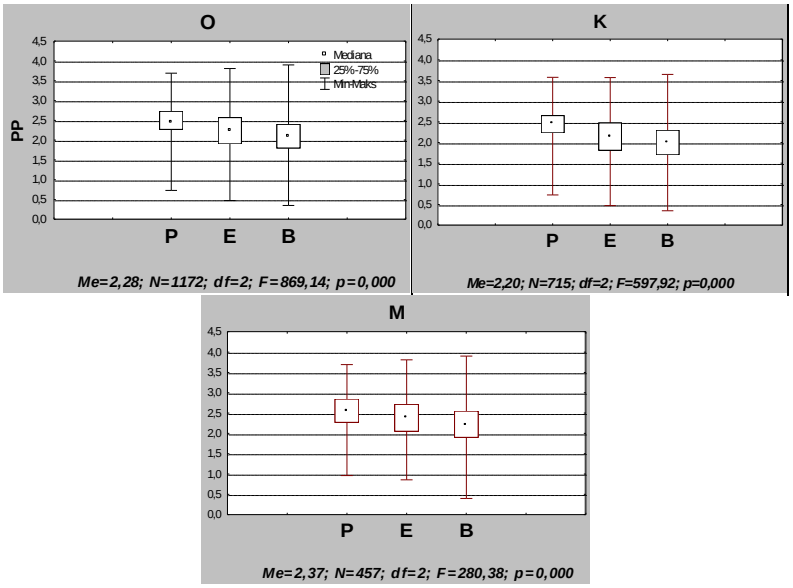
Dependence of physical activity level of girls in the overall organization method depends on grade level (p<0,01). A high physical activity level of girls from first grade (21,7%) was proportionally smaller in the second grade (13,6%) and the third one to 11,9%. Physical activity level of boys did not show any significant dependence (Fig. 1).



Markings:1 – fear of humiliation, 2 – bad health state, 3 – reluctance to work, 4 – lack of time, 5 – back of predispositions

Fig. 2. Obstacles influencing the lowering of physical activity level of tested young people (%)

Some obstacles significantly lowered physical activity level (p<0.01 – 0.001). They were the following: fear of humiliation, bad state of health, reluctance to work, lack of time and lack of predispositions. On the other hand, other obstacles, such as excess of school and home duties, lack of money, problems with access to sport base do not have any significant influence on lowering of physical activity level in free time (Fig. 2).



Markings: P, E, B: attitude components : P - cognitive – E - emotional, B – behavioral, O, K, M: in general, girls, boys

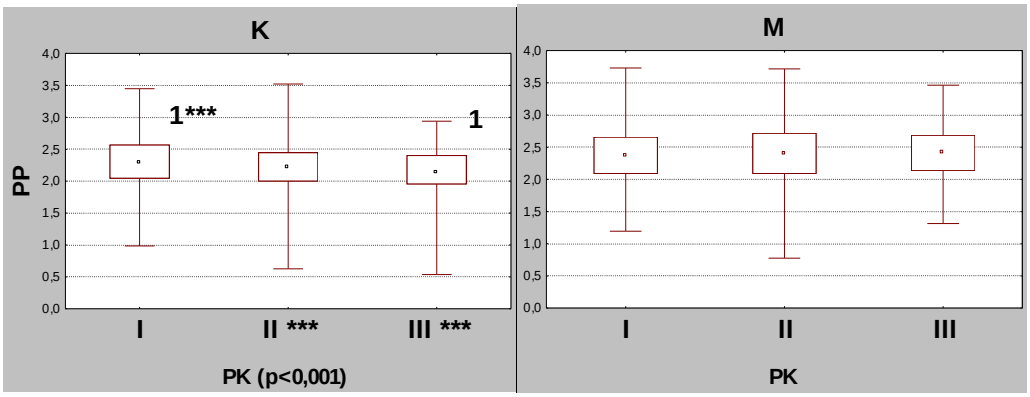
Fig. 3. Differentiation of prosomatic attitude components (PP) of tested young people

Personality of tested young people in general comparison is “able and ready to take care of their bodies” on the moderately positive level. The median of global coefficient of young people’s attitude toward physical culture equaled 2.28. It is positive, but its position close to the unshaped attitudes’ border means that the effects of physical education process for physical culture are low (Fig. 3).

Tab. 1. Spearman rank order correlation. Marked correlation coefficients are significant with p < 0.001

Attitude components	cognitive	emotional	behavioral	overall attitude
cognitive		0.71	0.67	0.87
emotional	0.71		0.78	0.92
behavioral	0.67	0.78		0.90
overall attitude	0.87	0.92	0.90	1.00

The strength of connection of action and cognitive components (0.67) and with emotional one (0.78) is not similar - it shows a weaker connection with cognitive component than with the emotional one, which has a stronger connection with an overall attitude coefficient (0.92) than the behavioral (0.90) and the cognitive component have (0.87). The emotional attitude to physical culture dominates in the tested population (prosomatic) (Tab.1).

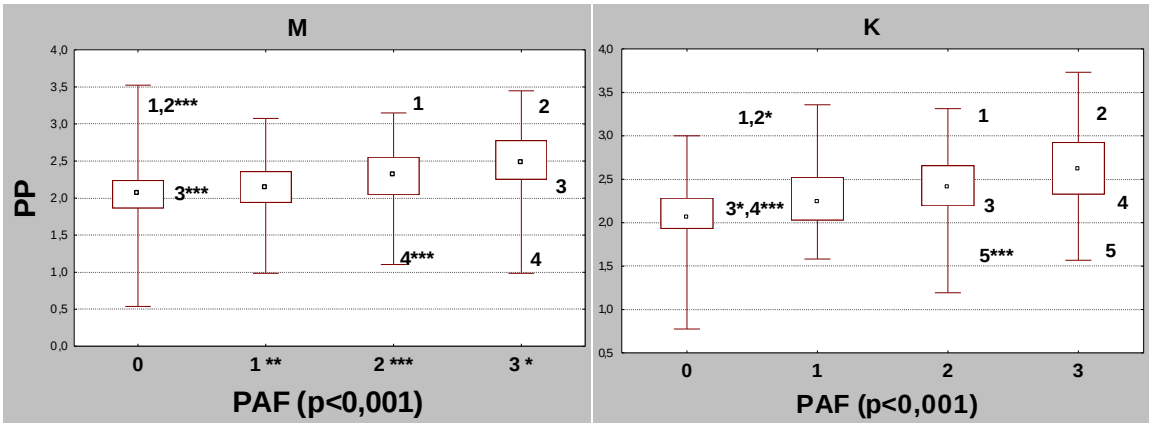


Markings: 1-1, 2-2, etc. (drawing area), see Fig. 12; I, II, III – grade level, see Fig. 1

Fig. 4. Differentiation of prosomatic attitude (PP) of girls - K and boys - M depending on grade level (PK)

An average value of attitude median turned out higher among boys (2.39) than among girls (2.21). However, the size of attitude between grade levels was significant only in the girls’ group (p < 0.001), where we can observe the lowering of attitude median together with the growth of class grade, despite the fact that a multiple correlation showed that only the attitude median in the third grade (2.13) was significantly lowered as compared to the first grade (2.28 - p < 0.001). Significant differences between sexes can be seen only in 2nd and 3rd grade (p <0.001). In this case the attitude median of boys was higher than the one

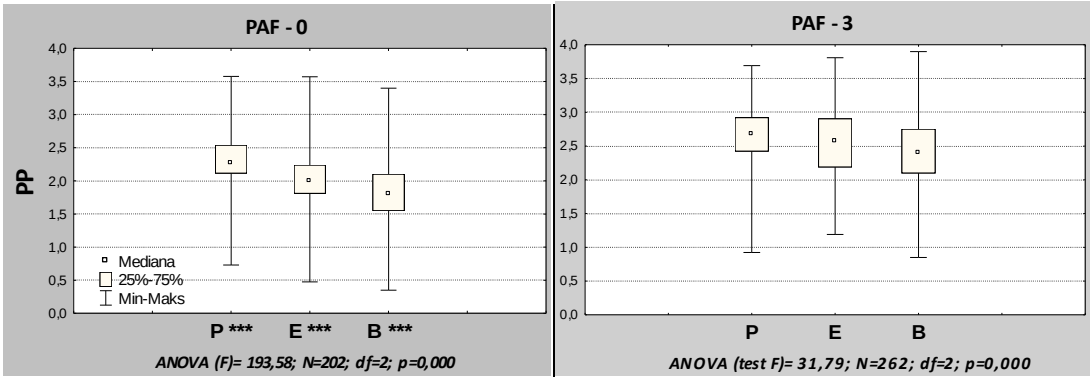
of girls - 2nd grade: 2.45 – 2.39; 3rd grade: 2.13 – 2.41. No significant differences have been found among boys. Attitude median in each grade was similar. It shows balanced attitudes in individual grades as compared to the girls (Fig. 4).



*Markings: 0, 1, 2, 3 - physical activity level : 0-none, 1-low, 2-medium, 3-high (significant relationship between sex and the same value of variables; 1-1, 2-2, etc.(drawing area): see Fig. 12; *, **, *** - p<0.05; p<0.01; p<0.001*

Fig. 5. Influence of prosomatic attitude (PP) of girls (K) boys (M) on physical activity level (PAF)

Attitude of young people toward physical culture influences a coefficient of physical activity in free time ($p < 0.001$). Multiple correlation shows that differences between all physical activity levels were statistically important ($p < 0.05 – 0.001$). Median value above average was on medium and high physical activity level. It can be clearly seen that the growth of attitude coefficient is connected with the growth of physical activity level (Fig. 5).

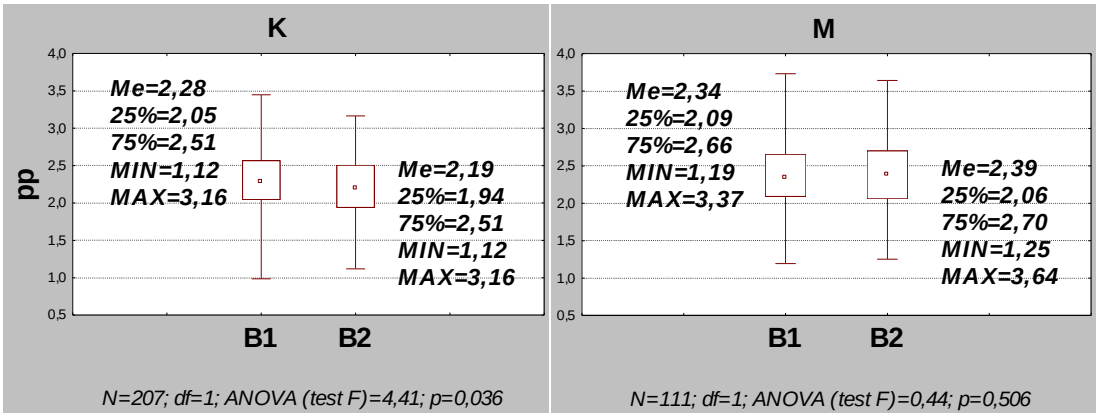


*Markings: a) P, E, B: attitude components: P - cognitive – E - emotional, B – behavioral (*** - significant relationship between sexes and the same attitude components (p<0,001 multiple correlation, post-hoc test); b) PAF-0, PAF-3: respectively - low and high physical activity level*

Fig. 6. Diversification of attitude components (PP) in relationship to border values of physical activity level

Difference between attitude components among young people not taking up physical activity and between its elements among the tested with high activity level was quite significant $p < 0.001$ (Fig. 6). Attitude medians for all attitude

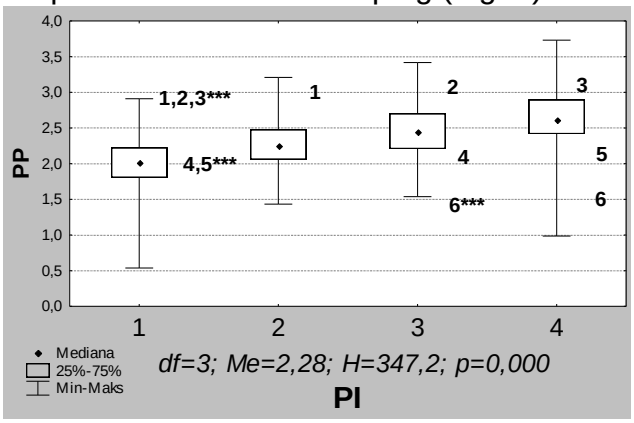
components in high physical activity level were significantly higher than components of physically inactive young people - median in cognitive component grew from 2.29 to 2.67; in emotional from 2.0 to 2.57 and in behavioral from 1.83 to 2.4.



Markings: B1-1st research stage, B2-2nd research stage

Fig. 7. Changes in attitude toward physical culture (PP) as a result of three years of physical education (B1, B2) - continuous research

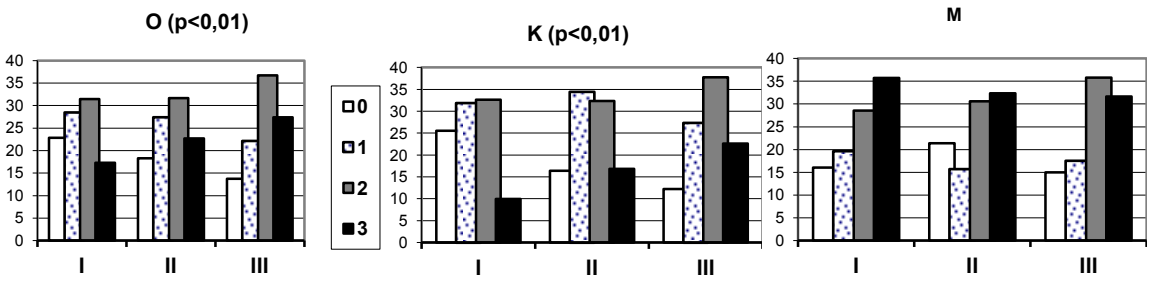
Analysis of data shows that we observe the lowering of prosomatic attitude median $p < 0.01$ (2.28 – 2.19). In the group of boys it is the other way round (2.34 – 2.39), but these differences are not statistically important. It can be assumed that attitudes of boys have not been significantly changed in the period of three-year education, and those of the girls have been significantly lowered as a result of lack of effectiveness in the process of attitude shaping (Fig. 7).



Markings: 1,2,3,4 – values of individual predispositions coefficient (very low, low, medium, high)

Fig. 8. Relationship of prosomatic attitudes (PP) of young people with their individual predispositions (PI) for taking up physical activity in free time

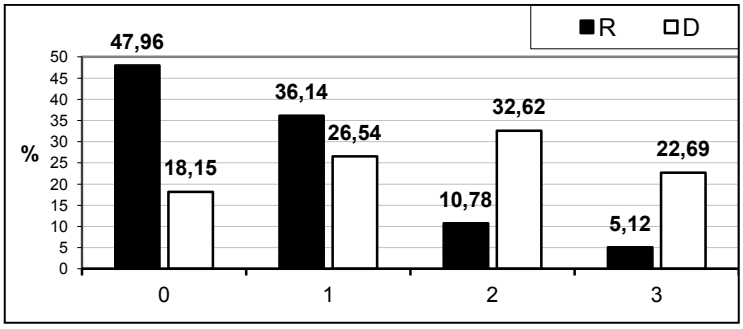
Attitudes toward physical culture (prosomatic) to a high extent correlate with individual predispositions of young people ($p < 0.001$) for taking up physical activity in free time. The growth of PI coefficient positively correlates with attitudes toward physical culture. Median 2.1 with very low individual predispositions gradually grows with consecutive values of variable PI, reaching 2.7 with the high predispositions (Fig. 8).



Markings: I, II, III - educational level of parents : I - low, II - medium, III- high ; 0, 1, 2, 3 – see Fig. 1, O, K, M – see Fig. 3

Fig. 9. Influence of educational level of parents (PWR) and categorized physical activity level of young people (%)

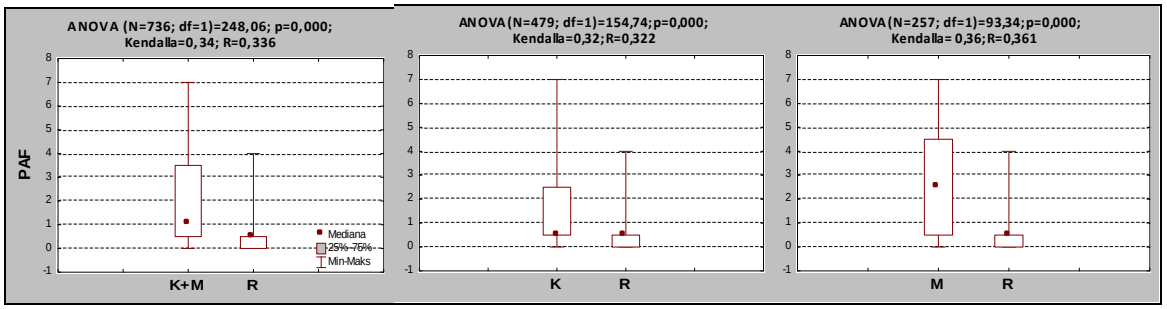
Influence of educational level of family on physical activity level of young people concerned only girls ($p < 0.01$). In case of boys no relationship has been found (Fig. 9). In girls' group border values of PAF coefficient show a negative relationship in the course of PAF coefficient - 0 (25.5% - 12.26%), and a positive one in PAF - 3 (9.9% - 22.6%).



