

**MATEJ BEL UNIVERSITY BANSKÁ BYSTRICA
FACULTY OF ARTS
SLOVAKIA**



Index 4,96

**ACTA UNIVERSITATIS MATTHIAE BELII
PHYSICAL EDUCATION AND SPORT**

**Vol. VI
No. 1/2014**

BANSKA BYSTRICA

2014

ACTA UNIVERSITATIS MATTHIAE BELII

PHYSICAL EDUCATION AND SPORT

INDEX  COPERNICUS
I N T E R N A T I O N A L

Vol. VI
No. 1/2014



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ISSN 1338-0974

ACTA UNIVERSITATIS MATTHIAE BELII PHYSICAL EDUCATION AND SPORT (ISSN 1338-0974) is a peer-reviewed scientific journal. The content of the magazine is focused on presentation of research notifications and theoretical studies connected with the problems of science of sport. The Editorial Board is looking forward to all manuscripts written on the above subject.

The journal provides open access to its content - all published articles are accessible in PDF format free of charge.

The Journal is indexed in Index Copernicus



index 4,96

ACTA UNIVERSITATIS MATTHIAE BELII PHYSICAL EDUCATION AND SPORT (ISSN 1338-0974) je vedecký časopis. Svojím obsahom je zameraný na prezentáciu pôvodných výskumných výsledkov a teoretických štúdií, ktoré sa vzťahujú k vedeckej problematike vied o športe. Redakcia uvíta všetky rukopisy spracované v tomto duchu.

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DEVELOPMENT AND ANALYSES OF STUDENTS RELATIONSHIP TO SELECTED SEASONAL ACTIVITIES DURING YEARS 1997 – 2012 AT TU IN ZVOLEN

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SUMMARY

At present, physical education at colleges and universities has a period of the declining interest of students in physical activities in general. Seeking new and attractive forms of new activities and establishing these at physical education classes became a necessary prerequisite to motivate students and lead them to regular exercise and sport activities. Seasonal activities provide a broad spectrum of possibilities how to motivate students into sport and at the same time to improve their relation to healthy living style.

KEY WORDS: seasonal activities, physical education activities, course based forms of physical education

INTRODUCTION

Current difficult conditions of human existence place high demands on the overall level of skills, capabilities and activities of each individual, resulting in a number of changes in an individual's life. The changes are then related to the total life of man. From organization of work, free time to selection and use of movement and sports activities. The movement a sport activities are somehow disappearing from the daily routine of children and adults. The result is continuously increasing curve of various lifestyle diseases occurring in lower age groups. A frequent argument tends to rely on a lack of gyms, sports facilities, sports halls, etc. According to the current state of our society we can not count on the improvement of spatial conditions, it is therefore necessary to find solutions and those are offered in the use of the biggest gym which is nature.

Implementation of movement and sports activities out of enclosed spaces has a positive impact on the development and regeneration of not only physical, but also mental strength is clear to us that the inclusion of activities such as winter tourism, recreation and exercise in nature, boating, downhill and cross-country skiing, cycling and others, should become an integral part of an individual's physical activity from early childhood and should not miss in sports activities offer for university students.. The name only tells us that these activities are carried out depending on weather, material and spatial conditions when using the the natural environment.

Seasonal activities, mentioned before, serve not only to physical and mental recreation, but also for all-round development of human personality. All these activities use a versatile option of natural environment which in addition to a beneficial health effect provides an unforgettable aesthetic and emotional experience.

Physical education and sports activities belong to the seasonal activities that have a great popularity among university students because of its attractiveness (exploring new environments, creating groups with common physical training focus, the possibility of improving the unusual physical activities ...), so they should be supported, developed and organized by every physical education department at universities.

Individual seasonal activities and their role in teaching physical education at universities can be found in the thematic curriculum only at schools profiling the future physical education teachers. At other schools they are only part of the course form of physical education with the possibility of their inclusion in the offer of sports activities for students using their own recreational facilities or suitable natural conditions in surrounding area.

Characteristics and significance of selected seasonal activities

We encounter the characteristic of *tourism* in publication of Žiškaya (1995) who says that it is a complex of activities related to stay and movement mostly in the nature, to cultural - learning activity and professional - technical knowledge and skills. Their goal is to develop spiritual wealth, mental and physical fitness and strengthening human health.

Through hiking and outdoor exercising we develop motor, endurance, strength, speed and coordination skills. At the same time we develop movement habits that have an impact on increasing of overall physical fitness.

Hiking occupies most muscle groups of the lower extremities and torso, only a minor part of upper extremities muscles. Endurance level of the body by walking except the speed depends on the weight of the body, weight of the load carried, the track profile (plane, climb, descent), the quality of the surface (sand, snow, muddy terrain), the type of footwear, clothing and weather conditions. Walking increases the functional efficiency of the movement system, as well as muscle strength, flexibility and strength of connective tissue and joints (Sýkora, 1986).

Since the hiking is natural locomotion we can carry out walking from early childhood. It should be carried by accessible forms since childhood. Appropriately chosen and properly dosed physical activity which take age into account associated with the use of natural factors, observance of rules of personal and social hygiene and good lifestyle conducive to healthy growth and development of the organism and contribute to improving its performance.

Another advantage is that in many cases nature provides more difficult conditions to exercise as gym or playground. Thanks to this there is creation and consolidation of such moral and volitional qualities such as endurance, courage, strong will, perseverance, self-discipline, determination, help friends, sacrifice, self-reliance. Hiking and recreation in nature also have a very positive effect on the nervous system. Recreation in nature, rapprochement with it and gaining the necessary exercise habits lead to active relaxation and total regeneration of the human body (Watkins - Dalal, 1995).

In addition to hiking excursions, tours, walks, marches and exercises in nature also other types of tourism may be applied in the seasonal activities such as: ski hiking as one of the options of winter hiking or cyclotourism.

Ski tourism uses skis, cross-country as the transport way to move through snowy landscape. From the locomotive point of view it belongs to the most versatile types of tourism. The implementation of this type of tourism is contingent by ski skills because it uses techniques of cross-country and downhill skiing.

We agree with authors (Dvořák, 1990; Hřeka - Drdacká, 1992; Michal, 1998) that it has a great importance in terms of health because all the major muscle groups are equally loaded. It has endurance character and it impacts on improving the circulatory and respiratory systems.

As reported by Kozlov (1990) a special incentive in terms of health is the environment in which skiing is carried out. Movement and recreation in the country covered with snow brings everyone joy, mental satisfaction and finally leads to emotional and aesthetic experience. Movement in the mountain area cultivates toughness, strength, endurance, speed, coordination skills, also hardiness, courage, determination, sense of orientation and competitiveness, it shapes a person's character.

Cyclotourism is a kind of tourism that uses the bicycle as a means of active way of transport. It allows us to keep in touch with the immediate environment, with nature, but it assumes complete mastery of technique and knowledge of driving traffic laws (Ludvík, 1990).

When cycling endurance skills are developed, dexterity and balance also. When cycling extensors of thigh and leg and foot flexors are the most loaded, which requires and also develops muscle strength of lower extremities of dynamic character.

Cycling affects positively also on the cardiovascular system, it follows that the regular cultivation of cycling can benefit from an early age to prevent cardio-vascular diseases (Hrčka - Drdacká, 1992; Ludvík, 1990). We can influence load when cycling by several factors such: distance, cycling speed, difficulty of terrain - mountains, road surface etc.

Cognitive activity has important role in the cycling that is focused on exploring cities, beautiful nature and interesting areas, which classic routes, bike paths or unpaved field, meadow and forest trails lead us to.

When riding on public roads we must remember to respect the roads traffic law and the technical equipment of bike because if we break the rules we can be charged by the same penalties as drivers of motor vehicles. At the same time, we must realize that there are a lot of risks riding on the vehicle roads and therefore we should care about safety and ride in maximum attention.

We divide cyclotourism according to the terrain character:

- 1 Road cycling - use mostly public roads, it is focused on cognitive activity and associated with moving from place to place
- 2 Mountain cycling - use mostly unpaved trails, mountain and forest paths, it aims to discover the beauty of nature, ride through nature with overcoming uneven terrain.

Bence - Zbiňovský, 2006 characterize boating tourism as water sports activities in the natural environment. This environment allows you to actively explore the excellence and uniqueness of nature, culture and history of visited sites of our country.

Control of boat traditionally belongs to important and attractive feature of sports and youth activities also adult. Water sports affect on personality development of an individual and in terms of generally accepted meanings of physical education and sports activities such as training, educational, health and especially recreational importance.

In terms of the development of will characteristics we influence toughness, pugnacity, fortitude and willpower to overcome objective obstacles, adverse subjective states and encourage optimistic - positive thinking.

Sports and recreation full-featured ride on the boat is conditioned by mastering techniques of paddling and driving techniques, but also exploring the nature of standing (mainly artificial ponds), but mainly flowing waters (streams, rivers, shipping channels).

Although it seems that when navigating the waterways there is no muscle load, the opposite is true, because cyclical movements evenly burden the muscles of the upper limbs, spinal and abdominal muscles. Overall, there is not only the development of individual muscle groups, but is also a great incentive for increasing fitness circulatory and respiratory system and further efficiency of material and energy transformation in the body. It significantly influences activity of the central nervous system.

Recreation and exercises in the nature belong to the physical activities of students with aim to create a positive attitude towards this activity, along with the efficient use of free time in nature. Their importance is in shaping the relationship of young generation to sport and active physical activity, they contribute to the overall development of students and to adapt the organism in natural conditions, develop physical fitness and performance, shape the relationship of people to nature. Further they contribute to the regeneration of anchoring forces and strengthening health in specific environment. Overall, it focuses on creating and shaping lifestyle, compensating one-sided load and their greatest advantage is that they can be used at any age.

From a physiological point of view they positively affect the respiratory system and support cardio - respiratory fitness, strengthen muscles and improve muscular strength, endurance and fitness, increase immunity, complement the vital energy. It also reduces stress

and tension and strengthen overall health of the individual. They help in the fight against civilization diseases.

Recreation and excersises in the nature in general we can divide to:

1 Movement activities – physical exercise in nature (running, walking, overcoming obstacles, walking, movement games, etc.)

2 Cultural - cognitive activities – sightseeing, natural beauties, protected areas, etc.

3 Professional-technical knowledge and skills – equipment, orientation in nature, topography, first aid, conservation, camping, rules, etc.)

We used in addition to traditional physical activities also non-traditional forms of exercise and within the summer courses for students at TU in Zvolen. The choice of sports was varied. The aim was to show students the different types of sports and activities and teach them basic skills and rules. Checking the level of mastering is best done through competitions, which are the culmination of all courses.

Orienteering

Students run on the route using a map and compass in order to find 4-6 check-points. Each check-point has a stamp and question. Answer and stamp are recorded on the race sheet. The finish time, the number of correct answers and total check-points found are taken into account. According to the number of participants it is decided whether it will be a race of individuals or teams. Students are divided into categories of men and women.

Air gun shooting

Individuals compete lying down. There are 3 sighting shots, followed by inspection and replacement of pure target. Next 10 shots shoot for real. Number of points scored is evaluated. Students are divided into categories of men and women.

Non-traditional sports

Darts - from a set distance students have available 3 sithting throws, followed by 5 sharp. Number of points scored is evaluated. Students are divided into categories of men and women.

Frisbee - simple throwing a flying plate on accuracy, distance, speed and so on. The easiest game in the frisbee is discgolf. The role of the athlete is to throw a plate to base (hole, stick, etc.) from a set distance using the minimum number of attempts.

Petanque - french parlour game for 1-3 member teams that try to post - throw the ball as close to the target, which is a wooden ball called piglet.

Garden croquet - the goal is to get the ball using a special bat through all gates built to generate route. The winner is the one who has the minimum of touches.

Speedminton - a game which links badminton, squash and tennis. It is played outside in the open field, but also on the court without net. If playing for points, point is gained when rival drop the ball or hits the ball over the opposite square.

In addition to these sport activities we included tennis, table tennis, aerobics, soft tennis and badminton into the daily routine.

OBJECTIVE AND METHODOLOGY

The aim of our work is to obtain relevant information about the knowledge of students at TU in Zvolen, related to seasonal activities and their attitudes towards them based on empirical research.

We realized the research during 15 years, starting from academic year 1997/1998 to 2011/2012. We surveyed student's knowledge of seasonal activities and their attitude towards them by questionnaire method.

The sample included a total of 2,028 students of the Technical University in Zvolen, who from the offer of physical activities beyond the school physical education chose one course based form offered seasonal activities. Offer included:

1 Ski courses (designed for downhill and cross-country skiing) organized in 3-day courses at Teaching and training facility at TU Šachtický.

2 Cyclotourism courses (designed for mountain biking) organized in 3-day courses at Teaching and training facility at TU Šachtický.

3 Course of hiking and recreation in nature (focus on mastering light tours, activities associated with cognition activity and orientation in nature, familiarity with selected non-traditional sports, their rules and play) organized in 3 to 4-days courses at Teaching and training facility at TU Šachtický.

4 Boating Courses (focused on the boating down the river Hron in the area between Zvolen and Nová Baňa, manage to control kayak, canoe and boats, cognitive activity and ways of food preparation and bivouac in nature) organized in 3-day courses with camping in the tents.

After completing the course at the end all of the students filled out a questionnaire prepared by us, which included questions relating to information on seasonal activities and attitude of students towards them. The results were independently evaluated after each course form and statistically processed.

RESEARCH RESULTS

To find out the total number of students who participated in course based forms of physical activity, we used lists of participants with evaluated documentation and the results from questionnaires. During the period the course based forms of physical education with a focus on selected seasonal activities was attended by 2,028 students of the Technical University in Zvolen. From the total number 654 were women (32.25%) and 1.374 were men (67.75%). Findings are more clearly stated in Table 1.

Table 1 Number of participating students in various course forms

Academic year	Skiing course	Boating course	Cyclotourism course	Hiking and recreation in nature cours
	• number of courses	• number of courses	• number of courses	• number of courses
	• n. of students/course	• n. of students/course	• n. of students/course	• n. of students/course
	• total	• total	• total	• total
1997/1998	3 24, 24, 24, 72	2 35, 35 70	1 0 15	1 0 16
1998/1999	3 24, 24, 24 72	2 35, 32 67	1 0 12	1 0 17
1999/2000	3 24, 24, 22 70	3 35, 34, 28 97	1 0 16	1 0 18

2000/2001	3 21, 24, 24 69	2 35, 35 70	1 0 17	1 0 15
2001/2002	3 24, 21, 23 68	2 35, 35 70	1 0 12	1 0 17
2002/2003	3 23, 23, 21 67	1 0 28		
2003/2004	3 24, 19, 24 67	2 26, 22 48		
2004/2005	3 24, 21, 23 68	2 28, 26 54		–
2005/2006	3 24, 24, 21 69	2 24, 25 49		1 0 19
2006/2007	3 19, 24, 23 66	2 26, 21 47		1 0 21
2007/2008	2 23, 22 45	2 24, 24 48		1 0 18
2008/2009	2 24, 19 43	2 26, 21 47		1 0 15
Academic year	Skiing course	Boating course	Cyclotourism course	Hiking and recreation in nature cours
	• number of courses • n. of students/course • total	• number of courses • n. of students/course • total	• number of courses • n. of students/course • total	• number of courses • n. of students/course • total
2009/2010	2 23, 24 47	2 24, 21 45		1 0 19
2010/2011	2 25, 21 46	2 24, 24 48		1 0 16
2011/2012	2 24, 22 46	2 22, 23 45		1 0 17
TOTAL	40 courses 915 students	30 courses 833 students	5 courses 72 students	12 courses 208 students

Table 2 Total numbers and percentage

	Skiing course	Boating course	Cyclotourism course	Hiking and recreation in nature cours	Total
Number of students	915	833	72	208	2.028
Percentage	45.12 %	41.07 %	3.55 %	10.26 %	100 %
Number of men i%	540 59.02 %	667 80.07 %	61 84.72 %	106 50.96 %	1.374 67.75 %
Number of women %	375 40.98 %	166 19.93 %	11 15.28 %	102 49.04 %	654 32.25 %

Regardin The questionnaires compiled to determine the knowledge of students about seasonal activities and their attitudes towards them showed the following:

Overall, 84.60% of respondents indicated least 4 seasonal activities, 9.40% reported less than 4 seasonal activities and 6% did not provide even one. This relatively high status can be explained by the fact that students meet in long-term with seasonal activities, they are informed about them regularly or many of students use them in their free time as a suitable type of physical activity, see Fig. 1.

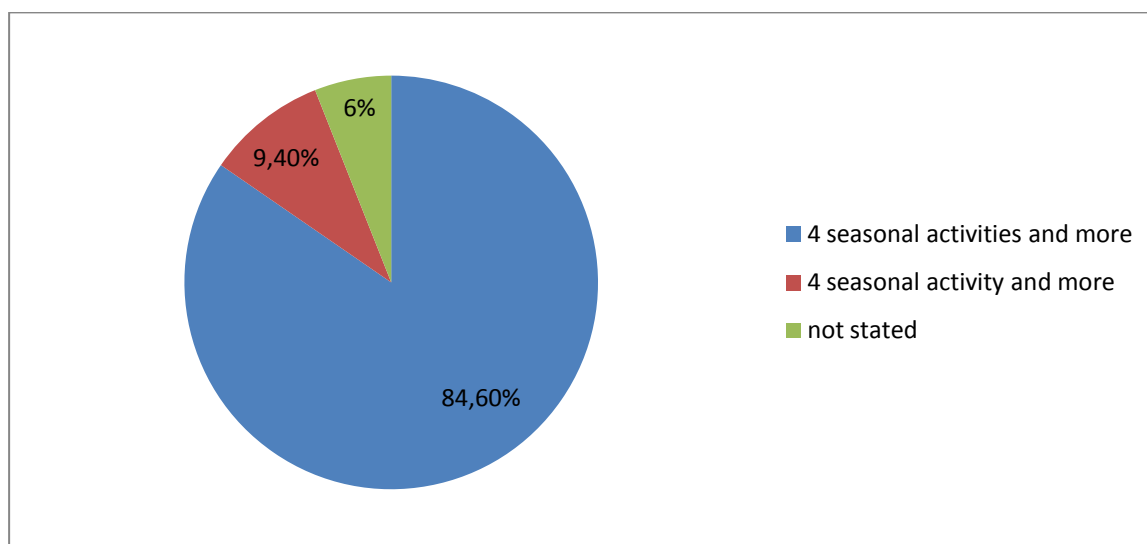


Fig. 1 Knowledge about seasonal activities

The question of seasonal activities popularity (Fig. 2) was reported by respondents in this order: in the first place was swimming (37.61%), followed by cycling (22.16%), skiing (15.14%), hiking (10.45%), skating (8.11%), sledging (4.25%) and boating (2.28%), which

can be explained by the fact that swimming is viewed as the most popular seasonal activity in our regions. The rise of cycling was positively affected by the affordability of quality road and mountain bikes, as well as the rise in popularity of this sport due to the success of our cyclists on world events. On the other side skiing is gradually losing its position. We believe that this is a significant effect of gradual waning of ski school classes and overall higher financial difficulty, which is mainly related to material equipment, ticket prices and transport to the ski resort.

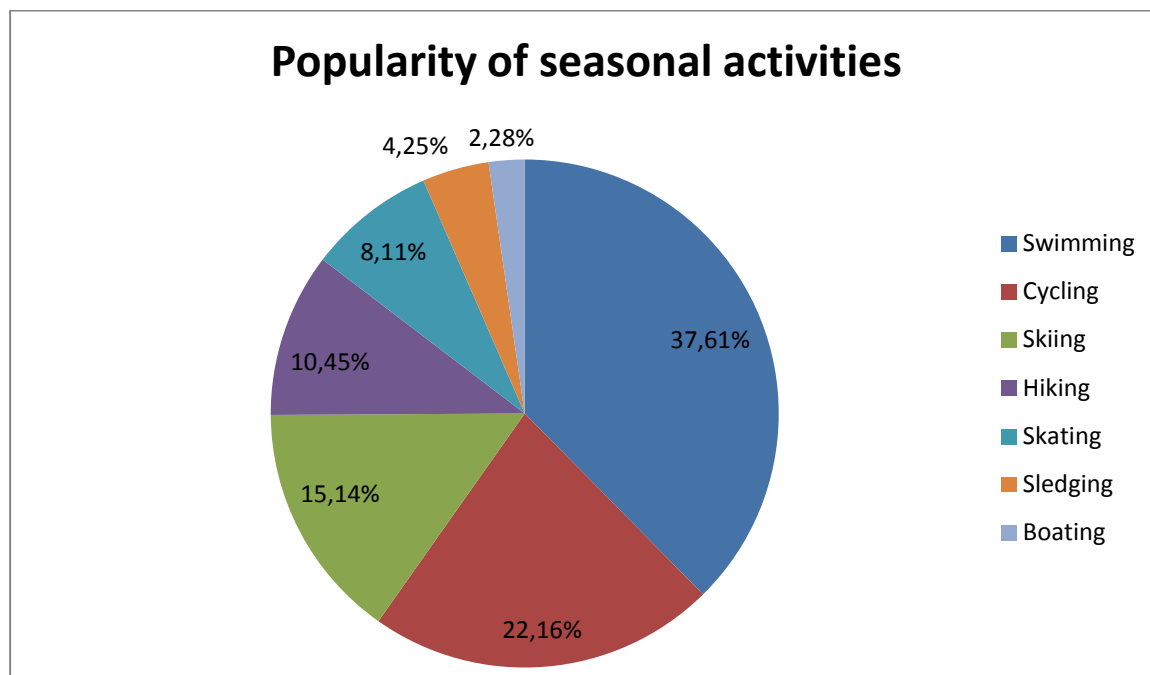


Fig. 2 Popularity of seasonal activities

The question of seasonal activities popularity (Fig. 3) offered to students at TU in Zvolen in the course based forms of physical education was reported by respondents in this order: firstly skiing (37.13%), boating (28.76%), hiking (26.18%) and cycling (7.93%). Popularity of skiing is possible to justify with long tradition in organizing ski courses at TU in Zvolen, as well as supplementing the training program to cross-country skiing, which is gradually coming to the attention of the young people, not just middle and older generation. A similar reason applies to the boating. Hiking and biking are slightly recedes into the background.

With the possibility of new forms of seasonal activities at TU in Zvolen respondents expressed interest in skating, in-line skating, trips to survive the winter and summer conditions, rafting.

Overall, since 1997 exactly 2.028 students attended within 87 course based forms of physical education organized by the Institute of Physical Education and Sport at Technical University in Zvolen. We reported the biggest number of courses and number of students at the ski courses (40 courses, 915 students) and boating courses (30 courses, 833 students).

Physical activities were popular among the students, most of them have expanded their knowledge, skills and experience of new non-traditional forms of collective and individual sports. These additional activities in form of courses develop students movement, cognitive and also knowledge site and therefore contribute to expand their knowledge and skills.

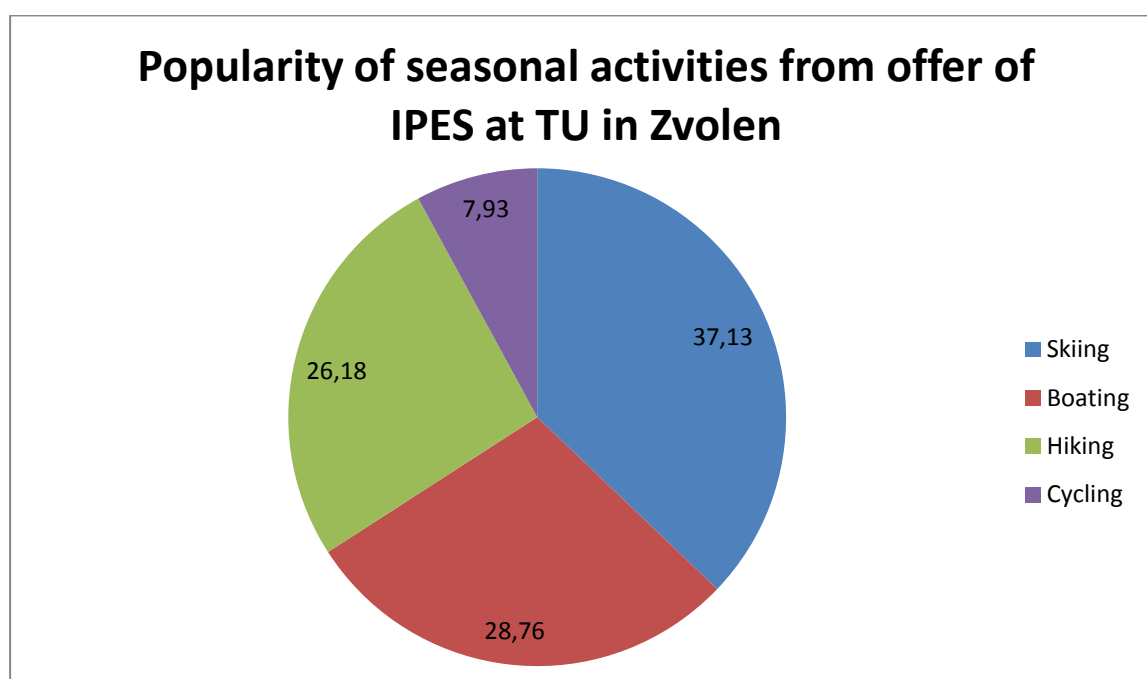


Fig. 3 Popularity of seasonal activities from offer of IPES at TU in Zvolen

CONCLUSION

The use of seasonal activities in course based forms of physical education at universities play an important role in motivating students to sport. Their choice, focus and exposure is closely linked to the conditions that the physical education departments at universities able to prepare. The fact that students are becoming interested in seasonal activities that is demonstrated by our research, in which we can declare the steadfastness of interest in them, given the opportunities that our physical education department provides. We note the suggestion for the introduction of other forms of seasonal activities, while we try on their includint into the offer of course forms. We believe that in the future we will succeed to create conditions in which we can carry out certain forms of seasonal activities, which

contribute to a deeper relationship of students to a lifetime need of sports and the need to improve healthy lifestyle.

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VÝVOJ A ANALÝZA VZŤAHU ŠTUDENTOV K VYBRANÝM SEZÓNNYM ČINNOSTIAM V ROKOCH 1997 – 2012 NA TU VO ZVOLENE

SÚHRN

Hľadanie nových - atraktívnych foriem telovýchovných aktivít a ich zavádzanie do hodín telesnej výchovy na vysokých školách sa stáva nevyhnutnou súčasťou práce vysokoškolského učiteľa. Zaujímavé a prítiažlivé pohybové aktivity sú lákadlom a tiež motiváciou pre

študentov, ktorá ich vedie k pravidelnému športovaniu. Práve sezónne činnosti poskytujú pre študentov široké možnosti športovania a tým aj skvalitnenia ich vzťahu k zdravému životnému štýlu.

KLÚČOVÉ SLOVÁ: sezónne činnosti, telovýchovné aktivity, kurzové formy telesnej výchovy.

THE RELATIONSHIP BETWEEN LIFE QUALITY AND PHYSICAL ACTIVITY OF SECONDARY SCHOOL PUPILS AND SECONDARY VOCATIONAL PUPILS

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SUMMARY

The aim of our work is to analyze the relationship of quality of life to the level of physical activity of students grammar schools and schools. We expect that each group of students of grammar schools and schools with different physical levels have different levels of quality of life in various areas. Evaluation of the importance and satisfaction of quality of life for both groups will be the same. Research group consisted of 220 pupils, attending the students of grammar schools and schools. To collect search data was used questionnaire method. The data obtained were subjected to statistical analysis by means of descriptive statistics, student t-test, Fisher's LSD post hoc test and Pearson's correlation coefficient.

The results show a different relationship between the level of physical activity and quality of the various areas of life. Groups of pupils grammar schools and schools give higher levels of an objective notion of relevance as the notion of subjective satisfaction of quality of life through physical and spiritual well-being. For groups of students with irregular physical activity were statistically significant differences among students in schools of the importance of fair site in the "psychosocial, material well-being and focus on the future" and negative relationships with pupils in grammar school subjective satisfaction of the page in the "spiritual, material well-being, education, free time and look and ownership of things."

The contribution is part of the Ministry of Education grant KEGA 014UKF-4/2013 Improving the quality and level of health of adolescents by means of physical activity in primary and secondary schools.

KEY WORDS: Life quality. Physical activity. Secondary school pupils. Relationship.

INTRODUCTION

Life quality is a phenomenon of era which is explored by many experts home down and also abroad. Sociologists, psychologists, economists, philosophers, doctors and other experts have in their field of science and also in the field of different cultures, divergent opinion on life quality.

World Health Organization presented in 1993 first general working definition of life quality which sounded: "person's life quality how he perceives his life status in context with cultural and worthy system in relation to his own aims, expectations, life style and hobbies" (Kebza, 2005). We found in psychological dictionary the life quality defined as "an expression of life joy feeling" (Hartl-Hartlová, 2000). We can say from the above mentioned definitions that life quality is much harder to define as quantity, let us say length of life. The main reason is that each person imagines under this expression something else, as far as life quality is highly subjective matter. The word well-being and life quality are sometimes wrongly identified. Personal well-being is a component or indicator of life quality (Blatný, 2007). Well-being is mostly emotional component of life quality with long lasting pleasant living overall state, positive self-assessment, and optimistic attitude towards life. Well-being is like this becoming an indicator of health and successful functioning of person in life, then non well-being follows from afflictions, illnesses, frustration, conflicts, stress and depressions (Kováč, 20006; cit. according Sádovská, 2011). Life quality is divided into two basic dimensions; they are objective and subjective life quality. Objective well-being is measured in society according to industrial and agricultural development, level of health in society and according to education and fulfilling of social and cultural needs of society members (Sádovská, 2011). According to Křivohlavý (2004) is subjective well-being defined as "cognitive and emotional evaluation of person's life". It concerns positive and also negative emotions, affects and moods, person's perspective on his plans, their realization and expectations. It always gets along from a concrete person and from asking on person's subjective feelings and status.

The research of children's and adolescent's life quality has some specifications and for them is in this field the research specific and methodologically demanding. Here we are speaking mainly about evolutionary, health, personal and social specifications (Michal et. all., 2010).

AIM

The aim of the work was to verify the relationship between chosen life quality fields and physical activity level by high school pupils and secondary vocational school pupils in the city of Nitra. We were expecting by pupils with more frequent physical activity during the week higher positive interaction to particular life quality fields.

METHODOLOGY

On the questionnaire research participated 210 respondents in months September and October 2013, 107 women (50.95%) and 103 (49.95%) in the age from 15 to 20. The average age of respondents was 16.3 years. The respondents were in the time of research students of high schools and vocational schools in Nitra.

The research file was divided into 3 groups on the basis of training sessions taken during the week. The first group “passive athletes” practice physical activity not more than 2 hours during the week or the do not participate at all. The second group “occasional athletes” do the physical activity irregularly from 3 to 5 hours in a week. The third group consists of “active athletes” who do the physical activity regularly from 6 to 15 hours in a week. Most of the pupils are members of a sport organization.

In the first part of the questionnaire we were finding out the basic information about the respondent; age, gender, which grade he/she attends, the frequency of doing a sport in a week (1-2x, 2-4x, 7 and more times in a week), number of training sessions during the week except the PE and Games lessons at school, sports level (passive athlete, occasional athlete, active athlete and professional athlete) and which sport they prefer (more than one answer possible).

In the second part of the questionnaire were used modified items from standardized questionnaire SQUALA (Zannotti – Pringuey, 1992; Dragomerická et al., 2006; Ocetková, 2007). We find out through the questionnaire what meaning do people dedicate to particular fields of life and which of them they consider as important and then they evaluate to which extent they are satisfied with these fields.

The SQUALA questionnaire included overall 30 indicators concerning the inner and outer facts of everyday life. We divided separate indicators, to make it easier, into 8 categories (Sýkorová - Blatný, 2008):

1. physical well- being (health, sleep, handle everyday activities, not to have problems)
2. psychosocial well – being (family, human relationships, intimate relationships, hobbies, safety)

3. spiritual well – being (justice, freedom, beauty, art, truth)
4. material well – being (money, good food)
5. education (to be educated, attend school)
6. free time (possibility to speak foreign language, have enough things to entertain)
7. appearance and property affairs (look good, wear nice clothes, have things I like)
8. orientation to the future (have children, job which I will enjoy)

The SQUALA questionnaire is divided into two parts. In the first part it defines the fields from the point “how important is it for you...” Respondents rated the items on 5 point scale (absolutely unimportant, a bit important, medial important, highly important, very important) according to the relevance to particular items in their lives, let us say how important it was for them in their life. The second part defines the fields from the point “how satisfied you are with.” This part was also evaluated on 5 point scale (highly dissatisfied, dissatisfied, something between, satisfied, very satisfied) according to how satisfied they actually are with particular items in their lives.

By the data presentation were used basic descriptive statistics (multitude, diameter and decisive deflection) from those was calculated statistic significance of differences between dependent groups by students' t – test. The differences between the independent groups were evaluated by Post hoc Fisher LSD test. We used by the evaluation of the relationships between variables in “fields of life quality and level of activity during the week” Pearson's correlation coefficient (Hendl, 2004). For the evaluation of statistic significances of differences and relations was used the level of importance $p < 0.01$ to $p < 0.20$. The data were handled in programme MS Excel and SPSS.