Markings: R-parent, D-child (tested young people). 0, 1, 2, 3: see Fig. 1

Fig. 10. Physical activity level (PAF) of parents and young people (children)

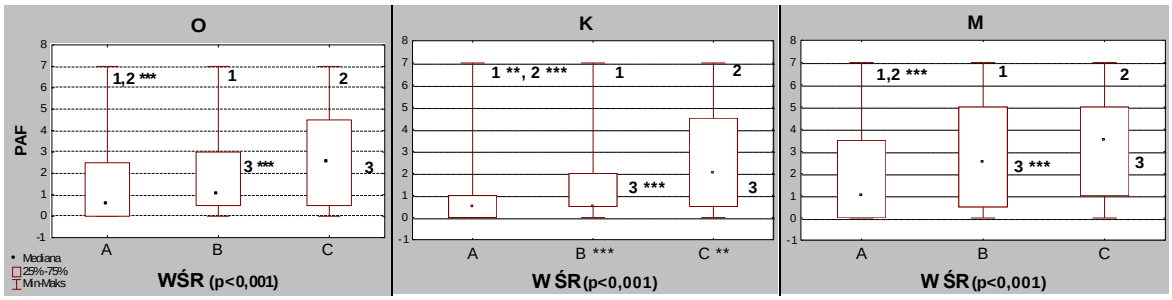
Physical activity level of parents turned out inversely proportional to physical activity level of their children. Data on Fig. 10 show that the percentage of parents gets smaller with the growth of physical activity level coefficient, and in case of young people (children) - the trend line takes an inverse tendency.



Markings: PAF – physical activity level coefficient ; O, K, M – see Fig. 3

Fig. 11. Comparison of physical activity level of young people to physical activity level of parents

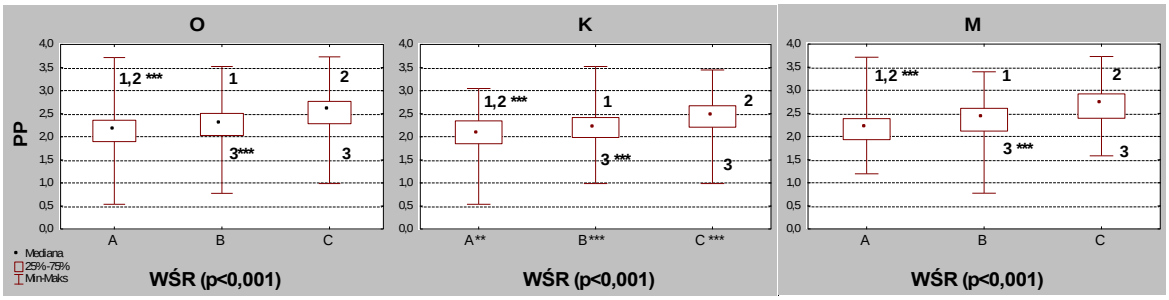
Physical activity level of parents in the group of girls ($p < 0.001$) and parents in the group of boys ($p < 0.001$) was significantly lower for the boys (median 2.5 0.5; Q1 4.5 – 0.5) and for the girls (median 1.0 – 1.0; Q 2.5 – 0.5). Analysis of data presented on Fig. 11 shows that the difference between physical activity level (PAF) of young people and their parents is bigger among boys than among girls.



*Markings: a) PAF – physical activity level coefficient ; O, K, M – see Fig. 3.O, K, M – see Fig. 3; b) WŚR: A-weak, B-moderate, C-strong (significant relationship between sexes in the same values of variables); c) 1-1, 2-2, etc., drawing area): see Fig. 12; d) *, **, *** - p<0.05; p<0.01; p<0.001*

Fig. 12. Influence of family environment (WŚR) on physical activity level of young people (PAF)

Analysis of variants showed relationship between coefficient of family environment influence (WŚR) and physical activity level of tested young people ($p < 0.001$). With the growth of importance of family environment, the median of physical activity level also grew (0.5 – 2.5). Apart from median's growth, the value of Q1 has been noticed: 2.5 – 4.5. Two-sided correlation showed that relationship between individual coefficient values was statistically important on the level - $p < 0.001$ (Fig.12).

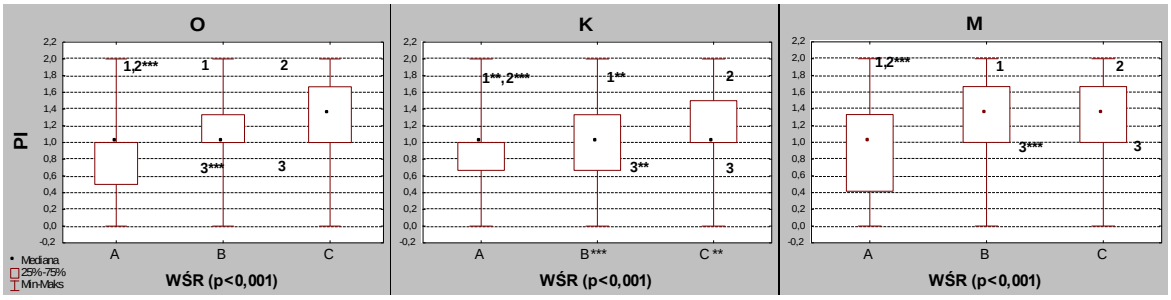


Markings: see Fig. 12.

Fig. 13. Influence of family environment (WŚR) on change of prosomatic attitudes (PP) of young people

Positive value of prosomatic attitude coefficient proves only a moderately positive preparation of young people to participation in physical culture. Correlating the family influence coefficient with values of prosomatic attitude overall coefficient, indirectly the influence of family environment on preparation to taking up physical activity in free time has been evaluated. Correlation results are statistically important ($p < 0.001$), so the family influences the development

of competences for taking up physical activity. It can be clearly seen that with the growth of WŚR coefficient value the values of PP coefficient grow, too. Median of PP coefficient value changes from the indifferent (2.12) with WŚR - low to a positive direction, with WŚR medium – 2.25 and high – 2.57 (Fig. 13).



Markings: see Fig. 12

Fig. 14. Influence of family environment (WŚR) on self-evaluation of individual predispositions (PI) of young people to taking up physical activity in free time.

The structure of individual predispositions (PI) to taking up physical activity in free time includes self-evaluation of movement abilities, physical fitness and needs. Family environment influences the value of this coefficient ($p < 0.001$). It can be seen that there is a positive relationship, namely that together with the growth of WŚR coefficient, the individual predispositions of young people to taking up physical activity in free time have grown (Fig. 14).

Discussion

The level of physical activity of young people was insufficient because 18,2% of the tested persons were outside the physical culture environment. Therefore, on average, every fifth schoolboy/schoolgirl of grammar school was in the risk group. No signs of physical activity have been found in the life style of this group. Similarly considerable part of the tested group took up physical activity at a low level – 26.5%. Low level cannot be considered health behaviour in the understanding of physical health because of too small frequency and their seasonal character. Altogether it constitutes a proportion of 42.8% of young people, which should arouse serious immediate anxiety and in the perspective of their adult life.

Taking into consideration an average level of physical activity, we deal with a regular, institutionally or individually organized physical activity, taken up year long and 1 - 3 times a week. The dimension of this activity, especially closer to the high border of frequency might be considered valuable, from the health point of view. 32.6% of the tested people take up such a kind of activity. Unfortunately, out of the physically active young people, 50% exercise twice a week, at the same time the median of girls' level equals once, and the boys' - 3 times a week. Therefore, health advantages of girls' physical activity are placed in extremely low

range of average level scale. On the other hand, average of boys' activity is placed in the extremely high scale range. The median values show that the average level of physical activity does not guarantee efforts of sufficient quality, which can classify this range as satisfactory.

High level of physical activity was reached by 1/5th of the tested. It seems that in this case physical effort does have health advantages. The results of such activity in their physical aspect can lessen the risk of incidence of civilization illnesses and almost definitely influence the level of physical fitness and functioning of organism. It has been established that among physically active young people 76% of boys exercise 5 times a week. Unfortunately, the girls do it only 3 times, but in opposition to the average physical activity level in this case the median of physical activity was more favourable.

The level of physical activity depends on type of school and the class grade, but only in the girls' case. No such similar relation has been observed in the group of boys. In all schools the level of boys' activity was higher than among girls, where high rate of lack of physical activity has been noticed. High rate of physical activity among girls from first grade (21.7%), was proportionally lower in the second grade (13.6%) and in the third grade (11.9%). The hypothesis in its part referring to the type of school and grade level has been confirmed only as far as girls are concerned.

The social and economical status the sex of young people and type of analyzed measure influence the level of physical activity in a diversified way. Among analyzed rates some influence was noticed only in case of educational level of the parents of tested girls, and of material reserves of families in boys' group. Negative correlation relationship changes into positive one when physical activity reaches average and high level. Then, the rate of growth of social problems intensification in the place of living does not affect physical activity level of both tested sexes. Unfortunately, the rate of subjective family wealth evaluation in a general society has a rare influence, because the influence of this factor on the physical activity level can be established only after testing around 1,000 persons. Smaller test groups do not give significant results in the variables' correlation. The hypothesis has been partly confirmed in two out of four measures of social and economical status. Partly, because these measures influence only boys in one case (OZMR), and in the second one only girls (PWR). From the two left social measures one (NPOZ) does not show any relationship, and the second one does show a relationship, but only in a general combination in the group of 1,000 tested.

Organized activities, after school and after class activities (sport, recreation, tourism) concentrate smaller part of young people (11.2% and 17.8%). The rest realized their interests individually in a year-long (46.0%) and seasonal (45.1%) recreational and tourist activities. We can see that young people looked for independent possibilities of physical activities. Such way of physical activity organization causes the lowering of its level. It has been noticed that the level of individual year long physical activity of girls depended on grade level. It caused the growth of physical activity on a low and average level, but lowering of its high level, together with the growth of grade level. At the same time, an average and high physical activity level institutionally organized has been lowered with the growth of grade, and the number of physically inactive girls grew. We deal then with a small, but still a growth of physical activity level in year-long individual activity, and at the same time its lowering in after-school institutions

and in schools. On this basis, it can be stated that young people in subsequent school years “abandon” organized forms of physical activities for the benefit of independent forms. Unfortunately, such a situation causes general lowering of physical activity. The hypothesis has been confirmed by the gathered and analyzed material. It must be underlined that it took place only in the part referring to the lowering of physical activity among girls. The boys are not subject to described relationships.

After separating from the general of tested people those physically active, we can see that the biggest median average was in individual year long organization of physical activity, and the smallest one - in yearlong individual activity, but in its variant, where the important part of the exercises was their seasonal character (seasonal forms of recreation and tourism). Therefore, in the global way of physical activity organization, taking up individual exercises influences the growth of measure of global physical activity level value. Organized way of physical activity was also important, whose median equaled twice a week.

The young people represented moderately positive attitude towards physical culture. Educational efforts in school during physical education classes did not cause proper shaping of operational aims. After three years of education the attitude of girls towards physical culture was meaningfully lowered, and the attitude of boys changed from moderately positive in grade 1, was not changed through 3 years of attending physical education classes. Similarly, the value of emotional and behavioral component of their attitude was lowered in girls’ group, and was not changed in the boys’ group. Only the cognitive component did not undergo any changes in both tested groups.

Among the girls as a result of three-year-education meaningful lowering of attitude towards the following: physical activity in free time, physical education classes, physical exercise, sport, sport events, cognitive activity of physical culture has been noticed. In the group of boys the differences were not significant. As a result, the attitude of girls and its components were changed in the neutral and negative direction, together with the promotion to the next grade. Emotional component among the girls in the 3rd grade reaches its border value for positive attitudes (2.05), and behavioral component exceeds the value, entering the area of negative and extremely negative attitudes (1.95). It means that in two components almost 50% of girls did not have formed attitudes towards physical culture. What is more alarming is the result which shows that in the second and third grade there were the most of girls who represented negative and extremely negative attitudes.

The change of attitude towards positive causes the growth of physical activity level in free time. This growth depended on cognitive component to the greatest extent, and on behavioral component - to the smallest. Only those young people whose physical activity was at least average stayed above average value of attitude median, other categories of physical activity level were below the average. The weakest link of attitude was behavioral component. Its dependence on physical activity level showed that those girls who did not take up any physical activity and those who took up activity on a low level represented negative behaviour and the boys - an average one.

The growth of attitude values towards areas of physical culture between border categories of physical activity level was quite significant in 9 out of 10 areas, and the biggest one in the area of self-physical fitness and physical

development, self-control and self-evaluation, and cognitive activity in physical culture.

Attitudes towards physical culture showed positive relationship from individual predispositions for physical activity, which positively influenced the development of physical activity in free time. Lower values of individual predispositions coefficient get the attitude towards the neutral, and the higher ones - towards positive. On the other hand, higher values of attitude median correlate with higher values of physical activity level coefficient. The exception was the group of girls with low predisposition coefficient, among whose a negative attitude was found. The hypothesis has been fully verified. Taking into consideration separate components of individual predispositions (technique of exercising, physical fitness, needs) in shaping attitudes may influence the development of physical activity in free time.

A family influences the development of physical activity, because certain models of behaviour and positive emotional links, increasing physical activity level, take place in the family environment. Unfortunately, almost half of the tested parents did not go in any form of physical activity (48%), and more than 1/3rd of the tested take up such activity on a very low level *36.1%). Only 10.8% of parents took up activity on average level, and 5.1% on a high level. In this part of the gathered material the hypothesis has been confirmed.

Physical activity level of parents and separately the way of spending free time did not significantly influenced physical activity level of young people in free time. However, the growth of physical activity level of young people depended on family environment. Therefore, the measure of family influence (WSR), which has been formed on the basis of theoretical assumptions, appeared an effective measure, on the basis of which we can conclude on influence of family environment. Family environment influenced also the growth of coefficients referring to attitudes towards physical culture and individual predispositions for taking up physical activities in free time. On the other hand, level of physical activity of parents or their way of spending free time did not influence the mentioned attitudes and individual predispositions only among young boys. An influence has been noticed among girls. Coefficient of influence of family environment, in opposition to physical activity level of parents and their way of spending free time, appeared to be the best measure of influence of family on development of physical activity of young people in free time and competences for taking up such an activity.

Conclusions

1) There was the smallest quantity of physically inactive young people. The percentage grew to 26 % at low level, and from medium level (32.2%) it got lower to 22.7% while having a high physical activity level.

2) The growth of grade level negatively correlated with a high physical activity level. Young people after being promoted to a higher grade “abandon” institutionally organized forms of sport for individual ones, which causes the lowering of physical activity level coefficient.

3) All obstacles lower an access to physical activity through limiting the possibility of taking up a chosen (preferred) sport discipline. But only the following: fear

of humiliation, health problems, reluctance to effort, lack of time and somatic predispositions significantly lower physical activity level coefficient of young people.

4) Average attitude toward physical culture, significantly higher among boys than among girls, was placed on moderately positive and positive scale for 50% of the tested.

5) Attitude of girls and boys toward physical culture and its components influenced activity level in free time in such a way that the growth of attitude coefficient caused the growth of physical activity level in free time. Regardless from physical activity level the attitude of girls was in each category lower than the attitude of boys. The growth of physical activity level depended on cognitive component to the greatest extent, and less on emotional one, and the least on the behavioral component.

6) The methods and quality of physical education classes were ineffective. After three years of education the attitude toward physical culture of girls was significantly lower, and the attitude of boys from the moderately positive one at the beginning of educational process in 1st grade of secondary school (grade 1) was not significantly changed in next grades.

7) The median of physical activity level in free time grew with the growth of individual predispositions for taking up physical activity (0.5 - 4), both among the girls and the boys.

8) Attitudes toward physical culture positively depend on individual predispositions of young people for taking up physical activity. At each coefficient value the attitude is positive. Lower values of individual predispositions bring the attitude closer to a neutral direction, and the higher ones to a moderately positive.

9) Educational level of parents influence the physical activity level of young people. Negative relationship of correlations changed to a positive one when physical activity level reached a medium or high value. Influence of education affects only girls, in case of boys no such relationship has been established.

10) Almost half of the tested parents were physically active in free time. Unfortunately, the activity level was low, and its correlation with physical activity level did not show any signs of statistical importance.

11) The coefficient of family environment influence as opposed to physical activity level of parents and the way of spending free time seemed to be the best measure of family influence on development of physical activity level in free time and competences for taking it up. It turned out that this coefficient raises competences of young people to taking up physical activity in the range of their attitudes and individual predispositions, and influences the growth of physical activity level of the tested.

Practical conclusions

1) Almost half of the tested young people (42.8%) do not take up planned physical activity typical for physical culture or take it up on a low level.

Those young people are in the group of health risk in a closer or further future. Girls are specially endangered group, whose average of physical activity median on a medium level equals once a week. That is why in everyday practice we should aspire to raising of physical activity level, and with special paying attention to females. This comment is important for physical education teachers and parents, because it mainly refers to recreational physical activity individually organized in free time.

2) Individual predispositions of young people for taking up physical activity strongly correlate with their physical activity level. While remembering the fact that predispositions include the following : motion abilities, physical fitness and individual needs in physical activity, special emphasis should be put on instrumental aims (technique, variability, fitness) and operational ones (stimulating the need of exercises, positive motivation, persuasion) in the educational work. The point is that the answer of young people to questions such as: do I know how ? Will I manage ? Why ? Is it worth while? Was always positive?

3) Influence of family environment (WŚR) raises competences of young people for taking up physical activity in the range of their attitudes and individual predispositions and influences the growth of their physical activity level. WŚR coefficient in its core connects: interests resulting from inner needs of members of family environment (parents, siblings, relatives) ; emotions felt by young people toward an important person who actively practises sport and their effect, namely taking up physical activity. That is why only a complex influence on young people in family environment (interests, emotions, effect) brings expected effects in physical culture. Single variables such as : physical activity level of parents and their way of spending free time do not influence the raise of physical activity level of their children.

4) Among the total number of tested young people, 17.8% took up physical activity in after school institutions in free time, 11.2% at schools which they attended, and 17.2% did not take up any forms of exercising. The rest, the most numerous group individually took up physical activity (independently). On one hand, the research results showed that independent physical activity had a substantial share in physical culture, on the other hand though, this method of organization is characterized by exercising on a low level. That is why making institutionally organized activities more attractive and adjusting their character to needs will attract more young people, and as a consequence will raise physical activity level, which - as the research showed - is the highest in “clubs”. An educational offer and substance of activities should be especially adjusted to females, whose activity level is lower than that of boys.

5) Educational authorities and teachers of physical education should make their best to stop the withdrawal of girls from organized physical activity during after-school activities with the promotion to higher class grades. This comment refers also to people responsible for training in after school institutions. We think that reaching such an aim would be much easier in schools because of organizational reasons.

References

BAILEY, R. Physical education and sport in schools. A review of benefits and outcomes, [in:] Bailey R., Kirk D. (ed.) *The Routledge Physical Education Reader*. London and New York. 2009.

BARANOWSKI, T. Validity and reliability of self report measures of physical activity: An information-processing approach. *Res.Q.Exerc.Sport*. 1988; 59, pp. 314-327.

BOUCHARD, C., SHEPHARD, R.J. Physical activity, fitness, and health: The model and key concepts. [in:] Bouchard C, Shephard RJ, Stephens T, editors. *Physical Activity, Fitness and Health: international proceedings and consensus statement.* Champaign, Ill: Human Kinetics.1994, pp. 77-88.

BRENNAN, D., BLEAKLEY, E.W. Predictors, problems and policies for post school participation. [in:] Kremer J., Trew K., Ogle pp., editors. *Young People's Involvement in Sport*: London Routledge. 1997, pp. 78-97.

BRONIKOWSKI, M. *Postawy prosomatyczne młodzieży gimnazjalnej jako efekt interwencji w procesie wychowania fizycznego*. AWF, Poznań. 2008.

CONNOR, S. Youth sport in Ireland: the sporting, leisure, and lifestyle patterns of Irish adolescents. Dublin, Ireland, Liffey Press. 2003.

ECKES, T. SIX B. Fakten und Fiktionen in der Einstellungs-Verhaltens-Forschung: Eine Meta-Analyse. *Zeitschrift fur Sozialpsychologie*.1994, 25, pp. 253-271.

GRABOWSKI, H. *Teoria fizycznej edukacji*. WSiP. Warszawa. 1999.

GUSZKOWSKA, M. Aktywność ruchowa a przebieg transakcji stresowej u młodzieży. *Studia i Monografie*, nr 101. AWF. Warszawa. 2005.

KRAWCZYK, Z. Społeczno-kulturowe wartości sportu w świetle badań empirycznych. *Wychowanie Fizyczne i Sport*. 1983, 3, pp. 39-47.

LARSON, R., VERMA, S. How children and adolescents spend time across the world: work, play and developmental opportunities". *Psychological Bulletin*. 1999, 125(6), pp. 701–736.

MANDINGO, JL., FOX, KR. "Do Youth Learn Life Skills Through Their Involvement in High School Sport? A Case Study. *Canadian Journal of Education*. 2008, 31, (2), pp. 281-304.

NILSSON, A., ANDERSEN L.B., OMMUNDSEN Y. et al. Correlates of objectively assessed physical activity and sedentary time in children: a cross-sectional study (The European Youth Hearth Study). *BMC Public Health*. 2009, (9), pp. 322-328.

OSIŃSKI, W., *Teoria wychowania fizycznego*. AWF, Poznań. 2011.

SAS-NOWOSIELSKI, K. *Wychowanie do aktywności fizycznej*. AWF. 2003. Katowice.

STANISZ, A. Przystępny kurs statystyki z zastosowaniem STATISTICA PL naprzykładach z medycyny. StatSoft Polska, Kraków. 2006.

STRZYŻEWSKI, S. Postawy wobec kultury fizycznej młodzieży kończącej zasadnicze szkoły zawodowe, *Wychowanie Fizyczne i Sport*. 1990, 3, pp. 73-85.

TWISK, J.W.R. Physical activity guidelines for children and adolescents: a critical review, *Sports.Med.* 2001, 31(8), pp. 617-627.

MARTIAL ARTS IN THE PROCESS OF CHILDREN AND YOUTH – EDUCATION, EXPANSION OR EXODUS OF THE EXAMPLE OF BYDGOSZCZ

Robert Stępniak[1],
Sylwia Wilczyńska[2], **Ewelina Drumińska**[2]

Kazimierz Wielki University, Bydgoszcz, Poland[1]
Section of Physical Culture, Student Research "WyKoNa", Kazimierz Wielki University, Bydgoszcz, Poland[2]

Key words: judo, wrestling, taekwondo, school children/youths

Abstract

Physical Education in the Primary School and Middle School can be implemented in many ways. One of them is martial arts which developed in Poland in recent years. The aim of the study was to verify the quantitative and qualitative expression of martial arts among children and young people in their school environment.

Personal interview information was collected using the data cataloged in: school documentation, in pupils sport clubs and other sport clubs.

Results of this study do not give a clear answer for these questions, but should provide a starting point for future trainers and managers of combat sports to consultation with Department of Education in Bydgoszcz.

The processes of assimilation combat sports of children and adolescents in the school environment should be a compatible monitored both at Sport Department and the Department of Education in Bydgoszcz.

Introduction

The high popularity of Japanese concepts concerning the security philosophy fell on the 70's and 80's of the XX century. This popularity was dominated by the huge interest in Far Eastern martial arts Budō on the territory of the Central and Eastern Europe. They were connected with the security philosophy and spirituality where societies were mired in the dreary reality of the communist totalitarian regime (Piwowarski, Korzeniowski, 2011).

In the political system before 1989 the martial arts discipline were mainly developing in so called power ministries like the army and the police, in the penitentiary departments and less often in the Students Sport Associations AZS. There were also few, led rather as experiment, sport classes at schools (former Primary schools number 62 and 20) with judo profile- also in Bydgoszcz (Wilczyńska, Drumińska, 2014). The sport facilities and budget were supported by national institutions, by contrast private sports clubs and associations were in minority. Since 1990 the changes in widely understood structure of the physical

culture (Jaczynowski, Żyśko, 1994) and in the structure and finances of the professional sport (Jankowski, et al., 1996) have started.

The educational value for youth of martial arts were previously pointed out by many authors in relation with the balanced development, violence deterrent or developing healthy lifestyle habits, additionally they were postulated to be introduce into the school timetable (Cynarski, Berdel, 2000; Daniluk, Kopeć, Rajecka, 2013; Kalina, 1991; Kalina, Jagiełło, 2000; Kozdraś, 2014; Krawczyński, 2007).

As Cynarki wrote after Tyszka the axiological values which are achieved by practicing sports and martial arts are as follows: development of the physic and psychological features, balancing psychophysical development, shaping psychological features and character, the chance to test oneself and boost self-esteem, the tool in educating and socializing the youth (Cynarski, 2004).

Besides, there are many researches that proof that the martial arts develop general fitness and body efficiency to the same level as traditional sport disciplines that have been in the school timetable for years (Bujak, 2000; Gierczuk, 2008; Litwiniuk, Cynarski, 2003; Litwiniuk, Daniluk, Cynarski, 2005; Klimczyk et al., 2013; Pujszo, Kuźmińska et al., 2013; Pujszo, Smaruj et al., 2012).

Equally interested is the fact that longstanding judo training brings improvement in body balance control. The occurrence of changing the body balance control by judo players during the nationwide competition points to the multidimensional of this occurrence. Some of those aspects were connected with the psychic that suggests that it can result in better balance awareness in general so also in old age (Błach et al., 2005).

It is worth mentioning that uniform services training should be sufficient to use coercive measurement or to follow the requirements of the contemporary battlefield.

Under that assumption, the use of the Far Eastern martial arts (judo, ju jitsu, karate taekwondo) can be very useful, on which basis the training for Police, border guards or soldiers, especially for special units of the border guards and Government Protection Bureu is designed (Korzeniowski, 2008).

Material and methods

The research material was gathered upon own information collected from sports clubs (organizations of higher utility), schools with sport classes, students sports clubs (UKS) and other martial art schools. Only Olympic martial arts like judo taekwondo and wrestling were taken into account.

The data was collected by personal interviews connected with inquiry into school or club documents. Some of the information was gathered by emails.

The data was divided into two groups, one comprised of school youth who trained in sport classes, the other comprised of youth who trained outside the school. The representation of three different time periods was presented: broad period of 2003-2005 because of the reorganization of judo section after Polonia club collapsing and moving player to University of Kazimierz Wielki students sport club (AZS UKW) and some by PTS Gwardia Club and period of 2010 and 2014.

The research material was statistically worked out with the use of Microsoft Excell preparing the spreadsheets, graphs and tables.

Results

The collected data of youth who train judo, taekwondo and wrestling is shown in Table 1 and on Figures 1-3 The data applied to periods 2003/2005, 2010, 2014.

Tab. 1. The quantitative representation of youth who train judo, taekwondo and wrestling in time periods

Years / discipline	2003/2005		2010		2014	
Judo	200		220		232	
Judo sport classes	30	15%	60	27.3%	60	25.9%
Wrestling	40		50		65	
Wrestling sport classes	0	0%	0	0%	0	0%
Taekwondo	240	0%	300		350	
Taekwondo sport classes	0	0%	120	40%	210	60%

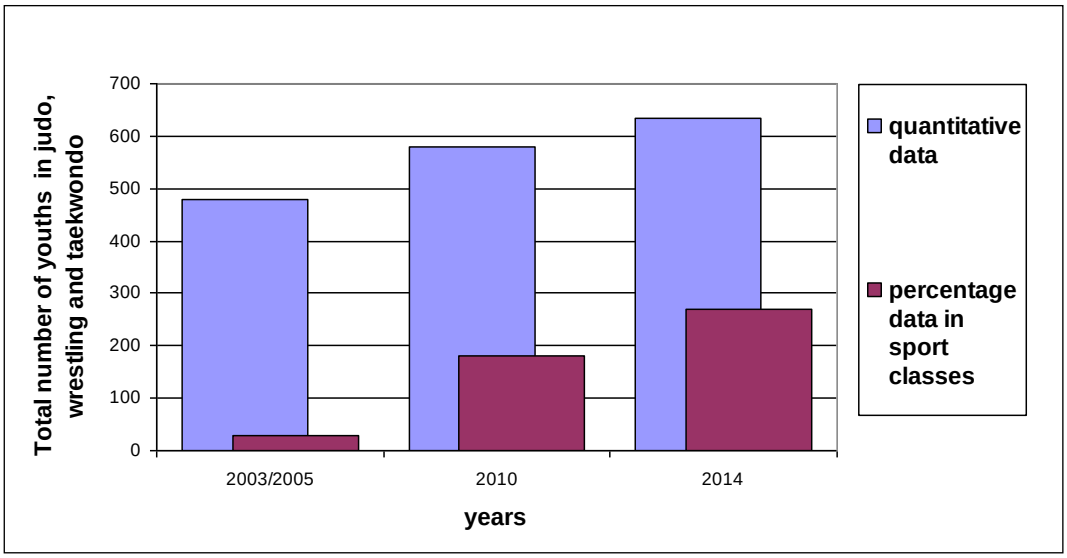


Fig.1. Total number of youth who train judo, taekwondo and wrestling in quantitative perspective and percentage of those who train in sports classes

There is visible growth in general number of youth who train judo, taekwondo and wrestling and the steady growth in percentage of participates in sports classes. The percentile growth shows bigger dynamics.

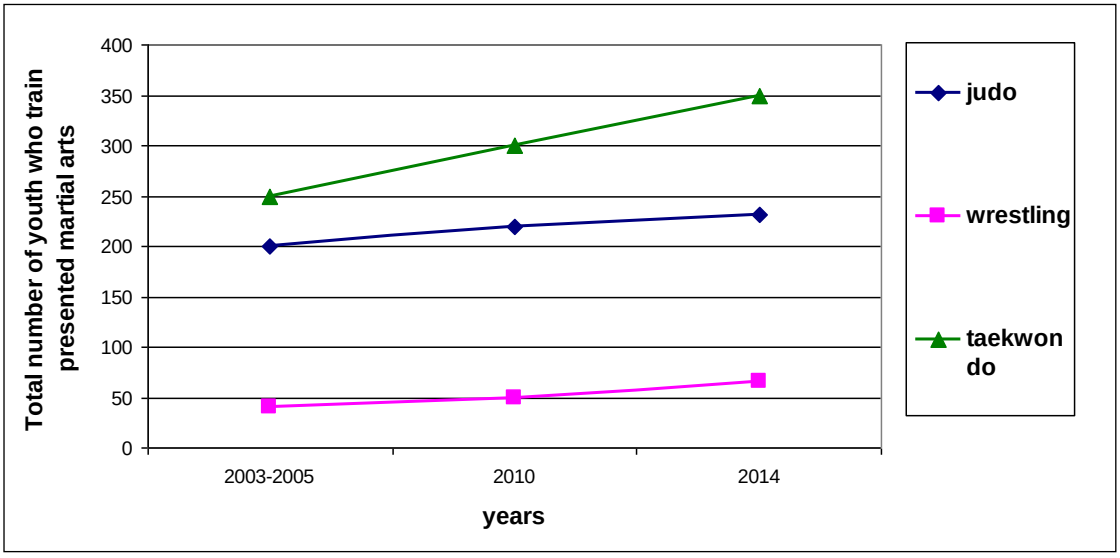


Fig. 2. The graphical representation of changes in general number of youth who train judo and taekwondo and wrestling in time periods

All disciplines present the tendency in growing number of training youth, where taekwondo growth is the most visible.