RESULTS AND DISCUSSION

On the basis of frequency of physical activity was the file of respondents divided into three groups and according to that we recorded higher statistic frequency of important differences in the fields of life quality and in the field of “how important is for you” in comparison with the field of “how satisfied you are” in the group of pupils from secondary high school and vocational school (table 1, 2).

To make it easier we used following abbreviations:

- passive athletes on high school – GYM_A
- occasional athletes on high school – GYM_B
- active athletes on high school – GYM_C
- passive athletes on vocational school – OU_A

- occasional athletes on vocational school – OU_B
- active athletes on vocational school – OU_C

Table1 Statistical characteristics in the field of life quality in groups with different level of physical activity

		GYM_A		GYM_B		GYM_C		OU_A		OU_B		OU_C	
Indicators		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
How often do you do sport?		1,205	,894	3,912	,793	9,000	2,708	,915	,873	4,038	,871	9,939	3,259
How important for you ...	Physical well-being	4,364	,589	4,276	,539	4,459	,323	4,068	,627	4,338	,338	4,297	,461
	Psychosocial well-being	3,800	,563	3,912	,495	3,765	,474	3,580	,459	3,831	,415	3,997	,498
	Spiritual well-being	4,212	,694	4,103	,581	3,973	,676	3,970	,615	3,990	,589	4,205	,733
	Material well-being	3,654	,867	3,485	,857	3,865	,847	3,683	,781	3,981	,741	3,955	,814
	Education	3,795	,825	3,868	,819	3,851	,857	3,878	,973	4,212	,710	4,242	,782
	Leisure time	3,949	,809	3,941	,814	4,108	,668	3,988	,912	4,000	,693	3,879	,927
	Appearance and Property Affairs	3,402	,943	3,521	,992	3,586	,951	3,528	,946	3,514	,925	3,748	,935
	Focusing on the future	4,244	,880	4,368	,731	4,297	,692	4,207	,750	3,885	,864	4,303	,847
How are you satisfied :	Physical well-being	3,923	,648	3,894	,597	4,135	,445	3,654	,525	3,723	,516	4,109	,606
	Psychosocial well-being	3,872	,408	3,768	,400	3,827	,509	3,551	,505	3,673	,511	4,015	,496
	Spiritual well-being	2,808	,755	2,904	,766	2,919	,727	2,811	,720	2,779	,715	3,106	,732
	Material well-being	3,692	,808	3,559	,886	3,986	,750	3,354	,682	3,635	,729	3,864	,832
	Education	3,718	,793	3,618	,954	3,878	,869	3,610	,855	3,923	,744	3,712	,750
	Leisure time	3,859	,858	3,765	,915	4,054	,771	3,646	,995	3,731	,839	4,273	,651
	Appearance and Property Affairs	3,633	,721	3,569	,733	3,838	,697	3,497	,646	3,539	,790	4,142	,662

Table 2 Importance of differences in the field of life quality in groups with different level of education (LSD; $p < 0.05$)

Level of sports		GYM_A <> OU_A		GYM_B <> OU_B		GYM_C <> OU_C	
Indicators		d	p-value	d	p-value	d	p-value
How often do you do sport?		,290	,485	-,127	,794	-,939	,036
How important for you ..	Physical well-being	,296	,009	-,062	,638	,162	,180
	Psychosocial well-being	,220	,046	,081	,526	-,232	,049
	Spiritual well-being	,242	,099	,113	,509	-,232	,140
	Material well-being	-,029	,875	-,495	,022	-,090	,649
	Education	-,083	,659	-,344	,118	-,391	,054
	Leisure time	-,039	,831	-,059	,782	,229	,241
	Appearance and Property Affairs	-,126	,554	,007	,978	-,162	,478
	Focusing on the future	,036	,838	,483	,020	-,006	,976
How are you satisfied ..	Physical well-being	,269	,033	,171	,244	,026	,847
	Psychosocial well-being	,321	,003	,095	,443	-,188	,098
	Spiritual well-being	-,003	,984	,126	,514	-,187	,290
	Material well-being	,339	,054	-,076	,711	,123	,513
	Education	,108	,563	-,305	,162	,166	,407
	Leisure time	,213	,265	,034	,879	-,219	,285
	Appearance and Property Affairs	,136	,389	,030	,870	-,304	,073

In the first comparing group of passive athletes GYM_A <> OU_A in the field of “importance” of life quality reached the group GYM_A higher values in physical well – being ($p < 0.01$) and psychosocial well – being ($p < 0.05$). The highest frequency of statistically important differences was recorded by given group in the field of “satisfaction”. The group GYM_A reached higher values in fields of physical well – being ($p < 0.05$) and psychosocial well – being ($p < 0.01$). In the group of occasional athletes GYM_B <> OU_B was reached high frequency of statistically important differences from the point of “importance,” OU_B in material well- being ($p < 0.05$). On the other hand the group GYM_B reached higher average values in field orientation to the future ($p < 0.05$).

Statistically the lowest field of important differences was recorded between active athletes GYM_C <> OU_C. The pupils from vocational school from the point of “importance” have higher priorities in psychosocial well – being ($p < 0.05$). By the analysis of particular groups we found out differences in objective understanding of importance and subjective understanding of satisfaction with life quality in groups of pupils from high schools and vocational schools with different frequency of physical activity (chart 1, table 3).

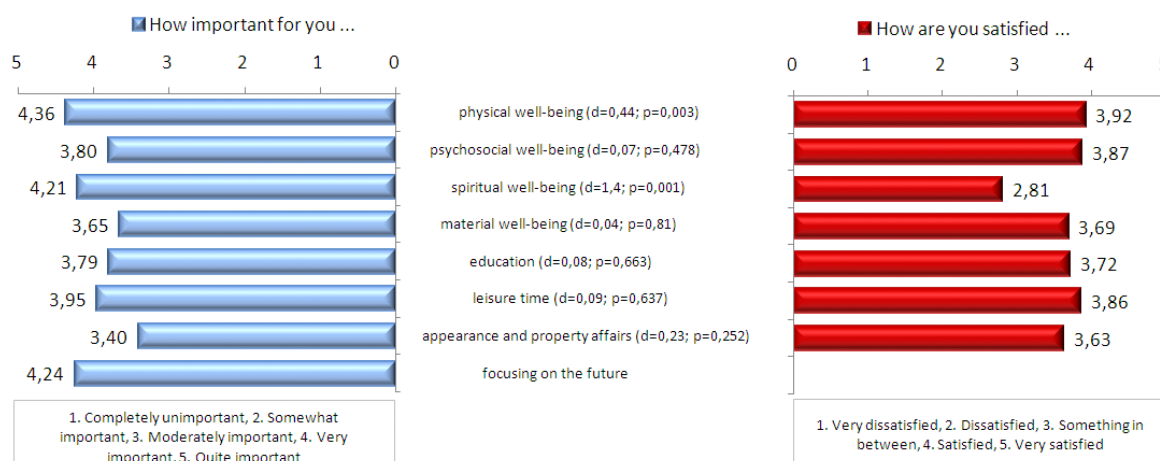


Chart 1: The example of comparison of the fields of life quality in items “How important is for you...” and “How satisfied you are...” in group GYM_A (t - test; $p < 0.05$).

In all of the groups were recorded significant differences in item spiritual well - being ($p < 0.01$) where they emphasize higher importance on justice, freedom, beauty, art and truth, how satisfied they are in real life. All groups above mentioned importance except OU_C in the item of physical well-being ($p < 0.01$).

Other statistically significant differences were recorded in groups of high school and vocational school pupils, where they emphasize higher importance to particular items of life quality how satisfied they are. In groups OU_A and OU_B is in the field of material well - being ($p < 0.05$), OU_C in field of education ($p < 0.01$). In group OU_C was recorded higher satisfaction in the item of free time ($p < 0.05$) and appearance and property affairs ($p < 0.05$).

Table 3 Comparison of life quality fields in items of evaluation of importance and satisfaction of high school and vocational school pupils (t - test; $p < 0.05$)

	GYM_A	GYM_B	GYM_C	OU_A	OU_B	OU_C
Indicators	p-value	p-value	p-value	p-value	p-value	p-value
Physical well-being	,003	,009	,001	,001	,001	,076
Psychosocial well-being	,478	,181	,513	,773	,100	,838
Spiritual well-being	,001	,001	,001	,001	,001	,001
Material well-being	,810	,753	,457	,033	,017	,586
Education	,663	,190	,845	,150	,075	,001
Leisure time	,637	,368	,759	,083	,212	,040
Appearance and Property Affairs	,252	,795	,158	,864	,882	,034

All observed fields were given in to correlation analysis through Pearson’s correlation coefficient (table 4), on that basis we were expecting higher occurrence of positive relationships in groups with more frequent physical activity. In the group of passive athletes

GYM_A we recorded importance in the field of appearance and property affairs ($r=0.212$, $p<0.20$) and orientation to the future ($r=0.336$, $p<0.20$). It is startling that just appearance and property affairs are for passive athletes (pupils) important as far as concerning physical activity they do nothing for that, let us say only a minimum. The group OU_A gives positive meaning to importance in field of psychosocial well - being ($r=0.398$, $p<0.20$) and orientation to the future ($r=0.257$, $p<0.20$) and satisfaction in the field of material well-being ($r=0.233$, $p<0.20$). Higher occurrence of negative relationships in particular life quality fields is found in the group of occasional athletes GYM_B. This group is negatively presenting the level of importance in orientation to the future ($r=-0.282$, $p<0.20$), they are not satisfied with spiritual well - being ($r=-0.226$, $p<0.20$), material well - being ($r=-0.402$, $p<0.20$), education ($r=-0.367$, $p<0.05$), free time ($r=-0.301$, $p<0.10$) and possession and property affairs ($r=-0.608$, $p<0.01$). Occasional athletes OU_B emphasize the importance to material well - being ($r=0.404$, $p<0.20$) but field of education ($r=-0.273$, $p<0.20$) is presented negatively. It is the only one group which showed this kind of relation to education. They are also less satisfied with physical well - being ($r=-0.367$, $p<0.065$).

In the group of active athletes GYM_C we did not record any positive or negative attitude towards life quality fields. Younger athletes OU_C are satisfied only in one particular field and it is appearance and property affairs ($r=0.342$, $p<0.10$).

Table 4 Relationship between sport levels and life quality (r, $p < 0.20$)

			Level of sports			Level of sports		
			GYM_A	GYM_B	GYM_C	OU_A	OU_B	OU_C
How important for you ...	Physical well-being	Correlation Coefficient	-,016	-,211	-,064	-,003	-,209	,054
		p-value	,925	,232	,709	,986	,306	,766
	Psychosocial well-being	Correlation Coefficient	,167	,103	,201	,398	-,026	-,015
		p-value	,308	,561	,233	,010	,902	,932
	Spiritual well-being	Correlation Coefficient	,087	-,013	-,087	,036	-,038	-,103
		p-value	,597	,944	,608	,824	,853	,570
	Material well-being	Correlation Coefficient	,043	,110	,206	-,233	,404	-,190
		p-value	,795	,537	,222	,142	,041	,290
	Education	Correlation Coefficient	,005	,051	-,018	,120	-,273	-,129
		p-value	,976	,773	,916	,455	,178	,474
	Leisure time	Correlation Coefficient	,106	,039	,161	-,127	,166	-,204
		p-value	,521	,828	,340	,429	,418	,254
	Appearance and Property Affairs	Correlation Coefficient	,212	,035	,007	-,120	,025	-,128
		p-value	,196	,844	,968	,454	,905	,478
	Focusing on the future	Correlation Coefficient	,336	-,282	,111	,257	-,074	-,146
		p-value	,036	,106	,512	,105	,721	,418
How are you satisfied ...	Physical well-being	Correlation Coefficient	-,054	-,225	,088	,152	-,367	,165
		p-value	,745	,201	,606	,343	,065	,360
	Psychosocial well-being	Correlation Coefficient	,002	-,191	-,040	,121	,200	,010
		p-value	,991	,279	,813	,452	,327	,955
	Spiritual well-being	Correlation Coefficient	,128	-,226	,099	,113	,175	-,177
		p-value	,437	,198	,561	,482	,393	,323
	Material well-being	Correlation Coefficient	-,111	-,402	,130	,073	,244	-,193
		p-value	,502	,018	,443	,650	,230	,281
	Education	Correlation Coefficient	-,120	-,367	,071	,189	-,211	-,065
		p-value	,465	,033	,677	,237	,300	,720
	Leisure time	Correlation Coefficient	-,201	-,301	-,086	,209	,124	-,029
		p-value	,219	,084	,611	,190	,546	,874
	Appearance and Property Affairs	Correlation Coefficient	-,002	-,608	,014	,143	,104	,342
		p-value	,990	,000	,935	,373	,613	,051

CONCLUSIONS

Our results showed that for our pupils is very important spiritual and physical well-being which means they want justice, freedom and truth in their surrounding and that health should be in the first place of value scale. That's why it is very important to point out the importance of physical activity, whereas parents, teachers, medias and students should care about.

Pupils from Nitra consider to the objective side of importance of life quality mostly higher level than to subjective side of satisfaction in their life.

Frequency of really low let us say no physical activity on the level of passive athletes makes higher the field of free time (possibility to spend free time, possess enough things for having fun). The group of occasional athletes presents dissatisfaction almost in every field of life quality that means in fields of physical well - being (health, sleep, and handle everyday activities, not to have problems), spiritual well - being (justice, freedom, beauty, art, truth), material well - being (money, good food), education (to be educated, attend school), free time (possibility to speak foreign language, have enough things to entertain) and appearance and property affairs (look good, wear nice clothes, have things I like). The group of active athletes presents satisfaction with life quality in the field of appearance and property affairs.

We are able to reach with ensuring regular physical activity that the life quality by young people will be understood positively, either from the point of importance or satisfaction. Our recommendations emphasize that parents should achieve with their children regular physical activity. Not only parents but also school and teachers should supersede from traditional thematic plans and they should bring more experience into the PE and Games lessons, they should also try new forms of exercises. We should be aware of pupils who do the physical activity regularly, as professional sport athletes and ensure that they will be interested into this sport and would be happy to do it, the exercises should be changed. Otherwise we can reach the reverse effect and we can hint the negative reactions and moods which can influence the life quality by pupils as it occurs in our research.

Gained results cannot be made general but we can evaluate them according to the evaluation tool we used and measured group of pupils. We realize the biased results which follow from methods and procedures which were in our research used.

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SÚHRN

VZŤAH KVALITY ŽIVOTA A POHYBOVEJ AKTIVITY ŽIAKOV GYMNÁZIÍ A UČILÍŠŤ

Cieľom výskumu je analýza vzťahu kvality života k úrovni pohybovej aktivity žiakov gymnázií a učilíšť. Očakávame, že jednotlivé skupiny žiakov gymnázií a učilíšť s rozdielnou pohybovou úrovňou majú odlišnú úroveň kvality života v jednotlivých oblastiach. Hodnotenie dôležitosti a spokojnosti kvality života bude u oboch skupín rovnaké. Výskumný súbor pozostával z 220 žiakov navštevujúcich gymnázia a učilišťa v meste Nitra. Na zber výskumných údajov bola použitá dotazníková metóda. Získané údaje boli podrobené štatistickej analýze prostredníctvom deskriptívnej štatistiky, študentovým t-testom, Post hoc Fisherov LSD testom a Pearsonovým korelačným koeficientom.

Výsledky poukazujú na rozdielne vzťahy medzi úrovňou pohybovej aktivity a jednotlivými oblasťami kvality života. Skupiny žiakov gymnázií a učilíšť prisudzujú vyššiu úroveň k objektívnemu ponímaniu dôležitosti ako k subjektívnemu ponímaniu spokojnosti kvality života v oblasti fyzickej pohody a spirituálnej pohody. U skupín žiakov s nepravidelnou pohybovou aktivitou boli zaznamenané štatisticky významné rozdiely u žiakov učilíšť v objektívnej stránke dôležitosti v oblastiach „psychosociálnej, materiálnej pohody a orientácii na budúcnosť“ a negatívne vzťahy u žiakov gymnázií v subjektívnej stránke spokojnosti v oblastiach „spirituálnej, materiálnej pohody, vzdelaní, voľnom čase a vzhľad a vlastníctvo vecí“.

Príspevok je súčasťou grantu MŠ SR KEGA 014UKF-4/2013 Zvyšovanie kvality a úrovne zdravia adolescentov prostriedkami pohybovej aktivity na základných a stredných školách.

Kľúčové slová: Kvalita života. Pohybová aktivita. Stredná škola. Žiaci. Vzťah.

HEALTHCARE ASPECTS OF ACTIVE WATER TOURISM

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SUMMARY

Water makes the basic component of natural environment and is vital for life and functioning of living organisms. Water environment crucially influences on human body in physiological, mental and aesthetic ways. This environments effects human organism differently. The strength of this influence depends on sex, age and psycho-physical condition of given individual.

The research paper presents selected water sports disciplines such as swimming, sailing and canoeing with their diversification into various attractive forms. Practicing them leads to improving functioning of systems, internal organs and levels of physical fitness.