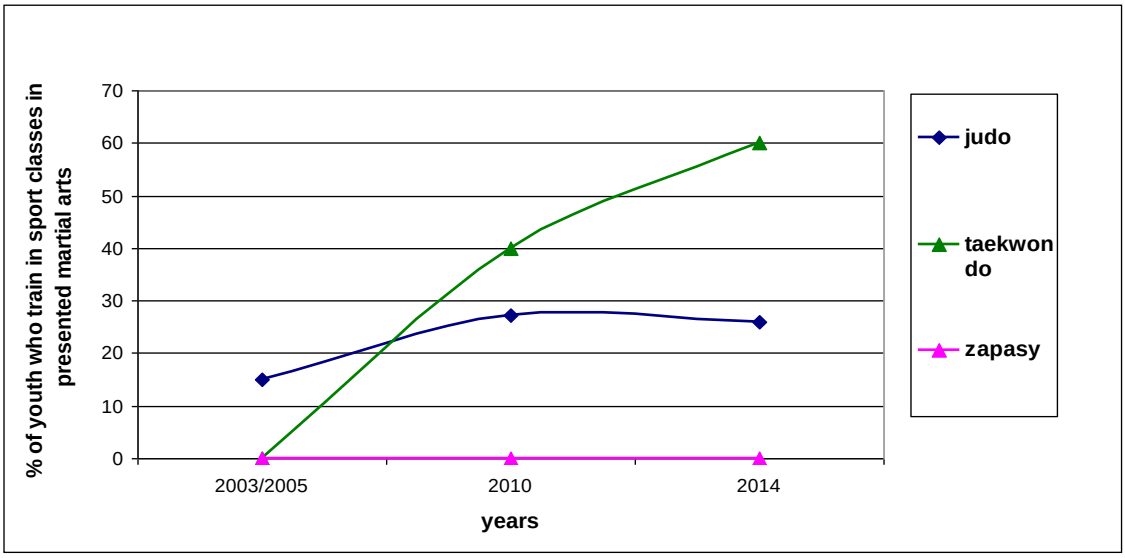


Fig. 3. The percentile representation of number of youth who train judo, taekwondo and wrestling in the sports classes

The most dynamic growth is visible in the taekwondo group; also the lack of youth who train wrestling in sports classes is visible.

Discussion

The data in Tab. 1 and in Fig. 1 shows that the number of youth who practice researched disciplines is increasing in all periods of time as well as there is a percentile growth of number of children attending sports classes.

It is worth mentioning that in literature; most of the researches concerning martial arts in sports classes are not focused on quantity aspect and that is why it is difficult to compare the results at this ground. Despite that, the research from Szczecin, which was also concerning the number of students in sports classes, showed decreasing number of secondary school children in sports classes. The authors also came to conclusion that there is a lack of consistency at all levels of children and teenagers' training plan (Cieszczyk, Eider, 2005).

The development of martial arts disciplines is not only connected with Olympic Games but also there are sports classes with the specialization in boxing, Muay Thai, karate and even MMA- for example at the Higher School of Humanities and Economics in Włocławek (Wilczyńska, Drumińska, 2014).

It is noticeable that the lack of wrestling sport classes is not a new phenomenon and has already been pointed out by other researchers. It seems that the dominant form of training preferred by coaches is training in the sports clubs, usually in small, local clubs. The observation of the beginnings of the career of some Olympian wrestlers showed that they started their career in small, local clubs. Probably the local environment is the reason for lack of continuation in training plan and founding wrestling sport classes (Rak, 2011; Wodecki, 2011; Ziarkowska, 2009).

Interestingly there are many concepts of how to help sport disciplines in developing through early training in sports classes (Chruściński, 2013; Spieszny, 2003), however, the numerical amount of football and basketball classes have not improved the sport results of those disciplines at different stages of career. The more detailed analysis tells to look at the achieved results from multidimensional point of view.

The changes in the total number of youth who practise judo, taekwondo and wrestling through periods of time presented on the graph show that the most dynamic growth is in the number of students who practise taekwondo and a slight growth in judo and wrestling group. At the same time the percentile conceptualization of the growth of the number of students practising in sports classes is very high in taekwondo group, moderate in judo group and wrestling sport class do not exist. It can be concluded that the total growth in number of practising students shown on Fig. 1. was created by the taekwondo group.

However, additional information gathered in Tab. 1 points out that the number of children who practise taekwondo outside the sport classes is systematically decreasing. So the total reorganization of the structure of training in that discipline has been observed.

So far Polish Taekwondo Team has not achieved any spectacular successes – a bronze medal at World Championship (Chorzelowski, 2001) and an advance to the Olympics (Uściska, 2004- did not win any medal though). Taking into account the fact that the debut of Polish Olympic team took place in 1988 in Seul the results and achievements are not satisfying.

One of the ways to improve the quality and the ability to achieve successes on the international field is the scientific approach to the discipline. The rule applied to taekwondo as well, as there are already international scientific standards in place (published in Polish journals), there are also first attempts to test players who are achieving successes at national championship (Capranica et al., 2010; Stankiewicz et al., 2013; Wąsik, 2014).

The sports classes are the tools mainly to achieve the sport championship at the highest level, so there is a question to be asked whether those actions are

coordinated at the sport and educational level in Bydgoszcz, if youth who are leaving the compulsory education still have access to good conditions for training, professional coaches and other ways of development.

Certainly there are detailed analysis concerning the efficiency of the sport classes/ schools at each level of educational authorities, however, there is not commonly known if they are used in coaching practice (Dedyk, Śmietanka, Mueller, 2009).

Other interesting point of view is presented by the summary data in Tab. 1 which shows that over 600 people- youth practice the above mentioned martial arts in Bydgoszcz. For example the data from the Territorial Basketball Association tells about the total number of players at similar level (around 600 players).

It can be said that youth equally like martial arts sports as other disciplines, for example team games. In that view it is difficult to understand the lack of interest of the Bydgoszcz city government with regard to founding "Budo Centrum"- the place accessible for everyone interested in martial arts. It needs to be mentioned that Budo Centrum project was created by students of the University of Kazimierz Wielki in Bydgoszcz and was introduced to the city government in 2011. Since that time the warm up gym for team games, next to the „Łuczniczka", has been built, despite the fact that, for example, basketball has not achieved any international success despite good organizational management- European Championship.

Sports results in Bydgoszcz has showed so far that only in wrestling (the group that has shown in research the smallest dynamics of changes) there has been a player at the highest international level (Wilczyńska, Drumińska, 2014).

Conclusions

1) Despite the development shown in absolute numbers and percentages, the expansion of martial arts among youth in Bydgoszcz cannot be clearly confirmed.

2) The proceeding of assimilation processes of researched martial arts should be monitored by city of Bydgoszcz educational authorities, especially with paying special attention to achieved sports results and the possibility to continue career after graduation.

References

BŁACH, W., PUJSZO, R., PYSKIR, M., ADAM M. Kontrola postawy ciała zawodniczek judo (badania pilotażowe). *Research yearbook*. 2005, 11, pp. 30-36.

BUJAK, Z. Rozwój fizyczny i sprawność fizyczna młodych osób trenujących teakwondo. *Współczesne kierunki rozwoju kultury fizycznej w formacjach obronnych*. 2000. 5, pp. 39-45.

CAPRANICA, L., CHIODO, S., CORTIS, C., CORRADO, L., AMMENDOLIA, A., TESSITORE, A. Scientific Approaches to Olympic Taekwondo: Research Trends. *IDO – Movement for Culture*. 2010, 10(1), pp. 75-79.

CHRUŚCIŃSKI, G. Koncepcja wieloletniego programu szkolenia dzieci i młodzieży w hokeju na lodzie w Polsce. *Rocznik Naukowy AWFiS Gdańsk*. 2013, pp. 96-100.

CIESZCZYK, P., EIDER, J. Klasy i szkoły sportowe w Szczecinie i województwie zachodniopomorskim. *Zeszyty Naukowe. Prace Instytutu Kultury Fizycznej. Uniwersytet Szczeciński*. 2005, (22), pp. 424.

CYNARSKI, W.J., BERDEL, B. Warsztat pracy instruktora sztuk walki jako nauczyciela kultury fizycznej – uwagi ogólne. *Roczniki Naukowe WSP Rzeszów*. 2000, (17), pp. 128–131.

CYNARSKI, W. *Teoria i praktyka dalekowschodnich sztuk walk w perspektywie europejskiej*. Wydawnictwo Uniwersytet Rzeszów, 2004, pp. 161.

DANILUK, A., KOPEĆ, A., RAJECKA, P. Czynniki warunkujące zachowania agresywne wśród młodzieży. *Journal of Health Science*. 2013, 3(13), pp. 280-293.

DEDYK, P., ŚMIETANKA B., MUELLER, M. *Monitoring w zakresie tworzenia, organizacji klas i szkół sportowych oraz szkół mistrzostwa sportowego*. Wydział Wspomagania i Strategii Edukacyjnej Kuratorium Oświaty, Opole. 2009, pp. 1-28.

EIDER, J. Olimpijczycy klubów sportowych województwa zachodnio pomorskiego na igrzyskach XXVIII Olimpiady-Ateny 2004. *Zeszyty Naukowe. Prace Instytutu Kultury Fizycznej. Uniwersytet Szczeciński*. 2005, 22(424), pp. 1-18.

GIERCZUK, D. Level of selected indicators of coordination motor abilities (cma) in greco-roman and freestyle wrestlers aged 13-14. *Pol. J. Sport Tourism*. 2008, 15, pp. 192-199.

JACZYNOWSKI, L., ŻYŚKO, J. Przekształcenia w systemie organizacyjnym kultury fizycznej w Polsce w dobie transformacji ustrojowej (sport i rekreacja), cz. I, *Kultura Fizyczna*.1994, (11-12), pp. 7-14.

JANKOWSKI, K., KOSIEWICZ, J., WANAT, S., ŻYŚKO, J. O przeobrażeniach systemowych w kulturze fizycznej i sporcie wyczynowym w Polsce. *Sport Wyczynowy*. 1996, (1-2), pp. 33-40.

KALINA, R.M., JAGIEŁŁO, W. *Zabawowe formy walki w wychowaniu fizycznym i treningu sportowym*. Wydawnictwo AWF Warszawa, 2000.

KALINA, R.M. *Przeciwdziałanie agresji, wykorzystanie sportu do zmniejszania agresywności*, Wyd., Polskie Towarzystwo Higieny Psychicznej, Warszawa,1991.

KLIMCZYK, M., KLIMCZYK, A., SMOLARZ, Ł., ŻUKOW, W. Special and physical fitness of footballers at age of 13. *Journal of Health Sciences*. 2013, 3(9), pp. 357-368.

KORZENIOWSKI, L.F. Securitologia. Nauka o bezpieczeństwie człowieka i organizacji społecznych. *European Association for Security Kraków*. 2008, pp. 308.

KOZDRAŚ, G. The martial art of judo as educational contents for children who living in an open society, Ido Movement for Culture. *Journal of Martial Arts Anthropology*, 2014, 14(1), pp. 20-28.

KRAWCZYŃSKI, M. Medical control of physical education and sport activity of children and adolescents. *Pediatria Polska*. 2007, 82(1), pp. 3-9.

LITWINIUK, A., CYNARSKI, W.J. Aikido jako sztuka walki i forma aktywności rekreacyjnej. [in:] Cynarski W.J., Obodyński K. (ed.) *Humanistyczna teoria sztuk i sportów walki – koncepcje i problemy*. Uniwersytet Rzeszowski. 2003, pp. 99-106.

LITWINIUK, A., DANILUK, A., CYNARSKI, W.J. Wpływ pozaszkolnych zajęć wf sztuki walki – aikido na poziom sprawności fizycznej młodzieży jako miernika zdrowia pozytywnego. [in:] Górniak K. (ed.) *Korektywa i kompensacja zaburzeń w rozwoju fizycznym dzieci i młodzieży*. PTNKF, AWF Warszawa. 2005, pp. 197-202.

PIWOWARSKI, J., KORZENIOWSKI, L. Przydatność dalekowschodnich koncepcji filozofii bezpieczeństwa dla funkcjonowania służb mundurowych. *Zeszyt Naukowy "Apeiron"*. 2011, pp. 6.

PUJSZO, R., KUŹMIŃSKA, A., PRZYBYLSKI, G., PYSKIR, M., PYSKIR, J., BANNACH, M., ADAM, M. The differences in chosen spirometric values of young judo competitors against of the control group as one of the patterns to the improvement the health of the young generation. *Ido Movement for Culture. Journal of Martial Arts Anthropology*. 2013; 13(4), pp. 16-24.

PUJSZO, R., SMARUJ, M., BŁACH, W. The Crampton index and the body postural control of judo competitors. *Journal of Combat Sports and Martial Arts*. 2012, 1(2), 3, pp. 27-33.

RAK, A. Sylwetki sportowe polskich olimpijczyków urodzonych na Kielecczyźnie. *Prace Naukowe Akademii im. Jana Długosza w Częstochowie*. 2011, 10, pp. 172-200.

SPIESZNY, M. Identyfikacja i poszukiwanie talentów. *Biuletyn Małopolskiego Związku Piłki Ręcznej*. Kraków. 2003, pp. 42-48.

STANKIEWICZ, B., DIX, B., NOWAKOWSKI, A., ŻUKOW, W. Cechy somatyczne i sprawność fizyczna ogólna zawodników Taekwondo Olimpijskiego. *Journal of Health Sciences*. 2013, 3(6), pp. 105-142.

WĄSIK, J. Wpływ ilości podejmowanych działań ofensywnych i defensywnych na rezultat walki sportowej w taekwon-do. *Prace Naukowe Akademii im. Jana Długosza w Częstochowie*. 2014, 3(1), pp. 141–147.

WILCZYŃSKA, S., DRUMIŃSKA, E. Informacje własne uzyskane wywiadem bezpośrednim lub drogą mailową. 2014.

WODECKI, K. Wybrane uwarunkowania rozwoju sportu w województwie piotrkowskim w latach 1975-1998 w świetle prasy regionalnej. *Prace Naukowe Akademii im. Jana Długosza w Częstochowie*. 2011,10, pp. 58-79.

ZIARKOWSKA, M. Tradycje olimpijskie w Zespole Szkół Rolnicze Centrum Kształcenia Ustawicznego w Pyrzycach. *Zeszyty Naukowe. Prace Instytutu Kultury Fizycznej. Uniwersytet Szczeciński*. 2009, 26(583), pp. 45-54.

INTERRELATIONSHIP BETWEEN COORDINATION MOTOR ABILITIES AND TECHNICAL ELEMENTS DURING THE FIRST YEAR OF JUDO TRAINING

Adam Maj[1], **Józef Drabik**[2], **Marek Adam**[3], **Mirosław Smaruj**[4]

Polish Judo Association[1]
Gdansk University of Physical Education and Sport, The Chair of Physical Education, The Unit of Health Promotion, Poland[2]
Gdansk University of Physical Education and Sport, The Chair of Sport, The Unit of Martial Arts, Poland[3]
Gdansk University of Physical Education and Sport, The Chair of Sport, The Unit of the Theory of Sport and Motorics, Poland[4]

Key words: judo, boys, coordination abilities, technique

Abstract

Aim: The aim of the present research was to determine the level of coordination motor abilities (CMAs) and their relationship to technical skills in the first year of judo training. It was assumed that there is a statistically significant correlation between the level of coordination abilities and the level and pace of acquisition of technical skills in judo.

Material and methods**:** Thirty one boys were the subjects in the study. The volume of training means applied was recorded in detail and the participants' progress in learning technical elements was registered. The following four CMAs were chosen for the purpose of the study: dynamic balance, gross body coordination, spatiotemporal orientation and choice reaction time. Technical elements mastered by the participants were registered in the observation form.

Results**:** Gross body coordination and spatiotemporal orientation were observed to hold the strongest relationship with the number of technical elements mastered by young athletes during a yearly cycle of judo training. The differences among subgroups with regard to these abilities sustained over the annual observation period and coincided with the differences in the number of technical elements mastered by the novice judo athletes.

Conclusions: It seems that the level of gross body coordination and spatiotemporal orientation could serve as key criteria for a division of the trained group into subgroups in order to enhance the effectiveness of technique teaching in judo.

Introduction

Coordination motor abilities (CMAs) provide the foundation for teaching and refining technique of movement as well as enhancing other motor abilities. They constitute a crucial component of sports training, particularly in disciplines with rich and complex technique such as artistic gymnastics, sports games or martial arts. High level of these abilities is critical for success in the above mentioned technical sports (Sadowski, Gierczuk, 2010).

The term 'sporting technique' (here: 'technique') has several similar yet distinctive meanings. Firstly, it may refer to a way a given movement is performed in sporting activity (correct, effective technique etc.). Alternatively, in its broader sense, it can be understood as a set of movement habits specific for particular sport and the skill to use them in a sports fight (extensive, broad technique etc.) (Czajkowski, 2005). Terms such as 'basic technique', 'individual technique' or 'situational technique' are also to be distinguished (Adam, 2007; Adam, Smaruj, Laskowski, 2014). Again Bompa (2009) assigns dual meaning to the term 'technique' saying that it may denote either a particular technical element (a movement structure that is included in the entire technique of a given sport) or a mode of execution of this element.