Following the undertaken analysis of specialist literature the conclusions are presented in the end of the paper.

KEY WORDS: water, health, physical activity, natural environment, water environment, water sports, active tourism

INTRODUCTION

The article concerns active tourism practiced by man in water environment. The authors of the article indicate health benefits coming from practicing water tourism in the form of various sports utilising water, the sun and wind for this purpose.

The subject of water tourism was analysed by Klementowski (2002), Raczynski (2007), Pawlowicz i Trybalski (2008), Baturo (2011).

Water is a basic component of natural environment in which a human lives. For humans water is a limited environment to which he has to get accustomed in order perform

special tasks in it, such as ability to swim. Water is vastly applicable in numerous spheres of human activity. One of them is active rest in water environment which gives opportunity to practice traditional and extreme sports.

Active tourism means variety of sports practiced with using appropriate sports equipment. These sports may be practiced in water, under water and on ice, beyond the domicile with the purpose of regeneration of physical and mental strength as well as getting and improving health condition.

Water is a restricted environment, to which a man has to get accustomed if he is willing to perform special tasks in it. The skills of swimming, diving at various depths or water jumps are included in these tasks. Besides, serving on various sailing and motor boats on seas, lakes and rivers in different climatic zones.

Nowadays there is a vast offer of physical exercises bearing sports, recreation and extreme character to be practiced by people in water environment.

Health-supporting benefits of water sports are evident through the influence of water environment on human organism t every stage of ontogenesis.

Physical activity stimulates physical, intellectual, emotional and social development especially in childhood and adolescence.

OBJECTIVE

The objective of the article is to indicate which sports should be practiced in active water tourism and how they influence on human health in physical, psychological and social aspects.

METHODOLOGY

The article bears the monographic character. The research method utilised in the present article is the analysis of specialist literature. An attempt to present healthcare aspects connected with water tourism was made with its background.

RESULTS OF UNDERTAKEN ANALYSIS

Each man should be physically active irrespectively of age, motor skills, somatic structure, disabilities or state of health. Physical activity considerably delays morphological and functional changes occurring in human body with age.

Water together with air make the basic component of environment which is important for life and functioning of people, animals and plants. It is present in the nature in three states of matter – liquid, gas in the form of steam and solid in the form of ice.

Natural water bears physical and chemical properties. Physical properties are temperature, hue, cloudiness, smell and taste. Chemical substances present in natural water are divided into two groups: inorganic (mineral) substances and organic substances in the form of water microorganisms and tiny plant particles. If we consider the value for human health, they can be divided into: harmful for health, indifferent to organism and necessary because of its positive influence on human's health, for example, iodine or fluorine compounds (Czabanski, Filon, Zaton, 2003; Raczynski 2007).

Water is 820 times thicker than the air. Density of water determines human body's behaviour in water. It matters both physiological activities and movements of a human. Making movements in water meets resistance in every direction. Water resistance is approximately 4 to 12 times stronger than that of air whereas an effort necessary to break the resistance is three times as great as during exercises on land. Density of water enables gaining driving force via locomotor movements of upper and lower limbs (Halat, 2000; Czabanski, Filon, Zaton, 2003; Raczynski, 2007; Piotrowska- Calka, 2013).

Surface waters undergo frequent pollution which make conditions beneficial for development of living organisms. Such organisms embrace bacteria and viruses but also algae, fungi, protozoa and others. The most dangerous for human's health are waters contaminated by sewage including excretions in the form of faeces and urine of people with infectious diseases (Grochowicz, Kortykowski, 1996; Prusik, Bochenek, Görner, Prusik, 2006; Raczynski, 2007 p. 85).

In 1984 the World Health Organisation put forward a new, more dynamic notion of health which now is treated "as undergoing changes human ability to thoroughly achieve physical, mental and social abilities supporting creative reaction to challenges of environment" (Woynarowska, 1989 p. 9).

Modern definition of health highlights that health should be won, searched for and promoted. Condition of such activity is human development, constant enriching your own life in professional and sports-recreational aspects. Within a healthy society every man is able to realise his life plans, undertake activities and develop himself physically, intellectually and spiritually (Czaplicki, 2008 pp. 13-19).

According to Woynarowska (2008) although lifestyle and health behaviours may change during lifespan of human, most of all, they are created during childhood and adolescence. Negative behaviours as well as insufficiency of positive ones formed in these periods, in the process of socialization, are difficult to be modified and corrected during adulthood.

As Wolanski says "Health is an optimal balance between organism and environment" (1983 pp. 241-258). This balance may be "measured" by adaptation changes efficiency. Organism efficiency means ability to perform such changes. When changeability of environment is taken into account, then the balance is dynamic. Therefore, health means a process. This means that it can be restored, improved, strengthened and developed.

From the physiological viewpoint, health is tantamount to adaptation mechanisms efficiency, during physical effort in particular (Drabik, 2006). Adjusting abilities make the most general and essential basis of health. Thus, we may assume that activity understood as ability to move, motor ability and physical efficiency are good examples of adjusting abilities. Together they are encompassed within the category of physical health (Drabik, 2006).

Holistic approach is the essence of contemporary health model. It assumes that health of an individual makes the "whole" which is comprised by a few mutually interconnected dimensions: physical, mental, social, spiritual, sexual and reproductive health. The aforementioned dimensions are influenced by a number of various factors which merge together in different groups (Woynarowska, 2010). Among them there are: cultural norms, environmental health conditioned by physical, chemical, biological and social factors.

According to Woynarowska (2008) healthful behaviours divide into supporting and threatening health. Supporting behaviours should be understood as any conscious activity undertaken by an individual in order to promote, protect and maintain health irrespectively of its efficiency or not. To make an activity to be called so, there must be a component of conscious decision making as for its orientation to health. Health supporting activities are physical activity, rational nutrition, keeping clean the body and surroundings, providing safety, keeping adequate social contacts and coping with stress.

Swimming may be practiced competitively or for recreational purposes – for fun and pleasure. When practiced systematically it improves the physical fitness of organism, increases life capacity of lungs, improves blood circulation in the organism and the respiratory system functions. It means that stronger workout may be taken up and vital forces may be regenerated faster.

Recreational swimming is form of play, relaxation and active rest. More and more often it bears sports form especially extreme one nowadays.

Various motives of realizing these needs are attributed to conscious participation in sports and recreational swimming. Starting from pro-health motives, through family activity to keep fit of individuals until setting sports records (Karpinski, 2002; Klementowski, 2002; Czabanski, Filon, Zaton, 2003; Wojtasik, Tauber, 2011).

Physical activity regarded within categories of value boasts autotelic nature which should be understood as a collection of values being the objective in themselves and realized by certain people or groups of people. That's why, in order to relax, unwind or check in mental-physical respects we swim, dive, do water sports such as sailing, canoeing, rowing and others. And, at the same time, to improve the state of health in physical, mental and social dimensions. Moreover, to enhance physical fitness of our organism, motor efficiency and to improve moving techniques (Karpinski, 2002; Klementowski, 2002; Czabanski, Filon, Zaton, 2003).

Water environment exercises general and local influence on human organism. It means that placed in the skin sensory endings of the nervous system convey impulses due to being irritated by water particles. It causes certain reactions in the central, peripheral and vegetative nervous system (Czabanski, Filon, Zaton, 2003; Piotrowska-Calka 2013).

Contraindications for swimming and doing exercises in water have people with laryngological disorders, skin diseases and the cardiovascular system inefficiency. Swimming and bath in open waters fulfil a particular role from the viewpoint of resistance to diseases of cold and toughening up the body. Toughening up the body means making the organism resistant to atmospheric influences and rays of the sun. Stimulating the skin with low temperature of water as well as intensive muscle efforts enhance metabolism. The temperature of water determines reactions of the organism, when it feels warm or cold. A lower temperature slows down basic physiological processes, such as blood circulation, heart beat or lung breathing. On the other hand, a higher temperature intensifies the processes. It is significant in planning workout load in the discipline of swimming in different strokes.

Swimming in rivers, lakes or sea has chilling influence on the organism, but it also influences mechanically through impact of waves. The skin is penetrated by chemical substances coming from water, and the sun has enhancing influence on the nervous system, toughens up the body and works anti-rachitically.

Water environment interacts with human organism in different ways. Intensity of this influence depends on sex, age, psycho-physical condition and external conditions determined

by cultural and social aspects. Most of all, it is connected with the system of values functioning in the broadly-understood physical culture. It concerns human behaviours, their stances, emotions, and aspirations connected with accepted lifestyle.

Swimming is one of the most popular sports disciplines which are practiced by people for competitiveness or recreation. As an outdoor form of recreation it enjoys great popularity, most of all, due to its pro-health values, cognitive and economic benefits. It is accessible for everybody irrespectively of sex or age. Thus, swimming is regarded as a sport for life.

Swimming raises the level of physical efficiency, increases life capacity of lungs and in the same way influences on proper functioning of the organism..

Many dangers may appear when a man is in the water environment. If certain rules are obeyed, then it is safe and pleasant. No-one should swim in water after a huge meal since it may result in stomach cramps. Conversely, swimming with empty stomach leads to quick hypothermia of the organism. No-one should swim alone, jump into unknown and muddy water. Long swimming in cold open water leads to fast energy loss.

For humans, utilitarian form of swimming is crucial as a skill necessary in everyday life. This skill enables safe utilizing other water sport disciplines practiced in, under and on water and on ice. Physical and mental relaxation restores human strength, provides stress relief, calm and enhances immunity of the organism. It bears a vital character nowadays, when stressful life and working conditions are taken into account (Gracz, Sankowski, 2001; Klementowski, 2002; Gorski, 2011).

People practice sailing all over the world. Some in the tourist – recreational form as active rest, others take up this sport for competition. Everybody expects positive sensations connected with satisfying the needs: entertaining, cognitive, healthful, and physical activity.

Sailing is an art of navigating, setting sails and converting power of the wind into basic source of energy necessary for moving a yacht, iceboat on water or ice.

Sailing is divided into: oceanic, marine, solitary, board (windsurfing), ice (iceboats) and yachting sailing (Ostrowski, 1998; Dziwulski, 2001; Wirga, 2006; Czajewski, 2006; Staniszewski, Neuhorn, 2008; Liponski, Sawala, 2008; Szczepanowska, Rycicka-Kwasniewska, Dobosiewicz, 2013).

Sailors are greatly influenced by natural environment. Most of all, there are meteorological factors, among which there is a strong and stormy airflow causing considerable cooling of the body, strong intensity of solar energy including direct radiation and reflected from the surface of water, and strong air humidity as well. Simultaneously, it may cause a greater amount of ozone, iodine, sodium and magnesium chlorides and smaller

air pollution. These factors influence on the organism and cause acclimatization and adaptation. It results in increase in activity of certain enzymes. There are ongoing beneficial changes in the composition of blood, i. e. increase in the number of red blood cells and in the amount of calcium, phosphorous and potassium. At the same time, speeding up metabolism and improving general immunity of the body. Beneficial changes in functioning the nervous system, such as enhancing mental processes, feeling well physically and mentally, relaxation and stress relief.

Canoeing is a natural form of movement, influencing the human body comprehensively. It is a variety of water sports practiced on the surface of water with the use of canoes, Canadian canoes and dragon boats. It is also a canoeing tourism combined with sightseeing. Sports canoeing can be divided into classical, mountain, polo and rodeo. Mountain canoeing is practiced on rivers with strong fall head of water. It also means extreme sports competitions which include river running, creeking and freestyle.

Other conditions dominate in the water environment than in that natural for humans. They are unnatural and particular as for him. Water is a limited environment, to which a man should get accustomed in order to carry out special tasks in it. These tasks include swimming in water and under water, diving at different depths and places, often dangerous. Also, jumping and plunging into water in natural circumstances and man-made ones; team sports practiced on the surface and underwater, such as water polo. Aqua fitness exercises done in the vertical position with making use of equipment and accompanied by music. Sailing on the surface by various vessels such as canoes, boats, yachts, catamarans.

Swimming affects human body in two ways. Firstly, through balance of the body condition change. Horizontal positioning of the body leads to change in kinaesthetic feeling, trains the sense of balance and muscle-articular feeling. Secondly, thermal conditions. Change in the thermal conditions cause a considerable loss of body heat. Keeping a constant body temperature is possible thanks to the work of thermoregulating mechanisms.

When the organism is in the water various reactions take place. The initial vascular reaction occurs immediately after immersing the body in cold water. Narrowing blood vessels of the skin diminishes the loss of heat. During the second reaction, expanding of vessels takes place, the blood moves to the periphery and it is manifested by blushing skin and raising its temperature. During the third vascular reaction the disorder of thermoregulating processes appears. Present symptoms are skin congestion, shiver, goose pimples, chattering teeth and cyanosis around the mouth. The presence of such symptoms means a person must leave water

and go ashore (Klementowski, 2002; Czabanski, Filon, Zaton, 2003; Piotrowska-Calka, 2013).

The impact of water environment on human organism is essential in the physiological, mental and aesthetic aspects. Various exercises performed in water lead to improving blood circulation, respiration and thereby functioning of health and lungs. Also, to enhancing physical efficiency. At the same time, to increasing the pace of metabolic processes and lowering blood pressure (Jaskolski, 2002; Klementowski, 2002; Czabanski, Filon, Zaton, 2003; Gorski, 2011; Piotrowska – Calka, 2013).

CONCLUSIONS

Following the analysis of the gathered material, the health beneficial factors of water tourism advantageous to human health include:

1. Influence on proper functioning of organism.
2. Rising the level of physical efficiency of organism.
3. Improving the fitness of motor system.
4. Rising the level of motor efficiency.
5. Keep-fit and technical preparation in order to practice water sports.
6. Toughening up organism through physical activity in water.
7. Correcting faulty postures.
8. Restoring physical strength and mental rest.
9. Delaying the aging process of the human organism.
10. Satisfying conditions of practicing sports, including extreme ones, connected with water.
11. Gaining knowledge connected with physical activity in water environment.
12. Arousing motivation to participate actively in various sports – recreational activities in water.

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THE POSITION OF MOVEMENT AND SPORT ACTIVITIES IN LIFE OF UNIVERSITY STUDENTS POPULATION AT THE UNIVERSITY OF MATEJ BEL

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SUMMARY

In this article we have analyzed within the scope of project VEGA1/2053/12 the position of movement and sport activities among the population of university students at the University of Matej Bel in Banská Bystrica. By means of our research we have made a finding that 49,50 % respondents considers their health condition to be fully satisfactory. We have also discovered that they practice other sport activities 20,00 % than those stated in the questionnaire. The university students stated that they practice martial arts, basketball, aerobic, zumba, archery, hill climbing and dancing. It was also discovered that especially the fathers lead the young generation to sport activities (39,00 %) and the university students mostly draw the information about movement and sport activities from the internet (59,00 %).

KEY WORDS: movement activity, population of university students, adolescence, adulthood.

INTRODUCTION

Lately the movement activity of young people is very constrained. The lifestyle of the majority of population urgently required some kind of counterbalance in terms of active rest and returning to living in the open. The simplest forms of aerobical exercise are movement and sport activities that use exercises natural for people – this helps to enhance their health and physical condition.

Sičák (2004) comments on the issue of the quality of life, which gradually gains greater and greater focus by 2 reasons:

a) Economic growth and advancement in science that helps the population to meet their primary material needs. It activates the necessity of meeting the higher forms of needs.

b) The consequences of the economic growth arise it becomes evident as a threat of health of the population

Veenhoven (1996) divides the quality of life into 2 types: the assumed quality of life and the actual one. He also mentions terms just as satisfaction with life, subjective comfort and happiness.

Hartlová – Hartl (2000) define it as an expression of feeling of happiness in life, psychical harmony, degree of self-realization and the degree of satisfaction or dissatisfaction in life.

With regards of the analysis of the condition of the physical education at universities, which took place in Slovak Republic in 1994, at several departments of physical education and sport science we can assume that physical ability and movement activity of the university students gradually downtrends. (Kampmiller – Sedláček, 1994).

Kompán (2003) talks about the activity of the university students, who gain and process a great amount of information in a short time. It results in beginning of physical and psychical exhaustion. The author considers an adequate degree of physical ability as one of the important factors, which ensure the stability of mental ability during the time of studies and they positively influence the disposal of negative influence of stress. In case of the population of the university students it is important to enhance the gained attitude towards movement activity. Particularly this stage is characterized by the important changes in life of the individual and these changes influence the arrangement of leisure time. Even in case of university students there is a predisposition of gaining weight or gaining muscle atrophy due to the influence of sedentary way of life, which is also the reason of the expansion of diseases of affluence.

Living in the open is an important part of human's life. Especially present-day youth most often spend their leisure time living in the open. It is related with the fact that each person has encountered with a form of living in the open and these activities belong to present-day population's most accessible and most common ways of spending leisure time. (Bochenek – Görner, 2005; Görner – Mandzák, 2011).

Living in the open is also described by Görner – Pyšný – Kompán (2007). They include there camping and living in the open. It markedly helps in recovery and all-sided personal development with the emphasis on the movement activity and cultural education.

Kompán – Görner (2007) include among the movement activity in the open a scale of activities, that include sports practiced outdoors, hiking, games and various exercises (outdoor pursuits, outdoor adventure and outdoor activities) and especially the exercises which require using our own power or special equipment in hurdling and they are ecologically friendly. (Outdoor activities and Outdoor sports) .

THE AIM

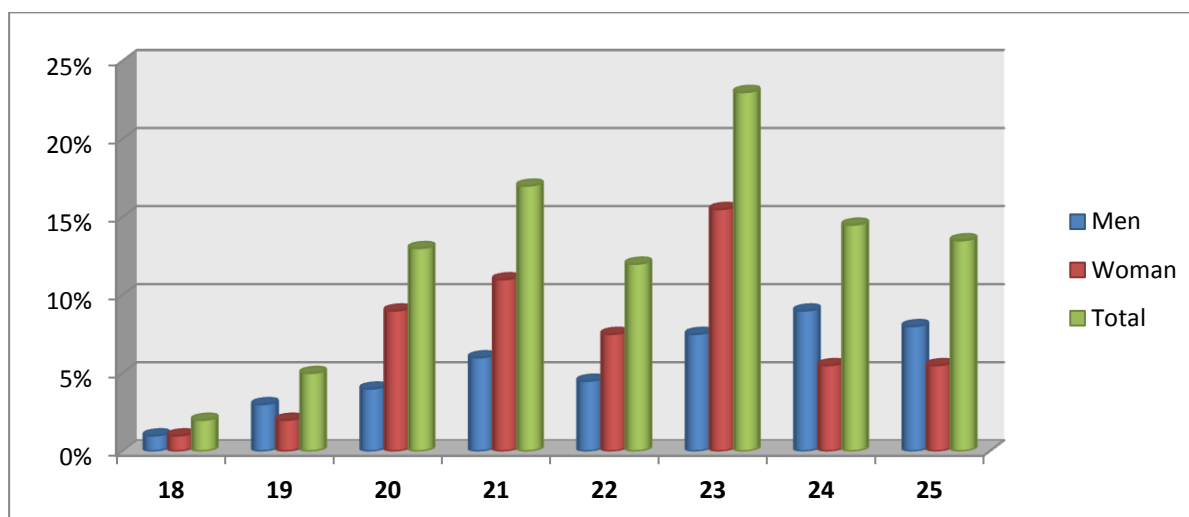
The aim is to analyze the position of movement and sport activities in lifestyle of the university students' population at the University of Matej Bel in Banská Bystrica.

METHODOLOGY

Our research has been actualized at the University of Matej Bel in Banská Bystrica. The researched group comprised of university students – first year, second year and third year undergraduate students and first year and second year students graduate students. Total number of respondents comprised of 57 % of women and 43 % of men (Panel 1). At the time of research the age of students was in scope from 18 to 25 years. (Picture 1)

Panel 1 Percent occurrence of respondents

n = 200	Number	%
Men	86	43
Women	114	57
Total	200	100%



Picture 1 Age of Respondents (original source)

Our research has been actualized in winter semester of academic year 2013/2014 na at the University of Matej Bel in Banska Bystrica. Primary research method used was a questionnaire in research VEGA1/2053/12. All the questionnaires were distributed in direct contact in printed form by means of questionnaire sheets and thereafter personally collected. The questionnaire comprised of questions aimed on ways of spending leisure time, interest in outdoor movement activities and hiking. Out of 220 questionnaires distributed there were 200 filled correctly. Therefore we registered 91 % return ($p = 200/220 \times 100$), which can be considered to be an acceptable result. The criterion of registering respondents in the research was submitting a correctly filled questionnaire.

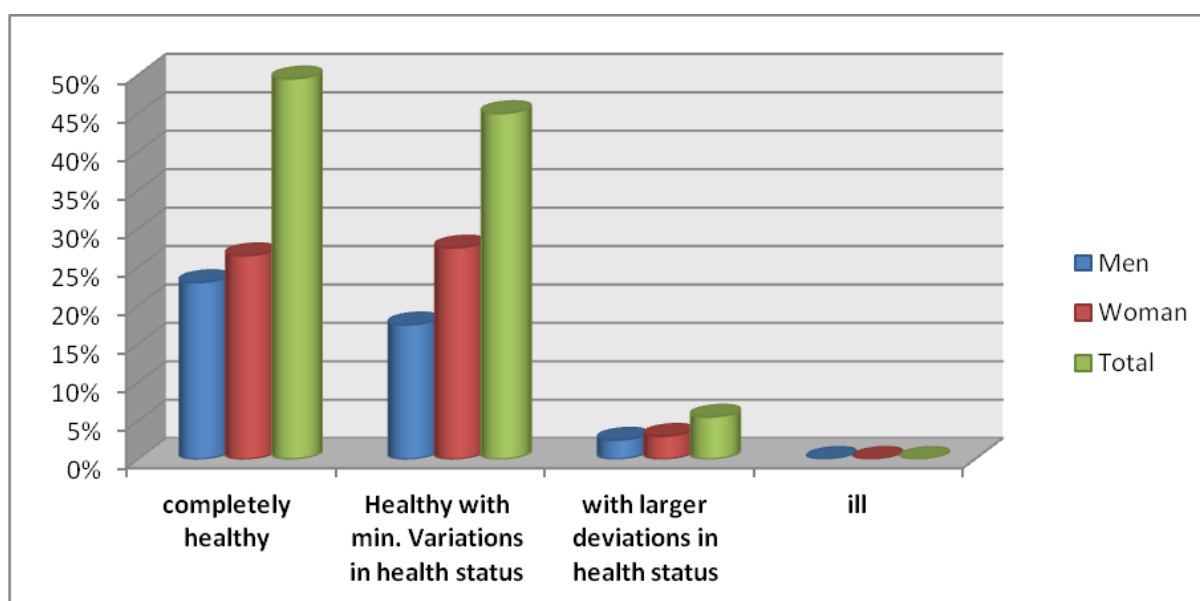
The respondents marked the chosen answer with a cross (**X**). In some cases there was a possibility of multiple choices. We used quantitative methods for evaluating the results expressing them by means of percentage. Numerical results were marked in panels and pictures.

RESULTS

Health is an important issue nowadays. Therefore this question seems to be simple, but the actual answer is complicated. The meaning of health to the individual and society itself is clear. Healthy society equals growth of healthy individuals and vice versa.

Therefore the first question was aimed on investigating the health condition of the respondents. Our researched group compiled of young people, while according to Picture 2 it is marked that less than half - 49,50 % of respondents, consider their health condition to be very good. There was 45,00 % of healthy respondents with minimal health issues and only 5,50 % of respondents with more serious deviations in health condition. None of the

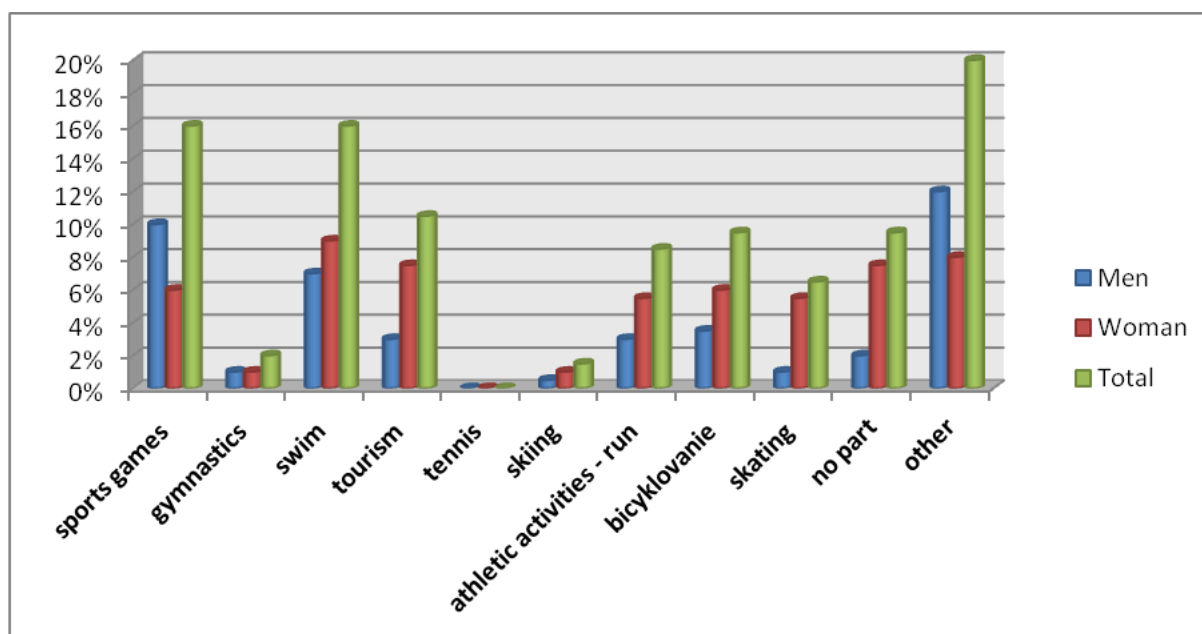
respondents was ill. If we compare genders, we can see that out of total number of men responded there is 23,00 % whose health condition is very good, whereas there is 26,50 % of women. There was 17,50 % of men with minimal health issues and 27,50 % of women stated, that there have minimal health issues. There were similar results in comparing more serious deviations in health condition, which appear in greater extend in case of women than in case of men, though the difference is minimal. Out of total number of men it is 2,50 % and in case of women it is 3,00 %. The total number of questionnaires corresponds with the total number of 200.



Picture 2 Health condition of the respondents (original source)

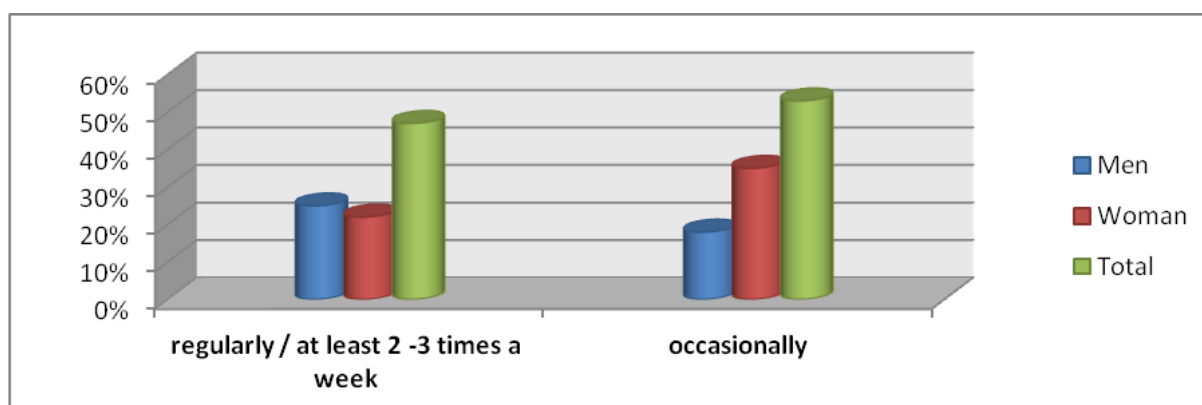
In our research we have also aimed on what kind of movement activity the respondents do in present time. According to the results we deduce that at present time 20,00 %, of them practice other sport activities than those available in the questionnaire.. Although Banska Bystrica is situated in environment ideal for hiking, or biking and also despite of the fact that young people prefer martial arts (karate, boxing, judo, basketball, aerobic, zumba, archery and hill climbing that are not related to sport and movement activities in the open. As we can see at the Picture 3 accordingly with 16,00 % do the student practice sport games and swimming at present time. WE assume that it so because sport games are very popular at this school. There is also a swimming pool at this school, which students can use within the scope of sport for everybody and this way they can also improve their swimming abilities. On the contrary the least practiced sport activities of university students are skiing 1,50 %, gymnastics 2,00 %, skating, athletic activities – running 8,50 % and hiking 10,50 %. None of the respondents

practice tennis at present time. If we compare differences between the genders, we see that sport games are practiced more by men than by women, whereas women are keener on hiking. The number of university students who don't practice any sport activity reaches 9,50 %, while majority of the number comprises of women, who do not practice any sport. Total number equals 200.



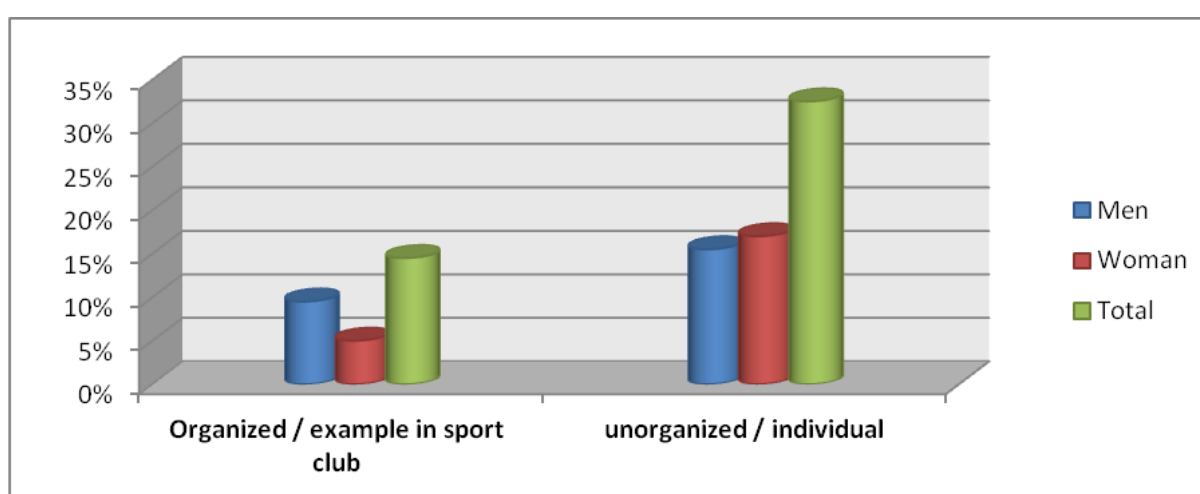
Picture 3 The most commonly practiced sport activity (original source)

Analyzing sport and movement activities practiced at present time we can assume that the number of young people who practice any sport activity occasionally has increased – it is more than a half of the respondents 53,00 %. 47,00 % of young people practice a sport activity on regular basis. If we compare the genders, we see that men practice regular sport activity more. 25,00 % and more women practice occasional sport activity 35,00 %. Total number n (200 questionnaires) equals the total number of respondents, who stated that they practice a sport activity.



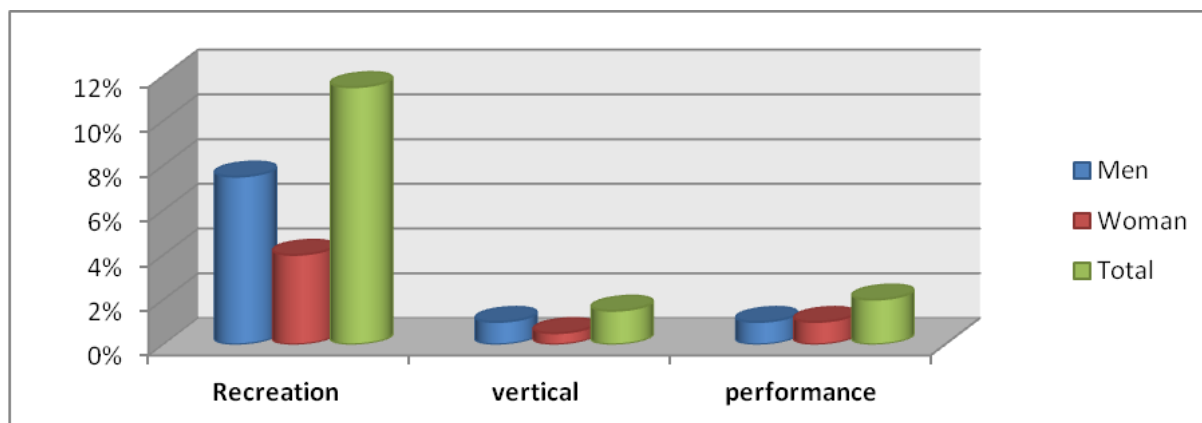
Picture 4 Way of practicing a sport activity with regards to regularity (original source)

At Picture 5 we can see that that university students prefer non-organized/individual sport activity practice (35,50 %). Young population prefers practicing sport and movement activities with friends to regular visits of clubs. Non-organized/individual sport and movement activity dominates over organized activity (e.g. in clubs) which is only preferred by 14,50 % of respondents. If we compare the gender, we see that women are more interested in non-organized form of sport activity. Total number n (200 questionnaires) does not equal a total number of respondents, but the number of respondents that stated that they practice a sport activity (Picture number 3), that they practice it on regular basis (Picture number 4) and in an organized way (Picture number 5).