Technical competence in judo encompasses a wide range of technical elements with highly complex movement structure and the ability to link and combine them under the circumstances of judo bout. Naturally, this presupposes mastery of numerous basic technical elements such as unbalancing one's opponent (*kuzushi)*, moving and turning, taking postures (*shisei)*, or gripping the opponent's *judogi* (Kano, 1986).

Judo, like fencing and other combat sports, belongs to the group of sports with multiple open sensory-motor habits in which motor adaptability plays a crucial role (Czajkowski, 2005). As such it demands abilities connected with responding to different stimuli in unstable and unpredictable environment. The choice of a proper course of action, adaptation to constantly changing situations (i.e. to the opponent's moves), making decisions under time pressure, which are all inherent in judo, undeniably require high CMAs level. Therefore acquiring possibly the largest number of technical skills and skill elements necessary both for attack and defense, linking these skills and applying them in a judo match should be inseparably bound up with a high level of CMAs (Gracz, Sankowski,1995).

CMAs of paramount importance in judo are as follows: diversification of movements, spatial orientation, balance, reaction time, connecting and restructuring (adaptation) of movements (Kühn, 1985). It is emphasized that correct technique of combat sports (i.e. its accuracy, speed, dynamics and variability) relies on different combinations of these abilities. For example, technical accuracy rests upon such abilities as maintaining balance, differentiating, linking and adaptation of movements, whereas swift execution of a given technique involves quick reaction time, ability to connect movements and rythmisation (Raczek et al., 1998).

It seems crucial at the preliminary stage of sports training process in judo to assess the CMAs level of each individual and their developmental pace on the one hand, and the pace and the level of advancement in mastering technical elements on the other so that at further stages of the process it is possible to move

on to a higher qualitative level. Furthermore the assessment of the CMAs level helps to identify weaknesses and strengths of an athlete within the area of coordination, which is also important from the point of view of evolving their individual fighting styles. Finally, a high level of CMAs facilitates learning new movements and at the same time enables athletes to use more effectively technical and technical-tactical skills already acquired. Therefore a training process that takes into account broad and intensified refinement of motor coordination control seems to hold a considerable potential for improvement of technical skills and, consequently, sports success of young athletes (Drid et al., 2010).

Regarding CMAs as a vital part of training process in judo the aim of the present research was to determine the level of these abilities and their relationship to technical skills in the first year of judo training. It was assumed that there is a statistically significant correlation between the level of coordination abilities and the level and pace of acquisition of technical skills in judo.

Material and methods

Thirty one boys took part in the study. All of them started training judo in local Sports Club in 1997 (Tab. 1). The scope of research covered a yearly training cycle. The volume of training means applied was recorded in detail and the participants' progress in learning technical elements was registered.

Tab. 1. Characteristics of the group under research

Indices	Test1 n=31		Test 2 n=31		Test 3 n= 31		Test 4 n= 31	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Calendar age	10.9	1.08	11.5	1.09	11.7	1.1	11.9	1.08
Body mass	40.0	9.18	41.1	9.2	43.0	9.61	45.4	10.93
Body height	145.8	10.03	149.2	10.26	150.0	10.19	151.8	10.64
BMI	18.6	2.47	18.2	2.22	18.9	2.64	19.4	2.73

Chosen CMAs were examined in the participants of the study four times:

- at the beginning of the calendar year (January 1997 – Assessment Session 1),
- at the end of the school year (June 1997 – Assessment Session 2),
- after the holiday break (September 1997 – Assessment Session - 3),
- and finally in January 1998. (Assessment Session 4)

Each time all the measurements were taken within three consecutive training sessions in the afternoon hours, each preceded by a warm-up.
The following four CMAs were chosen for the purpose of the study: dynamic balance, gross body coordination, spatiotemporal orientation and choice reaction time. They are probably the best recognized coordination abilities and at the same time characteristic of judo.

For assessment of dynamic balance the participants marched on rosette in Měkota test. Gross body coordination was evaluated with the use of an agility slalom run under the crossbar (Mekota, Blahus, 1983). To assess spatiotemporal orientation the participants ran to colorful balls (Jung, 1985). Choice reaction was measured with a MRK 433 apparatus and the number of correct reactions and their times were registered. The obtained results were converted with the use of t-scale. To evaluate the results received in particular tests the three-sigma rule was applied. The following five-level assessment scale was used for the need of the research (Szczotka, 1976):

- very high 70-100,
- high 60-70,
- average 40-60,
- poor 40-30,
- very poor below 30 points.

Technical elements mastered by the subjects were registered in the observation form. The ability to demonstrate a given element with confidence and ease in simple conditions, i.e. without the opponent's resistance, was taken as the criterion for assessing the degree of proficiency in it. Classification, spelling and manner of executing technical elements were based on the following sources: Inokuma and Sato (1982), Sugai (1991), Yamashita (1991), Gibert and Flamand (1993), Swain and Yeoh (1994), Kashiwazaki and Nakanishi (1995), Adams and Ferrie (1996). According to the same sources postures, bows, moving and turning, grips, falls and *kuzushi* (unbalancing one's opponent) are to be considered as technical elements.

At the end of the educational experiment the boys were observed by holders of level 2 certificate in coaching judo, who had not previously worked with the examined group, with the aim to assess their individual proficiency in performing the technical elements they had been introduced to. The boys performed technical elements from the range of techniques required for the Kyu grade according to Gokyo –No – Kaisetsu (Mifune, 1967) with a partner of their own choice (*Uke*). Then the coaches ranked the boys according to the level of proficiency they had demonstrated. In order to verify the assumption posed in the introduction of this paper it was decided to carry out statistical analysis for the entire group of subjects as well as for each individual; the subjects were divided into subgroups and a statistical method called cluster analysis (Statistica 6.0) was applied. Arithmetic means, standard deviation, correlation coefficients and levels of statistical significance between means were calculated. Duncan's Test was applied to verify the significant differences between group means. Using the complete linkage method (Figure 1) it was possible to distinguish 7 clusters of participants who were similar in terms of achieved results in all four CMAs assessment sessions (taking 60 units as a linkage distance).
They are as follows:

1) Cluster including only Subject 20
2) Cluster including Subjects 22, 17 and 2
3) Cluster including Subjects 15, 16, 14, 26, 29, 13 and 11
4) Cluster including Subjects 9, 30, 6 and 3
5) Cluster including only Subject 21
6) Cluster including Subjects 25, 28, 27, 19, 7 and 4
7) Cluster including Subjects 23, 18, 10, 12, 24, 8, 5, 31and 1

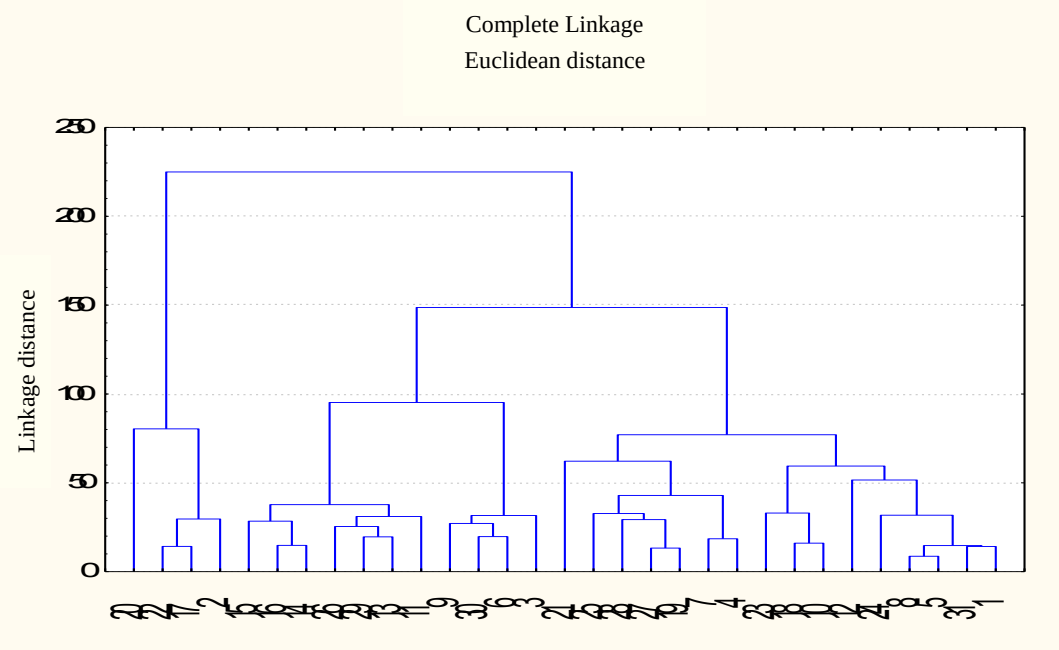


Fig. 1. Grouping of boys with the complete linkage method

In case of unweighted pair - group average method (Fig. 2) also 7 distinct clusters were obtained (taking 45 units as a linkage distance). They are as follows:

1) Cluster including Competitors 9, 30, 6 and 3
2) Cluster including only Competitor 20
3) Cluster including Competitors 22, 17 and 2
4) Cluster including Competitors 16, 14, 15, 26, 29, 13 and 11
5) Cluster including only Competitor 21
6) Cluster including Competitors 25, 28, 27, 19, 7 and 4
7) Cluster including Competitors 12, 23, 18, 10, 24, 31, 8, 5 and 1

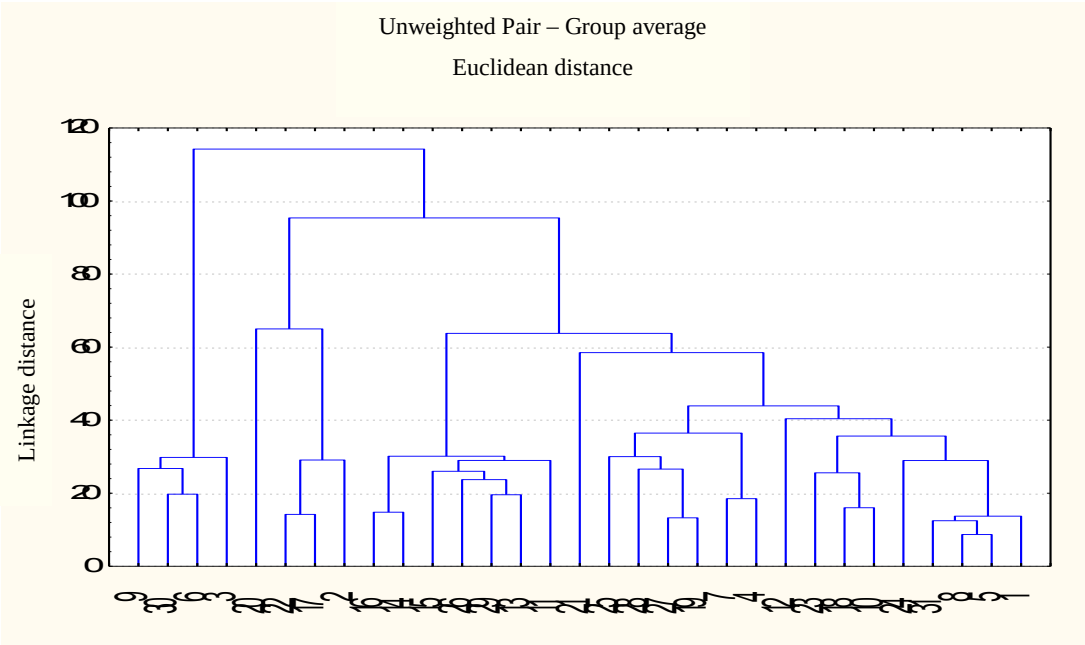


Fig. 2. Grouping of boys with unweighted pair - group average method

As can be observed, both foregoing methods gave identical results. Subjects 20 and 21 are individuals who, with reference to the achieved results, differed from the rest of the group. Others demonstrated similarity within particular clusters.

Results

Tab. 2 and Fig. 3 show rank correlation between technical elements (number of acquired elements and degree of their mastery) with the level of coordination abilities (amount of points according to the t-scale of studied abilities). Spearman's rank correlation demonstrated a high statistical relationship of the examined variables ($p<0.001$).

Tab. 2. Rank correlation between technical elements with the level of coordination abilities

	Number of technical elements	Degree of mastery of technical elements
CMA level	0.81815	0.74677
Number of technical elements	-	0.83266

The subject representing Cluster 1 (Fig. 4) mastered the greatest number of technical elements (261). The number of technical elements mastered by the subjects from in 2 was much above average (199.7) and so was the case with the subjects in Cluster 6 (176.8). The subjects in Clusters 4 and 5 learned similar average number of technical elements and were close to the average of the entire group. The subjects in Clusters 3 and 7 acquired 141.85 elements and 135.9 elements respectively, which generally represented the average of the whole group. The subject belonging to Cluster 5 mastered relatively small number of technical elements (97). The lowest number of technical elements was mastered by boys in Cluster 4 - 71.5 on average.

The analysis of the relationships between the number of acquired technical elements and the level of particular coordination abilities (Fig. 5) showed that the highest correlation exists between the number of acquired technical elements and gross body coordination ($p<0.001$ in Assessment Sessions 2 and 4). Then followed spatiotemporal orientation with slightly lower statistical relationship in three CMAs Assessment Sessions ($p<0.001$ in Assessment Session 2 and $p<0.05$ in Assessment Sessions 3 and 4). A significant relationship between dynamic balance and the number of mastered technical elements was revealed only in Assessment Session 2 ($p<0.05$). There was no significant correlation between choice reaction and the number of learned elements in the results obtained in any of the four assessment sessions.

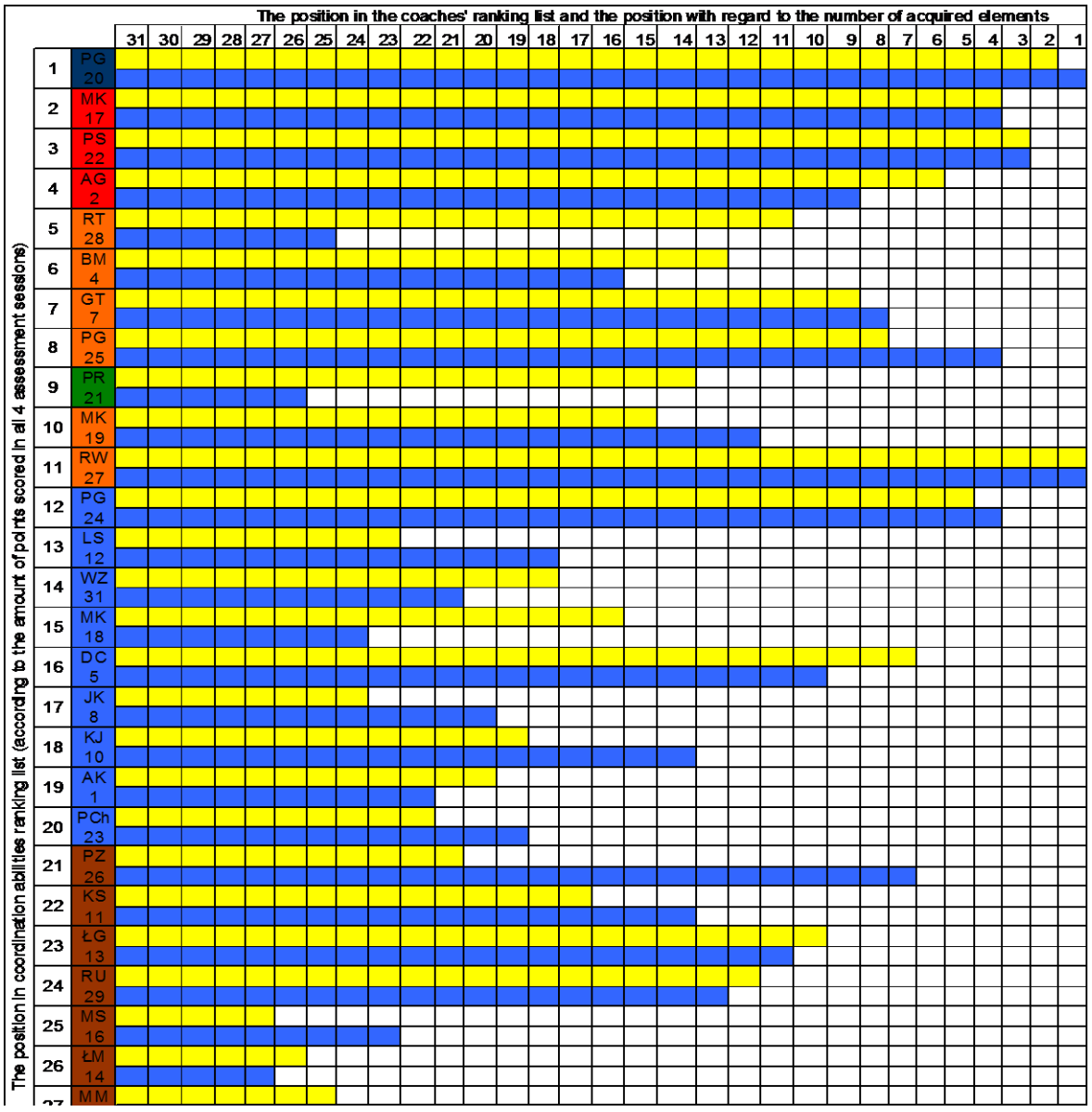


Fig. 3. Rank correlation between technical elements with the level of coordination abilities