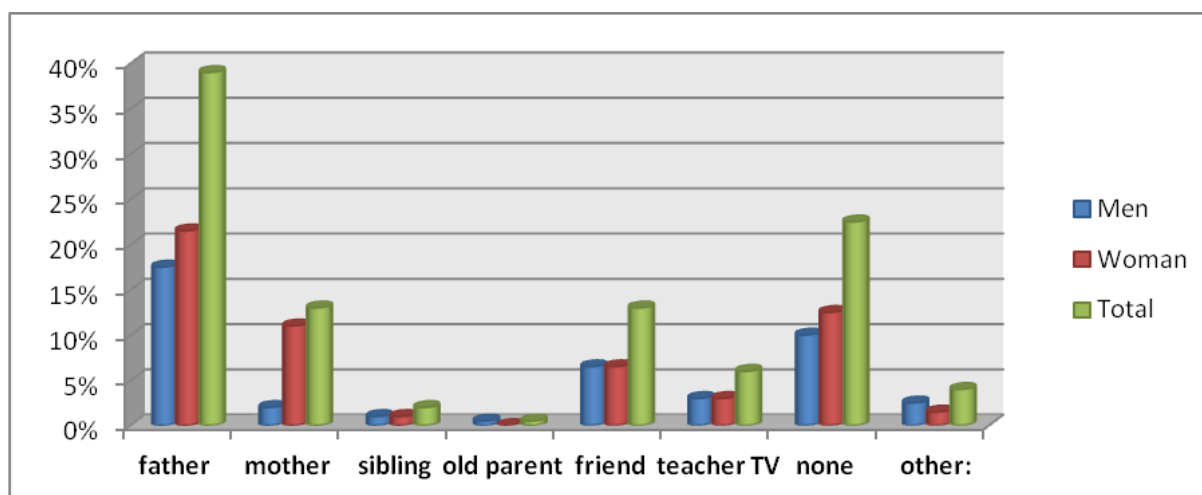
Picture 5 Way of practicing a movement activity or a sport activity in terms of organizing (original source)

At present time recreational sport activities are preferred (11,50 %). Our respondents prefer recreational sport activities especially because they do not have to concentrate on achievements. They act on their own account and their own condition. However it is bewildering that only 2,00 % of the university students practice sport activities professionally. It is surprising, because young people, especially at present time, should have a certain physical condition Equally low is a number of professional sportsmen, (only 1,50 %). If young people responded that they practice a sport activity (Picture number 3), they practice it on regular basis (Picture number 4), in an organized way (Picture number 5), then the number of respondents who responded the sixth question does not equal a total number of 200 respondents.



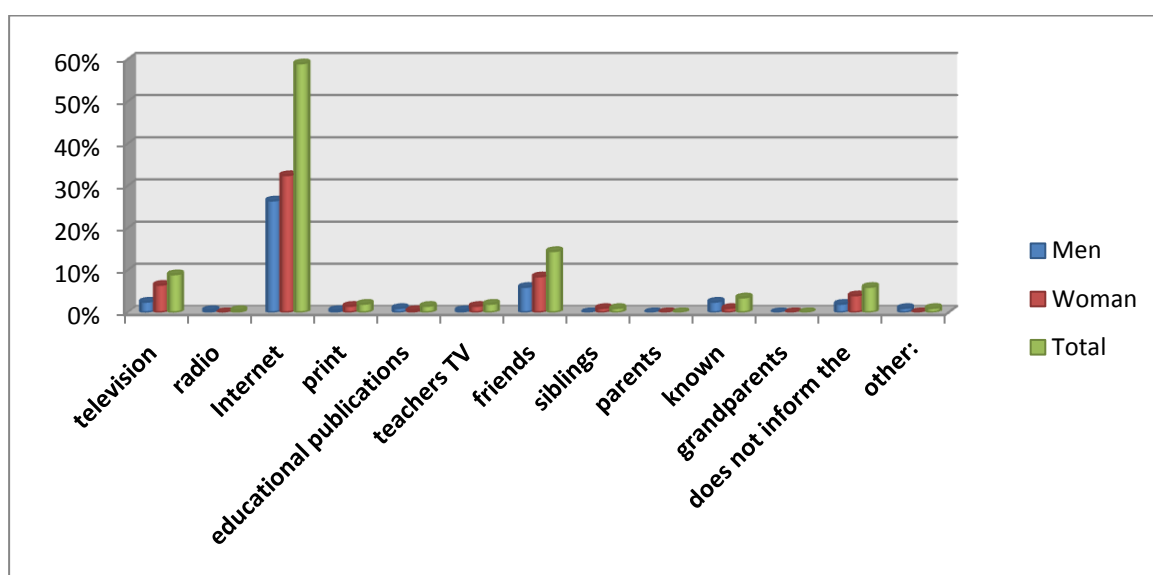
Picture 6 A way of practicing a sport activity at present time (original source)

With this question we attempted to determine who is the motive power that leads young people to sport activity practice. We have investigated that expressly the fathers – 39,00 %, try to lead their children to sport activity. Parents are the first who should encourage us to pursue active lifestyle. The second most common answer was, that nobody led our students to movement and sport activity (22,50 %), which is a negative information. The third place took a mother alongside with friends 13,00 %. If not a parent, then a P.E. teacher should be the leader who has an effort to lead young people to active lifestyle, however only 6,00 % stated that it is so. The lowest percentage gained grandparents (0,50 %) and siblings (2,00 %). Analyzing individual genders closer we have investigated that women are led to movement activity more by their father 21,50 %. If we concentrate on the mother, we see that she dominates more in case of women than she does in case of men 11,00 % . Total number equals 200.



Picture 7 Leading to movement activity (original source)

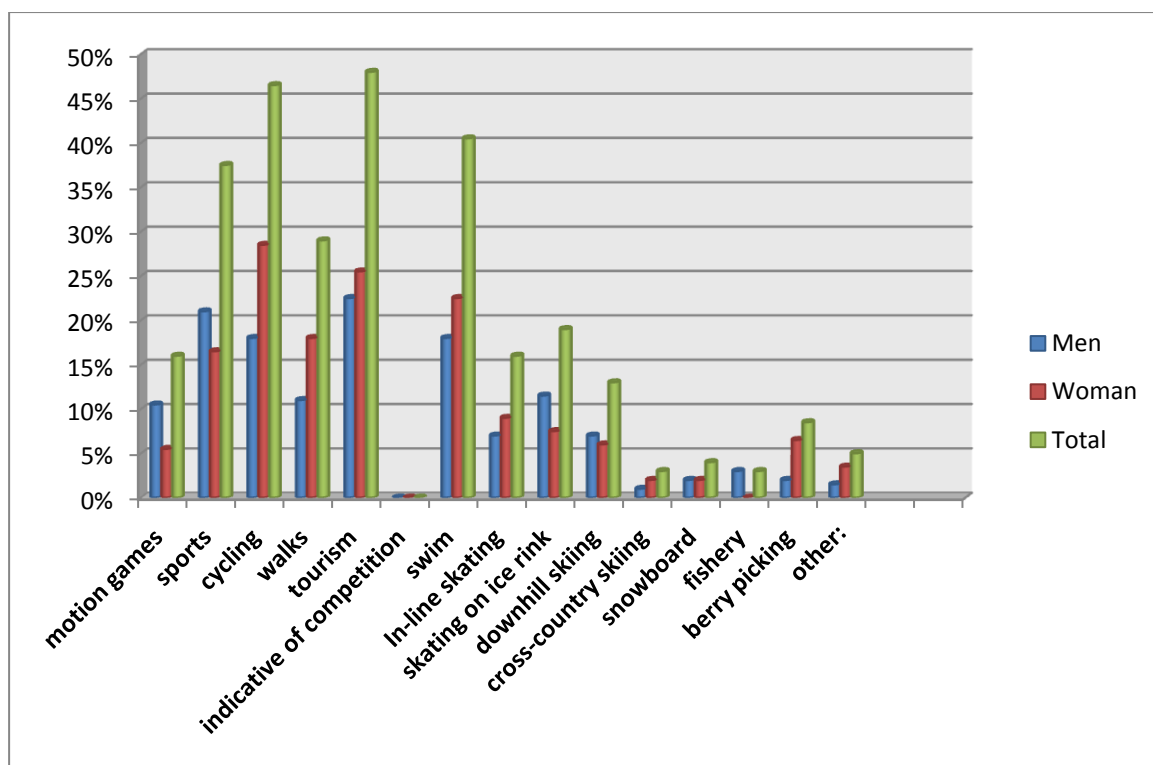
At present time, as we have assumed, the most important information source for university students is internet (59,00 %). They stated friends as a second source of information (14,50 %) and television as the third source of information (9,00 %). It was surprising that 6,00 % of the respondents do not search information about sport activities at all, while 4,00 % of these 6,00 % comprised of women. What was even more surprising was the fact, that nobody asks about information of sport activities from parents and grandparents, even if the family should be the one who offers the children majority of information. There was an equally bad result in case of acquaintances 3,50 %, press and P.E teachers 2,00 %, educational publications 1,50 %, siblings 1,00 % and broadcast 0,50 %. Total number equals 200.



Picture 8 Source of information about sport/movement activities (original source)

With this question we attempted to determine which forms of outdoor sport and movement activities the students are interested in, should there be an opportunity to practice it. According to the results we can assume, that the students are mostly interested in hiking 48,00 %. Hiking belongs to the most popular outdoor movement activities among the students, as a whole regardless the way of realization. Students are interested in watching the beauties of nature surrounding Banska Bystrica. As we already mentioned, it is also practiced at this school and it is very popular among the students. At the second place there is biking 46,50 %. Most of the households own a bicycle and parents are to first to lead their children to their first movement activity – biking. Swimming takes the third place 40,50 %. We already mentioned several times, that there is a swimming school at school and students like to use it

for training and relaxation. Among outdoor activities popular among students also dominate sport games 37,50 %, walks 29,00 %, ice skating 19,00 %, and roller skating 16,00 %. Less popular are fishing and terrain skiing (3,00 %). However, population of university students is not interested in orientation running. Analyzing individual genders closely we have investigated that, men are more interested in practicing sport and movement activities at ice-hockey ground, whereas women are more interested in biking, walking, hiking and swimming. The number of submitted questionnaires does not equal 200, because the respondents could choose max. three answers.



Picture 9 Favorite forms of outdoor movement / sport activity /should there be an opportunity of the realization/ (original source)

CONCLUSION

Physical activity is one of the most natural expressions of human being. It is an activity essential for life, which is a basic condition of healthy physical as well as psychical health. Physical activity, as a matter of fact, is a “medication” without the side effects. It prolongs our life and enriches its quality.

Therefore if we practice any chosen movement activity on regular basis, we can keep ourselves physically fit even in advanced age. Physical changes of the body are the response

for exercise and they support function of body systems. Active and regular movement activity improves condition, psychical stability; it supports metabolism, and positively influences cardiac activity. By means of movement activity we strengthen our lungs, clean our organism from toxins, it also helps in struggling obesity, it brings us joy and it has relaxing effects.

Gradually, living in the open and hiking plays a major role in people's life because it gives us calmness, stability and it is one of the most effective mean in struggle with stress. Even nowadays in this hectic time we should find a way to spend some time outdoors, because nature is the way to health. Here we find motivation, regeneration and beautiful perceptions. Living in the open is also suitable for families, because here they improve their communication, strengthen their relationships and surround themselves with positive thoughts.

To not surrender to the high speed of life nowadays a young person should take care of his physical ability and condition on regular basis. Equally important are also hiking and sport activities practiced outdoors, which are one of the most accessible activities and they help in forming physical and psychical side of personality.

The aim is to actualize an analysis of place of outdoor movement and sport in lifestyle of students of the University of Matej Bel in Banska Bystrica.

We actualized our research by means of standardized questionnaire, which was correctly filled by 200 respondents. Out of this number there were 86 men and 114 women at age of 18 to 25 years. Based on the tasks of the research we set we have accomplished to fulfil the aim of the research.

Less than half of our researched group states that their health condition is very good (49,50 %).

20 percent of respondents mentioned other popular movement activities than the ones mentioned in the multiple choice questionnaire. Here the university students stated that they practice martial arts (karate, boxing, judo), basketball, aerobic, zumba, archery, hill climbing and dancing.

We were also interested in finding who motivates the students the most to practice active lifestyle. The respondents stated here, that the father is the most influential (39,00 %), who was an active power in pursuing an active lifestyle. After all, who else than the parents should try to lead their children to active lifestyle even at early age?

The students stated that their favorite outdoor movement activities that should be realized are hiking (48,00 %), biking (46,50 %) and swimming (40,50 %). Nowadays university students search for the information mostly on the internet (59,00 %). We were

surprised that 6 % does not inform about sport and movement activities at all, whilst 4,00 % of these 6,00 % comprised of women.

We firmly believe that the results we have gained will serve in improving the image of present time university students at the University of Matej Bel in Banska Bystrica.

Our target group comprised of university students and it is essential to motivate especially young people in making the most of their leisure time by means of sport and movement activities. These outdoor activities should be practiced more, because they have positive effect on our health..

Hiking trips are organized for everybody at the University of Matej Bel in Banska Bystrica as a part of sport for everybody. However they should be organized more often and for a larger group of people to convince them about the positive effects of movement activities on our organism. Also lectures should be organized on positive effect of hiking and living in the open or make them more attractive by means of adventure form..

Promotion of hiking and sport and movement activities is very important, thus it is essential to use various sources of information, especially the internet which this generation uses to search for the information the most. P.E. teachers should also be motivated and encouraged to set an example to their students and spend their time actively.

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MIESTO POHYBOVÝCH A ŠPORTOVÝCH AKTIVÍT V ŽIVOTE VYSOKOŠKOLSKÉJ POPULÁCIE NA UNIVERZITE MATEJA BELA V BANSKEJ BYSTRICI

SÚHRN

V tomto článku sme analyzovali v rámci projektu VEGA1/2053/12 miesto pohybových a športových aktivít u vysokoškolskej populácie na Univerzite Mateja Bela v Banskej Bystrici. Prostredníctvom nášho prieskumu sme zistili, že 49,50 % respondentov, hodnotí svoj zdravotný stav ako úplne vyhovujúci. Ďalej sme zistili, že sa venujú iným športovým činnostiam 20,00 %, ako tým, ktoré sme im ponúkli v možnostiach. Tu vysokoškoláci uviedli, že sa venujú bojovým športom basketbalu, aerobiku, zumbu, lukostreľbe, horolezectvu a tancu. Mladú generáciu vedú k športovým aktivitám najmä otcovia 39,00 % a najčastejšie čerpajú informácie o pohybových a športových zručnostiach prostredníctvom internetu 59, 00 %.

KLÚČOVÉ SLOVÁ: pohybová aktivita, vysokoškolská populácia, adolescencia, dospelosť.

INFLUENCE OF SHORTENED P-S-S ON SKILL RETENTION IN SOCCER MATCHES WITHIN U11 AND U12 CATEGORY IN SOCCER

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SUMMARY

In this article, we try to detect the influence of shortened P-S-S on skill retention within U11 and U12 category in soccer matches in soccer club LAFC Lučenec. We found out that P-S-S has an positive influence on the skill retention in soccer matches, when we observed the realization of dribbling with Kick feint (inside) Furthermore, we can conclude that P-S-S also positive affects the drill automation (percentual success of drill realization within the experimental group exceeded the level of 80%) .

KEY WORDS: soccer, shortened P-S-S model, U11 - U12 category, retention of soccer skills

INTRODUCTION

Youth sport training is quantitatively and qualitatively different from adults training. It requires professionals in football, pedagogical and psychological department. They bear a huge responsibility for physical and mental development of young players. Even the youngest players are nowadays burdened with much more duties than previous generations.

In this article we try by the experiment to find out the influence of shortened P-S-S on skill retention in football club LAFC Lučenec.

PROBLEM

Nowadays the situation within sport preparation in Slovakia is not ideal, soccer performance lacks more quality within individual technical and tactical performance (self – confidence and more successful repetitions within 1-1 situation), speed, agility and psychical resistance in comparison with soccer advanced europe countries.

Nemec, Štefaňák (2008) claim that great mistake is that coaches are not patient when skill acquiring. To automate the skill we need more than only few repetition, it requires thousands of them. We agree with this opinion and establish that skill acquisition lacks more attention. We also assume that repetitions within skill acquisition are not sufficient for later automation, retention neither. It therefore causes their forgetting. Coaches tend to jump from skill acquisition to development very quickly (whereby Schmidt (1991) claims that skill acquisition is finished after 300-500 reps) and another found mistake is to jump very soon to acquisition of another skill before development of previous skill is not finished yet (whereby Schmidt (1991) find skill finished, stabilized and automated after 3-5 thousands repetitions).