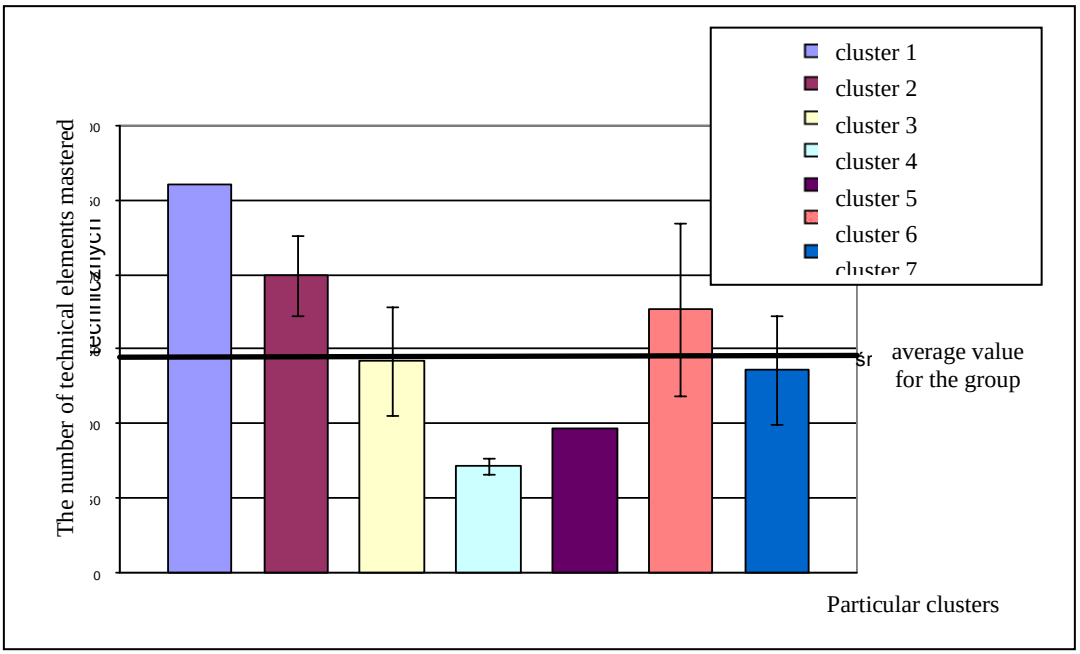
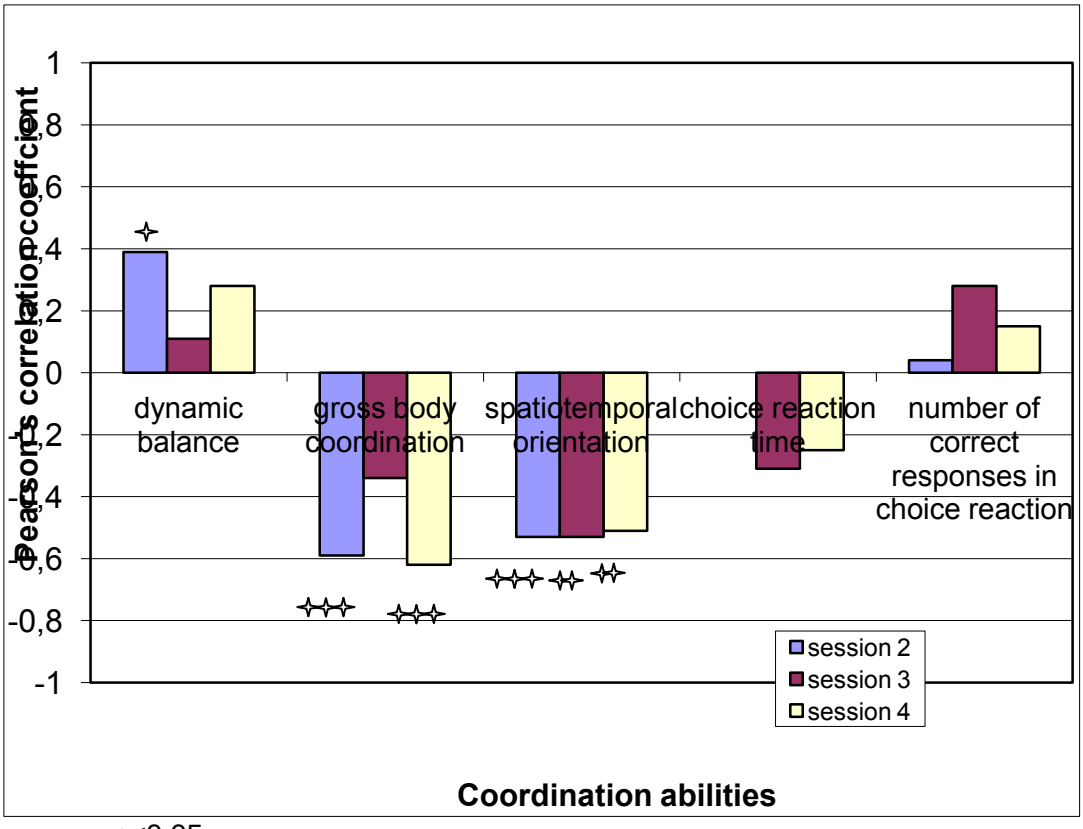


Fig. 4. Average values for the number of technical elements mastered



- p<0.05,
- p<0.01,
- p<0.001

Fig. 5. Interrelationship between the number of mastered technical elements and coordination abilities

Discussion

From among the coordination motor abilities under research gross body coordination and spatiotemporal orientation were observed to hold the strongest relationship with the number of technical elements mastered by young athletes during a yearly cycle of judo training.

It seems that the level of gross body coordination and spatiotemporal orientation could serve as key criteria for a division of the trained group into subgroups in order to enhance the effectiveness of technique teaching. The differences among subgroups with regard to these abilities sustained over the annual observation period and coincided with the differences in the number of technical elements mastered by the novice judo athletes.

However, contrary to the results obtained by Sadowski and Gierczuk (2009), which confirmed a strong correlation between dynamic balance and technical elements in wrestling, the results of the present research showed a low relation between the number of mastered technical elements and dynamic balance (significant relation was observed only in one assessment session). Balance is emphasized as an important coordination ability in judo. Interestingly, some other research on body stability revealed that judo competitors possess increased sensitivity thresholds of sensory system and that there is a larger zone of unresponsiveness of the nervous system to the loss of balance in them (Golema, 1993). They react only when a threat of balance is taking place. Findings by Golema (1987) indicated that instability of competitors' standing posture reflects their high sports potential. In a judo fight a competitor is striving to keep their balance in conditions of constant disturbances resulting from forces, of which the opponent and the player themselves are the source (e.g. while attempting to execute a throw). Judo competitors frequently have to keep balance very close to the edge of stability. This was confirmed by Błach (2001) whose findings also showed that the range of body swinging in judokas achieved its maximum on the edge of stability. Nazarewicz (1983) found that competitors from the Polish national judo team were able to stabilize body swingings caused by outside interferences in a shorter time than judo athletes beginning their sporting career, which might prove that judo training enhances the level of this ability. On the other hand, while discussing research findings on human balance system, it should be taken into account that human body may adapt to measurement methods of postural control (Pujszo et al., 2009).

Possibly, the test applied in this study did not measure the specific kind of balance inherent in judo. In spite of the fact that the test employed here did not reveal any significant relationships of this motor ability with the number of mastered technical elements, it is worth emphasizing that the present study confirmed close connections between balance and other coordination abilities, which was also demonstrated in Bajdziński and Starosta's (2002) findings. Both authors stressed that the ability to maintain balance in standing posture is probably conditioned by other CMAs.

No significant relationships between choice reaction and the number of mastered technical elements were revealed. Speed and adequacy of choice reaction most probably influence execution of acquired technical elements under the circumstances of sports fight, but in this study it did not have a vital connection with mastering these elements at the initial stage of judo training.

Considering the relations between coordination abilities studied in this

research and the number of technical elements (including *kuzushi*, postures, grips and ways of moving and turning) and the degree of their mastery it is possible to confirm the hypothesis that there is indeed a statistically significant relationship between them. Above all, significant correlations with physical gross body coordination and spatiotemporal orientation were revealed. The best results were achieved by boys with the highest CMAs level. They also did not have problems with learning technical elements posing the highest coordination requirements, unlike those ones whose level of the studied abilities was low.

Conclusions

The observations that have been made in the course of this research enable the authors to express the following conclusions:

1) Assessment of the initial level of CMAs, notably of gross body coordination and spatiotemporal orientation, may improve effectiveness of teaching technical elements at preliminary stages of judo training.

2) The test to estimate gross body coordination applied in the study can constitute an important diagnostic tool at the stage of preliminary training.

3) Structuring technical preparation around the CMAs level at the initial stage of training may substantially contribute to the optimization of technique teaching.

References

ADAM, M. Effectiveness of techniques performed by outstanding judo competitors. *Research Yearbook*. 2007,13(2), pp. 216-220.

ADAM, M., SMARUJ, M., LASKOWSKI, R.A technical and tactical profile of the double olympic judo champion: a case study. *International Journal of Sports Science & Coaching*. 2014, 9(1), pp. 123-138.

ADAMS, N. FERRIE, E. *Tai – otoshi. Judo Masterclass Techniques*. London: Ippon Books. 1996.

BAJDZIŃSKI, M., STAROSTA, W. *Kinestetyczne różnicowanie ruchu i jego uwarunkowania*. Instytut Sportu AWF, Warszawa; Instytut Kultury Fizycznej AWF, Gorzów Wlkp. 2002.

BŁACH, W. Amplituda maksymalnych swobodnych wychyleń ciała zawodników dżudo i studentów AWF w płaszczyźnie strzałkowej. *Human Movement*. AWF Wrocław PTNKF. 2001, 2(4), pp. 82-86.

BOMPA, T. Periodization. Theory and methodology of training. 5th ed. Champaign IL: *Human Kinetics*.2009.

CZAJKOWSKI, Z. *Understanding Fencing: The Unity of Theory and Practice*. New York: SKA SwordPlay Books; 2005.

DRID, P., BALA, S., OBADOV, S. The differences in motor and cognitive abilities between the more and less successful 12-14 year-old judokas. *Archives of Budo*. 2010, 6(2), pp. 95-100.

GIBERT, J., Flamand, J. *Judo champion: les techniques du success au sol*. Paris: Solar.1993.

GOLEMA, M. Równowaga ciała u człowieka [in:] Bober T, editor. *Biomechanika. Wybrane zagadnienia*. AWF Wrocław.1993.
GOLEMA, M. Stabilność pozycji stojącej. *Studia i Monografie*. AWF Wrocław. 1987, pp. 17.
GRACZ, J., SANKOWSKI, T. *Psychologia Sportu*. AWF Poznań: Seria Podręczniki 44. 1995.
INOKUMA, J., SATO, N. *Best Judo*. Tokyo, New York, San Francisco: Kodansha International Ltd. 1982.
JUNG, R. *Kontrollübungen zur Erfasung Koordinativer Fähigheiten im Schulsport*. Universitat Greisfald: E-M-A Universitat. 1985.
KANO, J. *Kodokan Judo*. Tokyo, New York, London: Kadansha International Ltd. 1986.
KASHIWAZAKI, K., Nakanishi H. *Judo Attacking. A guide to combinations and counters*. London: Ippon Books. 1995.
KÜHN, J. Untersuchungen zur technisch-koordinativen Vervollkommnung der Kampfhandlungen Junior. *Ringer Theorie und Praxis der Körperkultur* .11.1985.
MEKOTA, K., BLAHUS, P. *Motoricke testy v telesne vychowe*. Praha: SPN. 1983.
MIFUNE, K. Judo: *Kampf und Technik*. Frankfurt am Main: Budo – Verlag. 1967.
NAZAREWICZ, J. *Biomechaniczna charakterystyka stabilności ciała po zakłóceniach mechanicznych u zawodników judo*. AWF Wrocław. 1983.
PUJSZO, R., SMARUJ, M., BŁACH, W. Influence of the time of the day and the effect of adaptation on the control of body posture measurement. *Wellness and prosperity in different phases of life*. [in:] Olchowik G., editor. NeuroCentrum, 2009, pp. 303-312.
RACZEK, J., MYNARSKI, W., LJACH, W. Teoretyczno-empiryczne podstawy kształtowania i diagnozowania koordynacyjnych zdolności motorycznych. AWF Katowice. 1998.
SADOWSKI, J., GIERCZUK, D. Correlations between selected coordination motor abilities and technical skills of Greco-Roman wrestlers aged 14-15. *Archives of Budo*. 2009, 5, pp. 35-39.
SADOWSKI, J., GIERCZUK, D. Effectiveness of coordination training in technical preparation of freestyle wrestlers at various levels of sports advancement. *Archives of Budo*. 2010, 6(3), pp. 143-148.
SUGAI H. *Uchimata. Judo Masterclass Techniques*. London: Ippon Books. 1991.
SZCZOTKA, F. *Elementarne metody statystyki i ich zastosowanie w naukach o wychowaniu fizycznym*. 4th ed. AWF Warszawa. 1976.
SWAIN, M., YEOH, O. *Ashiwaza II. Judo Masterclass Techniques*. London: Ippon Books. 1994.
YAMASHITA, Y. *The Fighting Spirit of Judo. The techniques and spirit to win*. London: Ippon Books. 1991.

CONSUMERS´CRITERIA FOR MEALS SELECTION IN A CAFETERIA IN THE CZECH REPUBLIC

Jana Juříková, Martina Pluháčková

Department of Kinesiology, Faculty of Sports Studies, Masaryk University, Brno, Czech Republic

Key words: meal, appetite, taste, smell, price, consumer

Abstract

It was surveyed how consumers choose their lunch in the cafeteria. The survey was conducted in The Military University of Ground Forces in Vyškov. The questionnaire was distributed to the consumers, students of military and civil department, their teachers (soldiers and civil employees).

The respondents choose their meal according to their instant appetite. The food appearance is not important for the majority of soldiers and military students, but for the majority of civil students and their teachers´ appearance of food is always important. In cafés and restaurants smell and appearance are the most important for both military and civilian students, while for both military and civilian teacher the most important is price. Intensity of work that a person expects after lunch affects the choice of lunch at military students only sometimes, for military and civilian teachers and civilian students rarely or never. All groups of respondents agreed that they sometimes choose the unpopular meal.

Introduction

Ever since childhood, in the opinion of today's consumers contradiction, that the meals are either healthy or tasty. Compliance between these two aspects is needed. A considerable part of the population eats during the week in catering establishments. It is important for the nutrition of college students the quality of food in cafeterias, especially because college students are a group of mentally working people with extraordinary mental stress found in the still unfinished physical and intellectual development.

A considerable part of the population eats in a cafeteria during the week. The important thing about this way of boarding is, that the diet which they consume should be not only balanced and rich nutritionally, but also tasty. Consumers are also interested in the appearance of the meal on the plate and last but not least in the culture of catering.

Nutrition of selected population groups

In the 20th century in developed countries each new generation is usually slightly higher than the previous generation. The generations of adults in past centuries had smaller stature and lower body weight. The reasons for these changes are better medical care and higher socio-economic level in the late 20th century. Growth is a complex biological process that is regulated by multiple factors. These factors include genetic basis, nutrient intake, physical activity, age, gender, endocrine balance. All these factors affect human height and structure of its body. It is therefore important, especially in young children, to watch their weight and height in relation to their age. An important role is played by environmental factors such as hygiene, immunization, mental stress, autoagressive behavior and other habits (Hrstková et al., 2003).

Nutrition of college students

University students form a particular social group, determined by preparation for a future career. Prevailing activities are focused mainly on the area of the cognitive skills and learning professional competence. The only activity that affects the biological area of the personality of students are physical and sports education. The aim of this education is to teach students to understand, that a lifelong physical activity is an important key factor of its active physical and mental health. The work of many university teachers (Cepková, 2003; Havranová, 2003; Korček, 2004a; Urvayová, 1999) has repeatedly informed about the changing of the way of life of college students. Their way of life can be characterized as hypokinetic, what means a life characterized by a lack of physical activity, poor structure of the the activities and minimizing of physical effort (Hrčka, 2002; Rais, 2004; Korček, 2004b).

University students represent a distinctive population group of mentally working people aged 18 to 26 years with specific health and nutritional problems. Because of the study in a high school, many of them first pass out of the scope of the family, which greatly affects and sometimes completely changes their way of life. In comparison with studying in secondary schools the cognitive load increases, in the exam period the students may be exposed to stressful situations.

Nutrition of students is according Štefániková et al. (1995)at a relatively lower energy cost too rich on energy, with too much salt, qualitatively imbalanced with too much fat, animal proteins, and lack of fibre, vitamin C and E, magnesium, calcium and iron. Even at a lower total carbohydrate rate intake of sucrose is often increased. On the contrary, the consumption of fresh vegetables and fruits is very low (Bernasovská et al., 1999; Janeczko et Schlegel-Zawadzka, 2001). Inappropriate dietary habits explain students themselves as lack of time (Szárazová et al., 2002), or their own indiscipline. They do not consider lack of knowledge about the basics of rational nutrition as a reason for their inappropriate dietary habits.

Nutrition of working people

One of the main factors of external environment which has effect to human organism and to keeping its good health condition, is rational nutrition. It has

to correspond to the need of energy and nutrients without which man could not fully use his genetically given possibilities of physical and mental development or maintain the good health condition during the whole life. The correct nutrition does not mean only optimal satisfaction of needs of an organism in terms of energy and nutrients, but it also takes into account the distribution of meals during the day and the choice of food intended for rapid consumption so that each basic meal contain in addition to amount of energy also all necessary components like proteins, carbohydrates, fats, vitamins and minerals. The nutrition should contain the fibre, which increases the volume of food and facilitates motor activity of the digestive system (Hasik et Gawęcki, 2000).

Nutrition of working people must be divided by the character of the work, by the age and by the body type (Pokorný et Pánek, 1996). Very important is also dividing by gender. LaChance found that women who are on reduction diet have the lack of some minerals and vitamins (Pánek et al., 2002). On the contrary, people with the lack of physical activity or with improper nutrition are often obese (Hlúbik et al., 2000; Hlúbik, 1998). It is necessary to respect the compensation of energy balance. Middle aged man or older should maintain adequate body weight, approximately the one like in the young. National and international organizations are trying to determine guidelines for energy needs of man reflecting age, gender, body weight, physiological state and especially the type of work (Hasik et Gawęcki, 2000).

Nutrition of soldiers

Nutrition of soldiers should be the same as nutrition of civil employees. Nutrition of special combat and supply units must be customized to their needs and it is close to the nutrition of power and endurance athletes. The need of energy of soldiers and athletes is very different according to the nature of activity (Pánek et al., 2002).

The metabolism of human organism is subject to the most important changes because of the influence of physical work. Depending on the intensity and duration of increased exertion the energy expenditure may increase by 100% or more. To zoom to the needs of the troops it is necessary to find out energy expenditure of soldiers, activities that they do during military practise and everyday activities, too.

Material and methods

There were conducted a research about criteria of meals selection in a cafeterias in The Military University of Ground Forces in Vyškov. The questionnaire was distributed to the consumers, students of military department (102 people) and students of civil department (137 people) and to their teachers – soldiers (109 people) and teachers – civil employees (103 people). The questionnaire was anonymous and there were 15 questions about popularity of different types of meals, appropriate side dishes to individual meals and about criteria of meals selection. There is order system in the cafeteria, there is no possibility to see offered meals. For the most credible answers there was used the method of combined interrogation – oral and written, respondent filled the questionnaire personally with the presence of questioner. The questionnaire

was made by the Department of Economics and Food Hygiene of Military University of Ground Forces in Vyškov in cooperation with University of Chemical Technology in Prague. There are answers to some questions in this thesis. Groups of respondents are shown in Tab. 1.

Tab. 1. Summary of respondents

Group of respondents	Number of respondents
Students of military department	102
Students of civil department	137
Students - total	239 (99 women)
Teachers - soldiers	103
Teachers – civil employees	109
Teachers - total	212 (53 woman)
Total	451

Results and discussion

Answers to questions were evaluated and summarized in tables in the form of absolute frequencies. Some the most frequent answers were also processed graphically. For illustrative graphical representation, the absolute frequency is converted to the relative frequency in % rel. answering respondents, now it is possible to compare individual columns.

Question 1: How do you decide when you choosing your meal in a cafeteria? (The most important factor is marked as 1, at least important factor is marked by the highest number.)

a) Appearance of food
b) Actual taste
c) Medical reasons, correct nutrition
d) There is no other choice
e) Other reasons

Answers to this question are shown in Tab. 2 and Fig. 1.

Tab. 2. Criteria influencing selection of meal in cafeteria

Order of question	Respondents	Type of answer				
		a	b	c	d	e
1	Students of military department	7	69	15	6	5
	Students of civil department	13	82	25	7	10
	Teachers - soldiers	8	68	13	11	3
	Teachers – civil employees	9	66	27	5	2
2	Students of military department	28	16	27	18	2
	Students of civil department	34	29	36	22	1
	Teachers - soldiers	28	13	32	13	0
	Teachers – civil employees	36	25	29	7	1
	Students of military department	40	6	23	19	1
	Students of civil department	33	17	38	32	2

3	Teachers - soldiers	27	12	27	19	0
	Teachers – civil employees	34	13	28	20	0
4	Students of military department	12	0	27	50	0
	Students of civil department	34	2	23	57	3
	Teachers - soldiers	21	1	17	45	1
	Teachers – civil employees	16	1	14	61	2
5	Students of military department	2	5	2	0	2
	Students of civil department	5	1	1	3	14
	Teachers - soldiers	1	0	2	0	2
	Teachers – civil employees	2	1	0	1	0

From the Tab. 2 it is clearly evident that most respondents from all groups decided in the meals selection by the immediate taste. Option e) "other reasons" featured only those respondents who did not want to eat certain foods, and therefore they had to choose from dishes without this certain foods, such as red meat, i. e. beef and pork meat, any meat (vegetarians) or conversely favoured some of them attractive side dish, and then had to choose meal with preferred side dish.

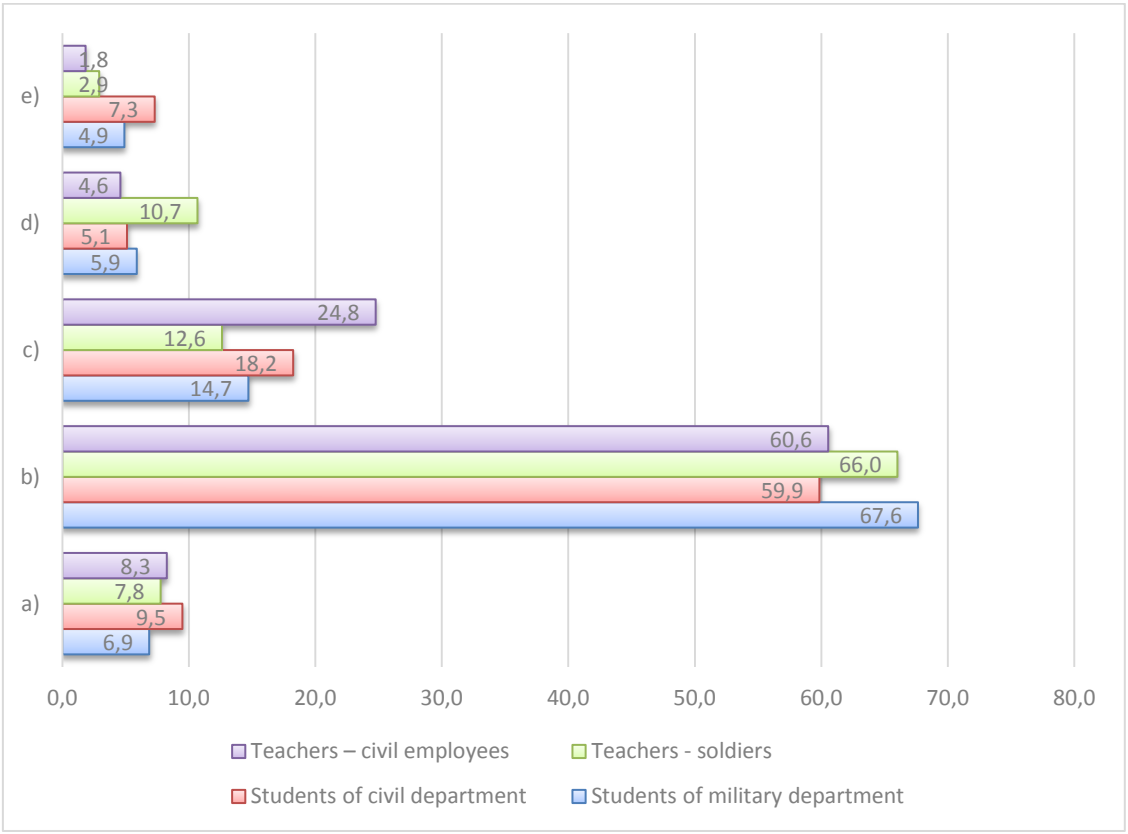


Fig. 1. The most important factor for meals selection in individual groups of respondents

As we can see from Fig. 1, majority of respondents (67,6% of students of military departments, 59.9 % of students of civil departments, 66,0% of teacher - soldiers and 60,6% of teachers – civil employees) choose their meal according to their actual taste.

According to work of Kamphuis et al. (2015) there are healthiness, taste, price, and travel time to the grocery store proved to significantly influence older adults´ meal decisions. Healthiness was the most important attribute for all of the participants. In my research health food was on second place behind the actual taste of the choosing person.

Question 2: How important is the appearance of the meal? Is it significant factor for meals selection? (Check one, for you the most important, answer.)

a) Always
b) Mostly
c) Often
d) It helps with meals selection, but it is not significantly important
e) It has no importance

Answers to this question are shown in Tab. 3 and Fig. 2.

Tab. 3. Influence of meal appearance to respondent´s choice

Respondents	Type of answer				
	a	b	c	d	e
Students of military department	16	29	12	40	5
Students of civil department	22	44	29	38	4
Teachers - soldiers	19	30	16	35	3
Teachers – civil employees	18	38	30	23	0

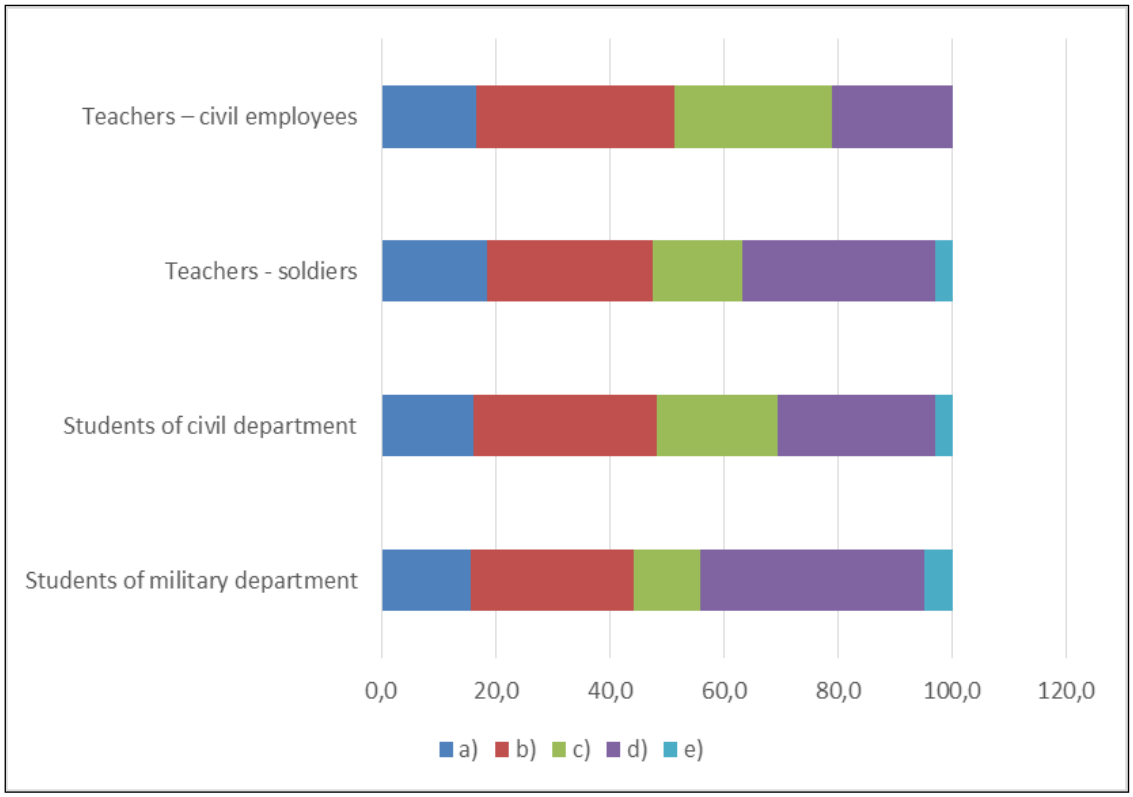


Fig. 2. Influence of meal appearance to respondent´s choice

In the contrary to the past question, in this question all groups of respondents did not answer consistently. The appearance of food is of great importance for the majority of teachers – civil employees of the Military University of Ground Forces and for students of civil department. For the professional soldiers (teachers – soldiers) and future professional soldiers (students of military department) was the appearance of food not very important and rather helps in decision making.

Question 3: How do you choose meals in diner or restaurant?
a) Appearance
b) Smell and taste
c) The size of portion
d) Price
e) Principles of healthy nutrition
f) Others
Answers to this question are summarized in Tab. 4.

Tab. 4. Criteria for meals selection in a diner or in a restaurant

Respondents	Type of answer					
	a	b	c	d	e	f
Students of military department	46	69	58	66	43	16
Students of civil department	39	71	36	62	39	10
Teachers - soldiers	57	63	65	69	41	9
Teachers – civil employees	62	67	36	72	49	8

The table shows that for both groups of students (students of civil and military department) scent and flavour are the most important factors for selection of food in the diner or restaurant. For teachers at the Military University of the Ground Forces price is the most important factor for selection of lunch in the bistro or restaurant. Several diners reported the variant f) "other". Most wrote: "According to the name of the meal in a menu." Nowadays it is in some restaurants and cafeterias possible to see meals in advance. If it is not possible to see the food in advance, the name of the meal in menu is very important, as discovered also by Kadlecová (2000), Pokorný et al. (2001) and Juříková et al. (2001).

Question 4: Is physical demands of your afternoon work the important factor for lunch selection in a cafeteria? (Check one answer.)
a) Always
b) Mostly
c) Often
d) Sometimes
e) Rarely or never

Answers to this question are shown in Tab. 5 and Fig. 3.