As presented, coaches therefore can not require from their players to remember skills and even using them in matches if these were not even automated.

Schmidt, Lee (2005) define the automation as a relatively permanent change in capabilities to realize motor skill as a result of a training or an experience. They are also convinced when the learning is completed and the player is able to realize skill automatically, the retention occurs and is not likely to forget them. But while attempting to learn new skill (particular changes in its acquisition), but if this activity untimely stops (before it become automated), the player decreases to his initial level and this process must be repeated again. To consider the skill automated Kollár, Adamčák (2007) recommend 80% success within its realization.

The drill approach (Schreiner, 1999, 2009) seems to be the best to handle so many repetitions needed to automate the drill and also to retain in memory. Nemec, Štefaňák (2008) agree with this argument and recommend to apply the drill approach to training process within U11 and U12 category.

The main philosophy of P-S-S is systematic learning, where the technique is basic (dribbling). P-S-S offers the particular guide to automate the skill, step by step. Author of P-

S-S, Peter Schreiner, claims, that players will be able to practice chosen skill automatically in match situations and furthermore mastered skills will stay in memory for the future usage. Our aim is therefore to test these arguments in matches in slovak conditions.

P-S-S divides training session into the five levels (Schreiner, 1999; 2002; 2009).

- A) Warm up games
- B) Warm – up drill
- C) Coordination conditioning
- D) Main phase with focal theme
- E) End games or competitions

AIM

The aim of this article is to detect by the experiment the influence of shortened P-S-S on the skill retention within U 11 and U 12 category in soccer club LAFC Lučenec.

METHODOLOGY

In our experiment we used one-group experiment. As a experimental factor was considered training session within shortened P-S-S with its schematical arrangement. This allowed players to realize more repetitions within 1-1 situation.

Experimental group represented 10 players U11-U12 category within soccer club LAFC Lučenec. The average age was 11,4 years. The soccer age varied between 4 and 5 years (the average was 4,5 years). The head coach was Igor Fajčík, UEFA B holder (7 years of coaching experience).

At the begining of experiment the start level of realization of the dribbling and Kick feint (inside) was detected within chosen matches. Subsequently the skill acquisition and then skill development was practiced. The skills we focused on were:

1. dribbling with Kick feint (inside)

2. dribbling with Dummy step (outside – outside)

3. dribbling with Step over (outside – outside).

The structure of training session within shortened P-S-S allowed players acquiring one skill while developing the other (in training sessions focused on development first feint, also second feint was acquired). Experiment lasted 104 days and contained 56 training sessions (four per week).

After the development of the first feint was finished its level was again followed in chosen matches. Rest days within the experiment when focusing on another two feints, the first feint was not further practiced and we focused on realization of the other two feints.

Level of first feint realization was repeatedly detected after development of third feint was finished (after 28 training sessions from the first feint was finished).

For the acquiring of start level and finish level of first feint (Kick feint (inside)) we used an observation approach. We judge percentual success eventually non-success while dribbling and pasting the opponent by Kick feint (inside).

When evaluating, we count percentual success in each match on the basis of all successful and unsuccessful attempts. The final percentual success of each player we count as a average of a sum of percentual success of all matches. The final percentual success of whole team was taken as a average of a sum of percentual success of all players.

To consider the skill automated we take into consideration level of minimum 80% (Schmidt,1991; Kollár – Adamčák, 2007).

RESULTS

When evaluating start % success of dribbling and pasting the opponent with Kick feint (inside) in chosen soccer matches, only the success of 34,28% was detected. Neither player automated this skill.

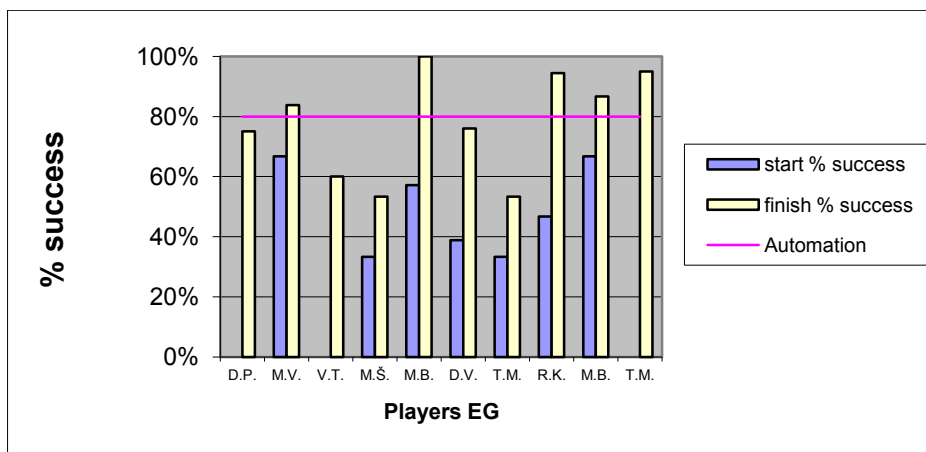


Figure 1 Percentual success of realization of Kick feint (inside) in soccer matches before and after implementing shortened P-S-S regarding the automation

By the evaluation of the level of dribbling with Kick feint (inside) in soccer matches after 28 training sessions later, when we did not practise this drill any further, we found automation of this skill already within 7 players. Level of dribbling fluctuated from 60% to 100% (Fig. 2). Furthermore, we found increased average level of dribbling with Kick feint against previous observation, group reached 82,15% success and this level we can considered as already automated.

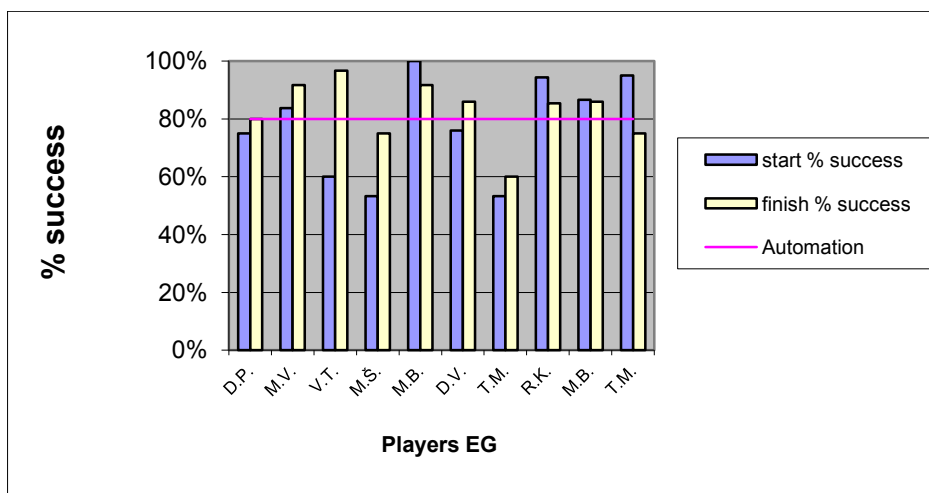


Figure 2 Retention – Percentual success of realization of dribbling and Kick feint (inside) in chosen soccer matches before and after 28 training sessions later (with no further training of this drill)

CONCLUSION

Regarding initiated we can conclude that shortened P-S-S has a fairly big influence on automation of chosen skill in soccer matches. It is needed to mention that after skill development was finished the level of automation was not detected yet, but in the same observation 28 training session later the automation was already reached. This discovery is very interesting also within skill retention. As we could see players did not forget learned skill and even used them more successfully afterwards (when they were not trained any further).

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VPLYV SKRÁTENÉHO P-S-S MODELU NA RETENCIU VYBRANÝCH HERNÝCH ZRUČNOSTÍ U MLADŠICH ŽIAKOV VO FUTBALE

SÚHRN

V našom článku sme sa pokúšali zistiť vplyv skráteného P-S-S modelu na retenciu vybraných herných zručností u mladších žiakov vo futbalovom klube LAFC Lučenec. Pozorovali sme realizáciu vedenia lopty a obchádzanie súpera pomocou Kick feint (inside). Bolo zistené, že skrátený P-S-S model má pozitívny vplyv na retenciu týchto vybraných herných zručností v stretnutiach. Navyše sme zistili, že skrátený P-S-S model má taktiež pozitívny efekt i na automatizáciu vybraných herných zručností (v experimentálnej skupine sme zaregistrovali vyše 80% úroveň úspešnosti pri ich realizácii).

KLÚČOVÉ SLOVÁ: futbal, skrátený P-S-S model, mladší žiaci, retencia herných zručností

COMPARISON AND COMPLEMENTARITY OF CLASSIC AND MODERN INSTRUMENTS IN EVALUATION OF PHYSICAL FITNESS AND MORPHOSOMATIC CHARACTERISTICS OF HUMAN BODY IN EXAMPLE OF 16-YEAR-OLD GIRLS

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SUMMARY

The study was conducted to evaluate the correlation between physical fitness, anthropometrics, surface electromyography signal and bioelectrical impedance analysis among 16-years-old girls in context of complementarity of used methods. Twenty six 16 years old girls have voluntarily participated in the study. They legitimated with average BMI of $21,62 \pm 3,35$. Girls' skinfolds as well as other anthropometric values were measured. Furthermore, the bioelectric impedance analysis (BIA) and the methods using skinfolds were used to estimate the percentage of total body fat (TBF). Participants performed three motor task which were derived from different physical fitness test and the surface electromyography (SEMG) of quadriceps femoris during specific trials was also estimated. The studied variables of SEMG were correlated with other measurements and the differences between three methods of TBF measurement were analyzed.

We found significant differences ($F(2;75) = 10,66$ $p < 0,0001$) between the BIA and the Hussman skinfold method. TBF was about 8pp higher in this second method. SEMG signal (mean amplitude RMS) correlated best ($r = 0,78$) with BMI and the thigh circumferences ($r = 0,66$). SEMG of the vastus lateralis muscle during the isometric chair-like position occurred to correlated the best with the physical fitness trial of 20 squats performed as quick as possible. There are differences between TBF measurement by using the BIA method and that

used by Hussman. SEMG seems to be a method that could supplement some data of the standard physical fitness testing.

KEY WORDS: 16-year-old girls, surface electromyography, bioelectrical impedance, anthropometry, physical fitness

INTRODUCTION

An interpretation of the term of physical fitness implies its ambiguous meaning. Although a common understanding of the term is not difficult it is a basis of a broad discussion in the area of physical activity and sport how to define it in a homogenous and comprehensive way presenting its complementary meaning. At the end of fifties (XX century) prof. Trześniowski proposed a definition of physical fitness as "a human's readiness to undertake and solve difficult movement tasks in various life cases requiring speed, strength, agility, suppleness, nimbleness, stamina as well as some acquired skills and movement habits based on appropriate movement competences and the health state". Though the discussed notion has evaluated since that time, despite differences in a way of defining the notion, according to most of scientists movement – a very important aspect of life - is an essence and basis of the definition of physical fitness.

In the used literature (Lipowski, 2005; Drabik, 1997; Ljach, 2003; Stamatakis et al., 2009; Kostencka, 2008; Pędraszewska, 1998; Stupnicki, et al., 2003; Osiński, 2003; Pasek, 2011; Przewęda, 1973; Martynia 1960), a level of physical fitness is considered to be one of the main prognostic factors referring to the health state of a society and defining both a level of knowledge about the health and health-oriented behaviors. It surely results from the fact that "movement as a medicine has neither a substance nor a packaging but it is irreplaceable", as professor Wiktor Dega used to say. Unfortunately, increasing globalization and continuous gaining knowledge and money cause that people are able to spend much less time for physical activity.

An interpretation of physical activity in a population of persons not doing sports at all is different than in a group of sportsmen or physically active people, even if they are active on the vocational basis. In the first case (persons who do not train) it seems to be the most important to tie the physical fitness in health, what is broadly popularized by WHO as HRF,

i.e. Health Related Fitness. The main tenet of the concept is to popularize keeping a proper fitness level which guarantee in general a good physical, psychical and social mood (<http://who.in.en>; Lipowski, 2005). Basing on the HRF concept, estimating physical fitness is an attempt to define ability of an active participation in an everyday life with simultaneous significant decrease of likelihood of contracting a disease in the future. Surely, it is important in the HRF concept to correlate various components conditioning healthiness – i.e. morphological, muscular (stamina), motor, cardiovascular and respiratory, as well as metabolic (quotient HDL/LDL, lipids metabolism, glucose tolerance), what is marginalized sometimes. A practical use of HRF concept allows to forecast a high level of a human body functionality and ensures a high level of health and longevity of the population (Drabik, 1997; Ljach, 2003; Blair & Brodney, 1999).

All operations we have done in our work are based on a measurement of a physical fitness level and are focused on an assessment of methods and tools useful for measurement of physical fitness, stature and body composition. Correctly developed psychical fitness and body composition significantly implies life comfort and abilities of acting as 16 years old girls, and afterwards – women, in the society of the XXI century (Stamatakis, et al., 2009; Kostencka 2008).

There are several situations when using such research tools as physical fitness tests is very complicated (because of housing, dysfunctions of motor organ, etc.), hence we have tried to enrich a set of classical measurement methods, i.e. physical fitness tests, with morphosomatic measurement supported by EMG examination of legs at rest and with stress.

Using anthropometric measures to examine a structure of a human body has enabled measurement of an adipose tissue content as well as to observe a correlation with results of fitness tests. Although such a methodology has been described in the scientific literature (Jackson & Pollock, 1985; Hermens, et al., 1999; Konstantynowicz, et al., 2008; Majcher, et al., 2004; Jakubowska-Pietkiewicz, et al., 2009; Kettaneh, et al., 2005; Minetto, et al., 2013; Nordander, et al., 2003; Diohisio, et al., 2008; Beechy, et al., 2012), in order to evaluate it correctly we have compared obtained results to the results achieved by body composition analysis with bioelectrical impedance and surface electromyography methods. The obtained values of measurements have enabled revealing significant correlations between bioelectrical muscles activity and fitness tests. In the future, EMG examination could serve as a valuable method of testing correlation between a fitness level and bioelectrical activity of muscles.

EMG is a relatively simple and completely non-invasive examination which can be conducted in a modest local condition and almost independently on a functional state of the investigated persons and their disfunctions.

AIM

The study was conducted in order to evaluate the correlation between physical fitness, anthropometrics, surface electromyography signal and bioelectrical impedance analysis among 16-years-old girls of the Bydgoszcz region.

MATERIAL AND METHODS

The research was done in the school year 2012/2013. 16 years old, healthy and not doing any regular sports girls have voluntarily participated in the study. They were informed about the goal and methodology of the research. The girls, their parents and the school headmaster agreed the research to be done. Taking the cost of the investigation into account 26 students were randomly chosen. Their results were complemented with measurements achieved by usage of electronic research tools: BIA, SEMG. All volunteers essayed fitness tests and anthropometry examination. Fitness tests (Stupnicki, et al., 2003; Żarów, 2006; Przewęda & Dobosz, 2007; Osiński, 2003; Pasek, 2011) were done after the volunteers had been informed about a correct fitness techniques. The tests consisted of: standing long jump (taken from the standardized EUROFIT tests), vertical jump (Przewęda, 1973) and test of squats done as fast as possible (according to Martynia, 1960 and Ryba, 1966).

Anthropometric methods consisted of measurements of a body height, body mass and limbs circumference. The measured values of the body height and mass were used to compute the BMI value accordingly to growth charts (WHO – see footnote).

Total adipose tissue content was computed by a measurement of skinfolds and computed with the following formulas:

- 1) by Jackson and Pollock (1985):

$$\%TBF = 0,29669 \cdot (x_1 + x_2 + x_3 + x_4) - 0,00043 \cdot (x_1 + x_2 + x_3 + x_4)^2 + 0,02963 \cdot W + 1,4072$$

- 2) by Hussman:

$$\%TBF = 11,91 \cdot \ln(x_1 + x_2 + x_5 + x_6) + 0,0442 \cdot \ln(x_1 + x_2 + x_5 + x_6) \cdot W - 23,54$$

%TBF – percentile content of adipose tissue in respect to the total body mass

- X₁ – vertical stomach skinfold
- X₂ – skinfold above arm triceps
- X₃ – vertical thigh skinfold
- X₄ – suprailiac skinfold
- X₅ – skinfold below shoulder blade
- X₆ – skinfold above biceps of arm
- W – age [years]

Anthropometric survey were conducted with the following measurement tools: ALUMED anthropometer, whose measurement accuracy is 1 mm, Gulick tume measure, SAEHAN mechanical skinfold caliper and a body mass scale TANITA WB-3000. The anthropometric measurements were carried out accordingly to Drozdowski (1998). They were conducted in a separate room neighboring to the gymnasium. Measurements of skinfolds were complemented with body composition analysis using bioelectrical impedance technique. The measurements was done by analysis of a body composition with TANITA BC 418 MA. The following parameters obtained by BIA were analysed: percentage of the total adipose tissue content, percentage of the adipose tissue content in legs.