Tab. 5. Influence of physical demands of afternoon work to lunch selection in a cafeteria

Respondents	Type of answer				
	a	b	c	d	e
Students of military department	8	19	7	37	31
Students of civil department	3	7	8	52	67
Teachers - soldiers	5	10	12	31	45
Teachers – civil employees	5	9	6	27	62

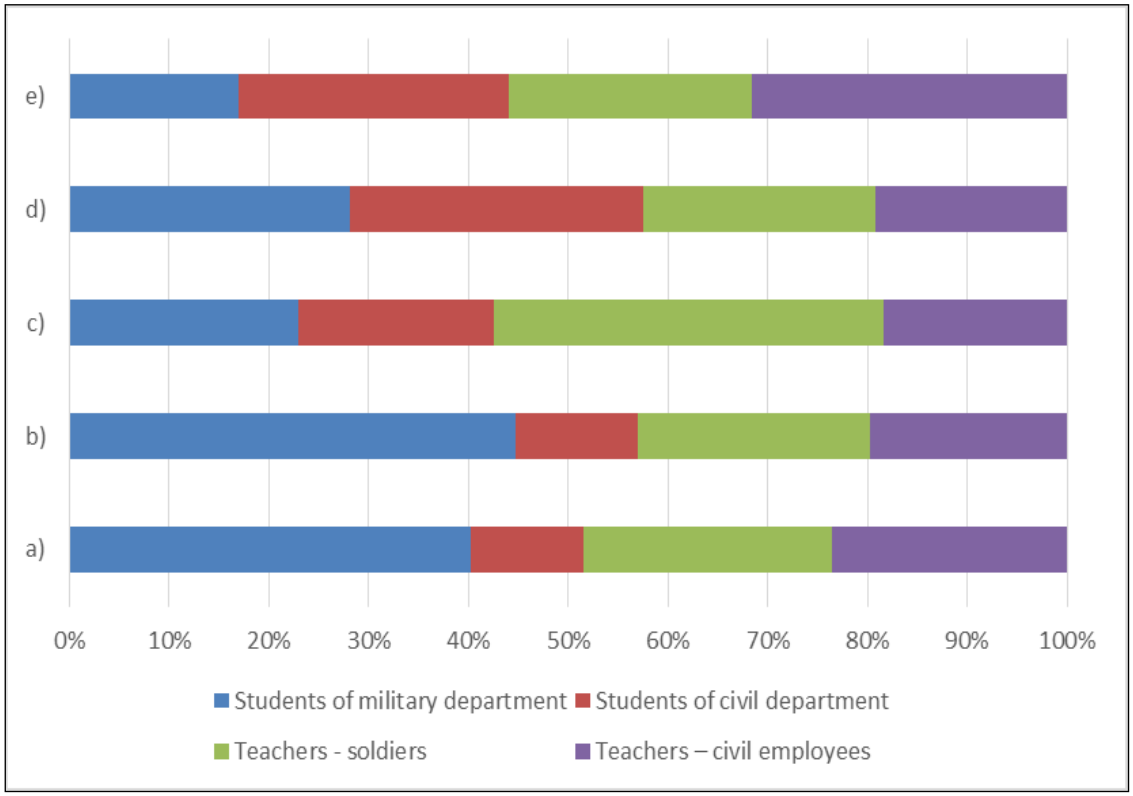


Fig. 3. Influence of physical demands of afternoon work to lunch selection in a cafeteria

Only for students of military studies, the intensity of physical work in the afternoon sometimes affects the choice of lunch for the others rarely or never. This is because of the physical demands of military training is much lower than it used to in the past.

Question 5: Are you going to choose unknown meal in a cafeteria or restaurant?

a) no

b) yes – if so, why? Are you tempted by:

c) unknown name

d) unusual combination of ingredients
e) new appearance
f) you want to try something new

Answers are shown in Tab. 6 and Fig. 4.

Tab. 6. Criteria influencing selection of unknown meal in a diner or in a restaurant

Respondents	Type of answer					
	a) no	b) yes	c	d	e	f
Students of military department	20	82	1	12	4	73
Students of civil department	18	118	9	10	2	106
Teachers - soldiers	28	75	3	9	1	70
Teachers – civil employees	32	79	0	5	4	77

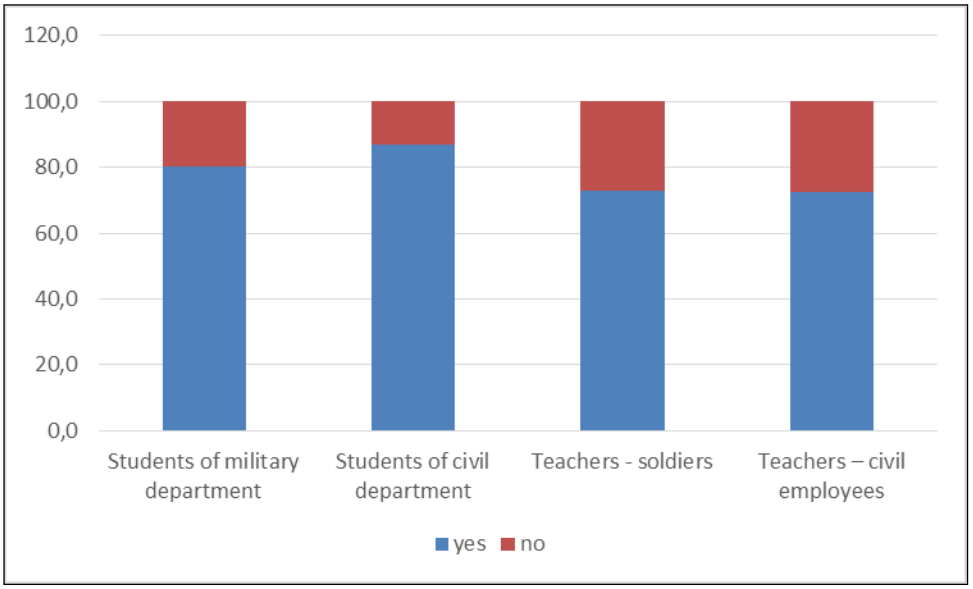


Fig. 4. Selection of unknown meal in a diner or in a restaurant – yes or not

From the answers to this question it is evident, that all respondents would choose unknown meal. The most common reason is the wish to try something new. The answer to this question confirmed the findings of the question 3 – the importance of interesting name of meal (Kadlecová, 2000; Pokorný et al., 2001; Juříková et al., 2001; Juříková, 2002).

Question 6: You choose unpopular meal in case:
a) there is interesting side dish which you like
b) there is some extra bonus (biscuit, yogurt etc.)
c) its large size of potion
d) it´s price is more acceptable
e) I would definitely not choose unpopular meal

Answers are shown in Tab. 7 and Fig. 5.

Tab. 7. Criteria influencing selection of unpopular meal

Respondents	Type of answer				
	a	b	c	d	e
Students of military department	13	8	9	2	70
Students of civil department	16	14	0	2	105
Teachers - soldiers	19	10	5	6	63
Teachers – civil employees	20	3	1	5	80

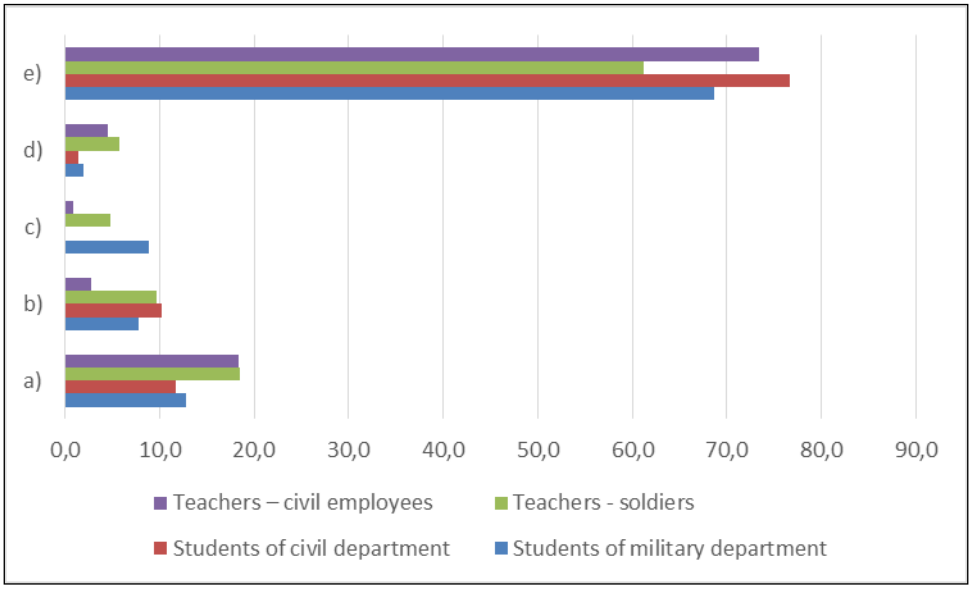


Fig. 5. Criteria influencing selection of unpopular meal

According to the table and graph, most respondents agreed that they would never choose their unpopular meal.

Conclusion

In this work we investigated determinants of choice of meal in students and employees of the Military University of the Ground Forces in a cafeteria and in a diner or a restaurant. According to the answers we have got, actual taste to one of offered meals and its appearance is crucial, if it is possible to see the meal in advance and consideration of healthy nutrition. The selection is often limited by concrete list of meals, which can´t be ideal for everyone.

In a restaurant, respondents choose their meal according to expected taste and smell, especially for working respondents the big influence has its price (who can realize the value of money).

Lunch should supply enough nutrition and energy for afternoon work, which can be physically demanding for soldiers. From the results this factor seems to be

less significant, which can be caused by lower physical demands of training than few decades before.

Most of respondents would choose the unknown meal because they are tempted by unknown name, but most of respondents would not choose the unpopular meal.

References

BERNASOVSKÁ, K., PETRIĽÁKOVÁ, T., RIMAROVÁ, K., HOLÉCZYOVÁ, G. Aktuálny nutričný stav popslucháčov 5. ročníka LF UPJŠ a jeho analýza vo vzťahu k životným podmienkam. *Životné podmienky a zdravie*. NCPZ, SLS, LF UK Bratislava. 1999, pp. 53–56.

CEPKOVÁ, A. Vplyv posiľňovacích cvičení na vybrané somatické a motorické ukazovatele študentiek univerzít. [in:] *Žena, pohybová aktivita, životný štýl, zdravie*. Univerzita Komenského, Bratislava. 2003, pp. 77–81.

HASIK, J., GAWĘCKI, J. *Żywienie człowieka zdrowego i chorego*. Tom 2. Wydawnictwo Naukowe PWN SA, Warszawa. 2000.

HAVRANOVÁ, M. Žena, študentka, zdravie, pohybová aktivita. [in:] *Žena, pohybová aktivita, životný štýl, zdravie*. Univerzita Komenského, Bratislava. 2003, pp. 29–39.

HLÚBIK, P., OPLTOVÁ, L., CHALOUPKA, J. Prevalence obezity ve vybraných regionech České republiky. Żywienie Czlowieka i Metabolizm. *Polish Journal of Human Nutrition and Metabolism*. 2000, 27, pp. 212–215.

HLÚBIK, P. Systém péče o obézní pacienty v ambulanci. *Vojenské zdravotnické listy*, 67, 1998, 5, pp. 190–193.

HRČKA, J. *Šport pre všetkých: verejné športovo – rekreačné programy a podujatia*. Univerzita Komenského, Bratislava. 2002.

HRSTKOVÁ, H., BAJER, M., BAJEROVÁ, K., MATUŠKA, J., VORLOVÁ, L. Výživa kojenců a mladších batolat. Národní centrum ošetřovatelství a nelékařských zdravotnických oborů. Brno. 2003.

JANECZKO, Z., SCHLEGEL-ZAWADZKA, M. Owoce cytrusowe – źródło substancji odżywczych i leczniczych a zwyczaje i upodobnienia żywieniowe wśród dzieci i młodzieży. Żywienie Człowieka i Metabolizm. *Polish Journal of Human Nutrition and Metabolism,* 28, 2001, 2, pp. 765–769, (supplement).

JUŘÍKOVÁ, J., BŘEZINA, P., POKORNÝ, J., DOSTÁLOVÁ, J. Vybrané faktory ovlivňující výběr pokrmů u studentů a zaměstnanců VVŠ PV a vojáků základní služby. Poster. 25. tématická konference “Výživa a potraviny 2001”. Pardubice, 13. – 15. 11. 2001.

JUŘÍKOVÁ, J. Senzorické hodnocení sestav pokrmů. [Doktorská práce]. Vysoká vojenská škola pozemního vojska. Vyškov. 2002.

KADLECOVÁ, D. Jídelníček ze všech stran. Panelová diskuse. Konference „Školní stravování 2000”, Pardubice, 26. – 28. 4. 2000 a 10. – 12. 5. 2000.

KAMPHUIS, C.B.M., DE BEKKER-GROB, E.W., VAN LENTHE, F.J. Factors affecting food choices of older adults from high and low socioeconomic groups: a discrete choice experiment. *The American Journal of Clinical Nutrition*. 2015, 101, pp. 769–774.

KORČEK, V. Telesný rozvoj a pohybová výkonnosť edukantov univerzít Slovenskej republiky. [in:] *Optimalizácia zaťaženia v telesnej a športovej výchove*. Slovenská technická univerzita Bratislava. 2004, pp. 98–103.

KORČEK, V. Telesný rozvoj a pohybová výkonnosť študentiek univerzít SR. Sborník příspěvků „Optimální působení tělesné zátěže a výživy 2004“ s podtitulem „Kinantropologické dny MUDr. V. Soulka“. Nakladatelství GAUDEAMUS. Hradec Králové. 2004.

RAIS, D. Postoje študentov SPU v Nitre k vlastnému zdraviu. *S*borník příspěvků „Optimální působení tělesné zátěže a výživy 2004“ s podtitulem „Kinantropologické dny MUDr. V. Soulka“. Nakladatelství GAUDEAMUS. Hradec Králové. 2004.

ŠTEFÁNIKOVÁ, Z., JURKOVIČOVÁ, J., AGHOVÁ, L., ŠEVČÍKOVÁ, *L. Hygiena*, 40. 1995, 4, pp. 281.

SZÁRAZOVÁ, M., JANUŠOVÁ, T., DOSTÁL, A. Sledovanie nutričných rizikových faktorov vo výžive poslucháčov 5. ročníku JLF UK v Martine. *L. Hygiena*, 47. 2002, 1, pp. 24–31.

URVAYOVÁ, M. Význam pravidelnej pohybovaj aktivity z pohľadu telovýchovného lekára. [in:] *Pohyb jako prevencia koardovaskulárnych porúch. Antri print*, Bratislava. 1999, pp. 27–33.

POKORNÝ, J., PÁNEK, J. Základy výživa a výživová politika. Vysoká škola chemicko technologická. Praha. 1996.

PÁNEK, J., POKORNÝ, J., DOSTÁLOVÁ, J., KOHOUT, P. Základy výživy. Svoboda Servis. Praha. 2002.

POKORNÝ, J., DOSTÁLOVÁ, J., JUŘÍKOVÁ, J., BŘEZINA, P., JANITZ, W., KORCZAK, J. Preference pokrmů ve společném stravování. 25. tématická konference “-výživa a potraviny 2001”. Pardubice, 13. – 15. 11. 2001.

Preface | Number of characters: 4,275.

Jana Juříková, Martina Pluháčková. *Physical activity in boys attending three types of secondary schools in the Czech Republic* | Number of characters: 20,452 (with abstracts). Number of graphics: 2 = 2,000 characters. Total number of characters: 22,452 (with abstracts and graphics) = 0.56 publishing spreadsheet.

Petr Reich, Ludmila Miklánková. *Preferences of physical activities of young age children in the Czech Republic* | Number of characters: 23,678 (with abstracts). Number of graphics: 4 = 4,000 characters. Total number of characters: 27,678 (with abstracts and graphics) = 0.69 publishing spreadsheet.

Pavol Bartík. *Attitudes of pupils to sports activities* | Number of characters: 16,428 (with abstracts). Number of graphics: 4 = 4,000 characters. Total number of characters: 20,428 (with abstracts and graphics) = 0.51 publishing spreadsheet.

Małgorzata Ostrowska. *Expected effects of physical education teachers' work versus the actual needs of pupils* | Number of characters: Number of characters: 21,517 (with abstracts). Number of graphics: 0 = 0 characters. Total number of characters: 21,517 (with abstracts and graphics) = 0.54 publishing spreadsheet.

Jana Juříková. *Leisure physical activity of persons with sedentary lifestyle* | Number of characters: 39,271 (with abstracts). Number of graphics: 4 = 4,000 characters. Total number of characters: 43,271 (with abstracts and graphics) = 1.08 publishing spreadsheet.

Karol Görner, Adam Jurczak, Janusz Zieliński. *Educational and family determinants of physical activity development of young people in their leisure time* | Number of characters: 45,467 (with abstracts). Number of graphics: 14 = 14,000 characters. Total number of characters: 59,467 (with abstracts and graphics) = 1.49 publishing spreadsheet.

Robert Stępniak, Sylwia Wilczyńska, Ewelina Drumińska. *Martial arts in the process of children and youth – education, expansion or exodus of the example of Bydgoszcz* | Number of characters: 18,613 (with abstracts). Number of graphics: 3 = 3,000 characters. Total number of characters: 21,613 (with abstracts and graphics) = 0.54 publishing spreadsheet.

Adam Maj, Józef Drabik, Marek Adam, Mirosław Smaruj. *Interrelationship between coordination motor abilities and technical elements during the first year of judo training* | Number of characters: 22,895 (with abstracts). Number of graphics: 4 = 4,000 characters. Total number of characters: 26,895 (with abstracts and graphics) = 0.67 publishing spreadsheet.

Jana Juříková, Martina Pluháčková. *Consumers´criteria for meals selection in a cafeteria in the Czech Republic* | Number of characters: 21,535 (with abstracts). Number of graphics: 5 = 5,000 characters. Total number of characters: 26,535 (with abstracts and graphics) = 0.66 publishing spreadsheet.

All book | 238,798 characters; 40 graphics; 6.97 publishing spreadsheet.