The survey was started with explaining the research procedures to the girls taking part in it. They were presented commands related to the measurements. Participants have undertaken each trial individually.

Measurements were complemented with an investigation of electric activity of thighs quadriceps using the surface electromyography during choosen exercises and voluntary contractions. Bipolar surface electromyography technique was conducted with Noraxon (USA) – TeleMyo 2400 G2 electromyograph and with the 1cm active area disposable electrodes from Sorimex (Poland). Electromyographic signals from rectus femoris and vastus lateralis muscles of both limbs were obtained. Participants skin and the location of electrodes were prepared accordingly to the SENIAM recommendation [<http://who.in.en>]. The signal was processed and archived with MyoResearch 1.08 application created by Noraxon (USA). Analyses contained a percentile muscle activity (%MVC) in regard to the maximal voluntary contraction (MVC), a mean (RMS_m) and the peak value of a RMS amplitude (RMS_{peak}) processed in a time window of 300 ms and the median frequency of power spectrum (MED). The above mentioned parameter were evaluated during the following motion activities: squat to 90° angle in knee joints (eccentric phase – 3 s) and return to the standing position (concentric phase – 3 s), a chair-like position test (keeping the position through 3 s) –leaning

back against a wall when knee and hip joints are in 90° angle. Each test was done 3 times. Before activity tests, rest activity of muscles was determined through sitting 5 s with legs freely pendent. The maximal voluntary contraction was evaluated with knee and hip joint flexed to 90° with back leaned against a wall and legs freely pendent. Arms were crossed on a chest, a torso and pelvis were stabilized. Analysis has included also a muscle activity of the opposite limb during the maximal voluntary contraction – contralateral MVC.

Basic descriptive statistics were used in the survey: mean, standard deviation, maximal and minimal values. The differences between results obtained with BIA method and those computed with the above mentioned formulas concerning an adipose tissue content, and the linear correlation between measurements of the total adipose tissue were investigated. One way ANOVA and the test of Pearson's linear correlation were used in order to evaluate the significance of the achieved results. The post-hoc Tukey's test was used to examine the significance of the main effect of the variance analysis. Analyses of a linear correlation between variables describing electromyography signal and other examined variables were done. Assumptions of all above mentioned tests were checked with the Shapiro-Wilk and Levene's tests. The statistical significance was set as $\alpha = 0,05$. All statistical computations and charts were prepared with STATISTICA 10 (Statsoft, Poland).

RESULTS

Results of anthropometric survey, analysis of bioelectrical impedance and fitness tests are presented in the tables 1 and 2.

The variance analysis has shown that the used methods of evaluation the total adipose tissue content significantly differ from each other - $F(2;75) = 10,66$ $p < 0,0001$. Mean values of measurements are presented in the picture 1.

The post-hoc Tukey's test has shown significantly greater values (about 8 percent points) of the total adipose tissue content estimated with the Hussman's method for skinfold content in a comparison to the Jackson and Pollock's methods and the bioelectric impedance. The results of the Pearson's linear correlation (tab. 3.) show a great correlation between methods based on skinfolds. Moreover, the BIA method correlates significantly greater with the Jackson and Pollock's methods than the method of Hussman.

The correlation between anthropometric indicators and bioelectric activity of thighs quadriceps are shown in the table 4.

A significant positive correlation (0,78) was obtained between the girls' BMI values and muscle's rest activity given in absolute units of the mean amplitude RMS. A negative correlation was observed for the same parameter during the concentric phase of a squat. Almost for all variables a positive parameters correlation can be observed in a case of rest activity, while a movement task (a squat), in contrast, a negative correlation was proved.

Comparing the correlation between sEMG values and an adipose tissue content, which significantly modulates electromyography signals, we observe the greatest values of the correlation coefficient (in a decreasing order): for BMI values, the greatest thigh circumference, the greatest crus circumference, a percentage fat mass in lower limbs. In contrast, the weakest correlation was revealed for measurement of skinfolds.

The Pearson's linear correlation was also examined in order to discover a relation between sEMG parameters in various conditions and results of particular fitness tests. The results are presented in the table 5. The squats test correlates significantly only to the chair-like position test given with the parameters of the peak amplitude RMS (RMS_s) and the mean amplitude (RMS_{peak}) for a vatus lateralis muscle. It is also visible that the correlations for rest activity and contralateral MVC (i.e. measurement of a leg which is opposite to the one doing the maximal voluntary contraction) are negative, but for other activities (MVC, chair-like position test, squat – concentric phase) the correlation is positive.

DISCUSSION

The main survey result is showing the correlations between variables examined with various techniques and tools, as well as presenting differences between methods of the variables estimation.

Anthropometric and somatic research described in the papers, especially an estimation of an adipose tissue amount (based on a skinfold measurement) were compared to BIA (Konstantynowicz, et al., 2008) and to densitometry (Majcher, et al., 2004; Jakubowska-Pietkiewicz, et al., 2009). The BIA method, as well as the one based on skinfold, are proved to be very reliable (Kettaneh, 2005).

The obtained BMI results (21,62) and thigh circumferences (55,94 cm) are similar to the results achieved by Konstantynowicz et al., (2008) with a random sample of 16 years old girls from Białystok (21,1 oraz 54,2 cm) and to the results of Przybyłowicz's survey (2006) with a random sample of 17 years old girls from Górowo Iławieckie (BMI – $20 \pm 2,9$).

Moreover, we have obtained similar results considering BIA (25,82%) in comparison to the densitometric survey results of the first mentioned author (26,7%) and to results based on 4 skinfold investigated by the second author ($28,2\% \pm 4,3$). As we proved in our research, the lowest estimation of the total adipose tissue characterizes the BIA method.

The examination with the surface electromyography enables to examine electric activity of human skeleton muscles. An important aspect of the mentioned technique is a variability of a skin surface and the depth of an adipose tissue. A subcutaneous adipose tissue acts as a specific filter low-pass filter modulating EMG signal, however collecting an adequate signal is possible even for obese people (Minetto 2013). There exists many methods of measurement of the total adipose tissue content in a body. We have proved a significant divergence between three investigative methods. Results obtained with the Hussman's formula differ both from those achieved with Jackson and Pollock's formula and from BIA. Moreover, a greater correlation coefficient between the two last mentioned methods reveals their greater accuracy in comparison to the Hussman's method. On the other hand, Majcher et al., (2004), comparing the BIA method, densitometry and Slaughter's method based on a skinfold of an arm and subscapularis, proves similarity of BIA and Slaughter's methods for girls with an obesity (an average age $15,32 \pm 1,09$). Moreover, Jakubowska-Pietkiewicz's et al. research (2009) showed a significant correlation and a coefficient of determination between BIA and Slaughter's methods – and densitometry measurements ($r^2 = 0,83$; $r^2 = 0,87$, respectively) for girls (average age $14,06 \pm 2,78$, BMI = $18,91 \pm 4,1$). In our survey the coefficient of determination was equal only to 0,52 in the case of BIA and Jackson and Pollock's methods.

As far as bioelectric signal of a muscle is concerned we have observed the greatest correlation between the mean amplitude RMS during the muscle relaxation and a BMI indicator ($r = 0,78$). The sEMG signal was also significantly correlated with the thigh circumference. It is interesting that the simplest measurement methods prove the strongest interdependence in contrast to methods examining an adipose tissue, e.g. methods requiring skinfold measurement or BIA. Another relation was proved by Nornander et al. (2003). It was shown a significant negative correlation ($r = -0,82$) between skinfold above trapezius muscle and an mean amplitude RMS during a submaximal isometric test. Our survey has not proved a statistical significance correlation in the case of an isometric chair-like position test. However, we have also observed a negative correlation during a dynamic voluntary contraction (squat), but it was not statistically significant ($r = -0,4$). It should be noticed that 16 years old girls

were concerned in our survey and previous mentioned examination were conducted on women in the average age of 50 (Nordander, et al., 2003). Additionally, it should be mentioned that there were different muscles chosen to be examined what obviously implies a different functional and morphological characterization.

In the survey, the authors undertook an examination of relations between a surface electromyography signals and results of particular fitness tests. At the moment any former attempts of such examinations are known to the authors. Usually analysis of an electromyography signal has been based on an evaluation of an activity level of individual muscles during a particular movement (Diohisio, et al., 2008; Balshaw & Hunter, 2012), without comparing it to any fitness test. After the analysis of the results, bioelectric signal of the vastus lateralis muscle has appeared to be the most representative. A higher correlation coefficient was obtain for the muscle in the case of the mean amplitude RMS during an isometric chair-like position test and a dynamic fitness test done as quick as possible.

The obtained results have proved complementarity of various research techniques. Contemporary science uses miscellaneous tools which enable to determine morphological (Beechy, et al., 2012) and motoric characteristics of a human body more and more accurately and reliably. However, there still exists a need of investigation of complementarity of measurements methods and tools for holistic approach to the researches.

CONCLUSIONS

Estimation of an adipose tissue content in a human body is not an easy task. Different results concerning a percentage of an adipose tissue were obtained with the BIA method and with a measurement of skinfolds, concerning a percentage of an adipose tissue. BIA proves a lower value of %TBF in comparison to the used methods based on a measurement of skinfolds.

ACKNOWLEDGMENT

The authors would like to thank to the headmaster, teachers and students of Public High School No. 5 in Bydgoszcz.

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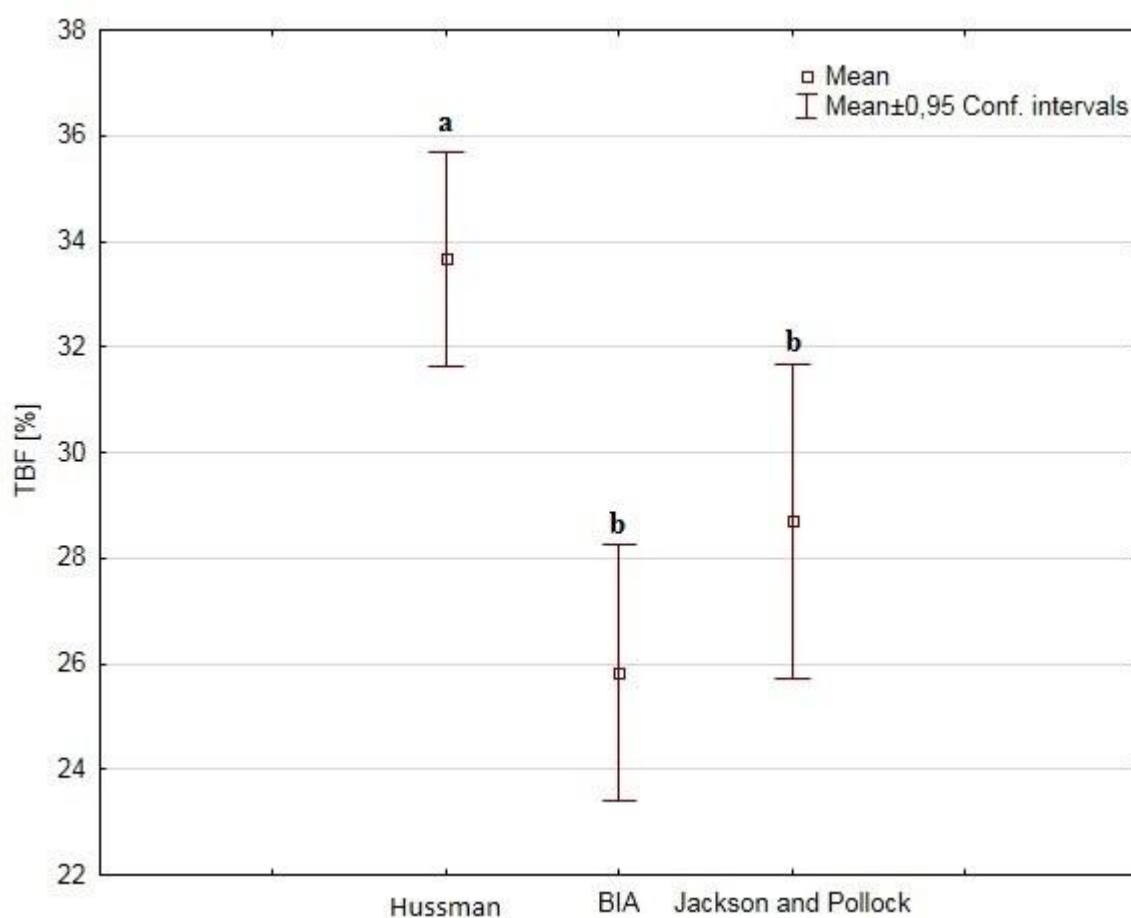


Figure 1. Compare of the total body fat (TBF) estimation methods.

BIA – Bioelectrical impedance analysis. Methods marked with the same letter did not show significant difference at $p > 0,05$.

Table 1. Summary results of the anthropometric survey of 16-year-old girls (n=26)

	Height [cm]	Body mass [kg]	BMI	TBF [%]	The greatest thigh's circumference [cm]	Thigh's circumference in half length [cm]	The greatest crus circumference [cm]	The least crus circumference [cm]
X	166,34	59,16	21,62	25,82	55,94	48,25	35,70	22,86
SD	5,64	9,04	3,35	5,99	5,37	5,62	3,25	3,19
min	150	41,5	17,17	14,6	49	40	30,5	19
max	179	87,9	33,08	37,6	71	61	45	36,5

TBF - The total body fat expressed as a percentage of body weight evaluated by BIA.

Table 2. Summary of the physical fitness test results in group of 16-year-old girls (n=26)

	Vertical jump [cm]	Standing long jump [cm]	Squats [s]
X	236,32	136,57	24,02
SD	10,13	25,90	3,91
min	215	89	15
max	253	184	35,14

Table 3. Pearson's correlation matrix between the different methods of calculating the total fat content in the body

	F1	BIA	F2
F1	1		
BIA	0,58**	1	
F2	0,82***	0,72***	1

Total body fat: estimated by Hussman's equation – F1; Pollock's equation – F2; bioelectrical impedance analysis - BIA. ** Significance at $p < 0,01$; *** $p < 0,001$

Table 4. Pearson's correlation coefficients between selected anthropometric indices and parameters of sEMG

Variables	Rest activity			Swuat – concentric phase	
	Mean amplitude RMS	Peak amplitude RMS	Mean percentile activity of MVC	Mean amplitude RMS	Mean percentile activity of MVC
BMI	0,78***	0,60**	0,63***	-0,43*	-0,30
% fat mass in lower limbs	0,60**	0,48*	0,53**	-0,40	-0,16
Thigh skinfold (vertical)	0,43*	0,49*	0,25	-0,39	-0,42*
The least crus circumference	0,17	0,12	0,40	-0,18	0,12
The greatest crus circumference	0,66***	0,54**	0,50*	-0,29	-0,33
Thigh's circumference in half length	0,56**	0,40	0,36	-0,36	-0,36
The greatest thigh's circumference	0,64***	0,54**	0,50*	-0,32	-0,30

* Statistical significance correlation at $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 5. Significant Pearson correlation coefficients ($p < 0,05$) between selected parameters of sEMG for the quadriceps femoris and physical fitness trials

Physical fitness trials	Rest activity		Squat – concentric phase		Chair-like position test		MVC	MVC contralateral	
	MED	RMS _m	RMS _m	MED	RMS _{SR}	RMS _{peak}	MED	RMS _m	
	VLO	REC	VMO	REC	VLO	VLO	VMO	VLO	REC
Squats	-	-	-	0,41	0,64	0,7	0,41	-	-
Standing long jump	-0,44	-	0,45	-	-	0,45	-	-0,51	-
Vertical jump	-	-0,48	-	-	-	-	-	-	-0,55

MVC – muscle's activity of executing limb during maximal voluntary contraction. MVC contralateral – muscle's activity of opposite to executing limb during maximal voluntary contraction. MED – median frequency of power spectrum; RMS_m – mean amplitude RMS; RMS_{peak} – peak amplitude RMS. VLO – vastus lateralis muscle REC – rectus femoris muscle; VMO – vastus medialis muscle.

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The text of the contribution is in English. The contribution is not to exceed a maximum limit of 15 pages (including tables, pictures, summaries and appendices). A summary will be in the Slovak language, and by rule 1 page at the most. The text is to be presented in MS Word editor.

All contributions are reviewed anonymously.

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Title of the contribution, name(s) of its author(s), workplace, summary of the text in English, key words.

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Tables, pictures, graphs, appendices

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We look forward to our further cooperation.

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**ACTA UNIVERSITATIS MATTHIAE BELII
PHYSICAL EDUCATION AND SPORT**

Vol. VI

No. 1/2014

Published by Matej Bel University, Banská Bystrica 2014

Science Editor: doc.PaedDr. Jiří Michal, Ph.D,

Technical Editor: Mgr. Stanislava Straňavská

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ISSN 1338-0974