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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.

Časopis poskytuje otvorený prístup k celkovému obsahu - všetky publikované články sú zadarmo k dispozícii vo formáte PDF**.**

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DYNAMICS CHANGES IN POWER ABILITIES AFFECTED BY A PREPARATORY SET OF STRETCHES

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KEY WORDS: preparatory stretches, power abilities.

INTRODUCTION

The importance of preparation stretches, not only in combative training units, but also during the hours of physical and sport education, for all types of schools mainly depends on helping pupils to acquire, improve and fix their knowledge in a playful way. For every teacher or a coach, games are an excellent diagnostic factor because in addition to other diagnostic methods they can use them to find out what pupils – or let us say the wards have learned – and even help them with the assessment. Even the current world trends prefers didactic game as an extremely positive form of work that promotes healthy competition and arouses the desire to be a successful participant in a game or competition; because failure in a game hurts like a failure at work (Horváthová-Haverlíková, 2010).

Age limitation for using preparatory stretches is wide - from 5-6 years to 16-18 years. They are easy to learn, adapt to fit everyone according to their physical and mental dispositions and current status (Slížik, 2008). In the preparation and main training unit or lesson, it is appropriate to use dynamic exercises which require more attention and speed. In the final part of the exercise, it is preferable to include exercises of static nature of without a big demand on fast movements, strength and speed.

AIM

The aim of this work was within the frame of project Vega 1/0927/12; to determine the effect of preparatory stretches in developing power skills by 9 to 10 years old youth.

METHODOLOGY

- **Characteristic of a research sample**

The sample consisted of 9-10 year-old pupils from primary school in Gemerska Ves; in the amount of 76 pupils. Of these, there have been 39 pupils (21 boys and 18 girls) of an experimental sample and 43 pupils of a control sample; of which were 22 boys and 21 girls. Their somatic characteristics are presented in Tables 1 and 2.

Table 1 Average values of height; considering boys and girls of the experimental and control sample and the average population of Slovakia (Moravec - Kampmiller - Sedláček, 1996)

	boys exp. súbor	boys kon. súbor	girls exp. súbor	girls kon. súbor
input measurements	143,6	144,6	146,8	147,2
output measurements	146,3	147	148,8	149,8
Moravec et al. (1996)	143,5		146	

Table 2 Average values of body weight; considering boys and girls of the experimental and control sample and the average population of Slovakia (Moravec - Kampmiller - Sedláček, 1996)

	boys exp. súbor	boys kon. súbor	girls exp. súbor	girls kon. súbor
input measurements	35,9	36,4	36,9	36,6
output measurements	37,4	38,8	37,6	38,3
Moravec et al. (1996)	36,4		36,3	

- **Progress and implementation of the experiment**

The research was conducted in September 2011 (realization of input measurements) - June 2012 (realization of output measurements). Experimental factors were stretching games that had been carried out regularly once a week in duration approx. 10 minutes.

To be able to detect power levels, we used standardized tests: standing broad jump, endurance during a pull-up and crunches in 30 seconds.

RESULTS

Physical performance of our study samples (experimental and control) compared to the performance of Moravec-Kampmiller-Sedláček et al. (1996) was significantly lower in a group of boys as well as girls. This fact correlates with results from the work of several authors (Novotná-Krška, 2003; Lednický et al., 2005; Ružbarská-Turek, 2007; Valová-Vala, 2009) pointing to the declining levels in physical performance of the current population.

Applying a set of stretching games in the experimental sample showed us an increase of physical performance in the group of boys as well as girls. Performance gain was markedly bigger in the group of boys, which was also reflected in surveys of statistical significance (Table 4).

The average performance gains in the experimental group of girls were 2.20 cm, which resulted in a statistically significant level at $p < 0.05$. Positive performance improvement have been seen in the control group (both groups of girls and boys), but these were not statistically significant. From Table 3, it is clear that the kinetic performance of our samples even in the output measurements of all samples (boys and girls of the control and experimental sample) was below the average values of the Slovak population (Moravec-Kampmiller-Sedlacek et al. 1996).

Table 3 Average values of the test standing broad jump; considering boys and girls in the experimental and control sample and the average population of Slovakia (Moravec-Kampmiller-Sedláček et al. 1996)

	boys exp. sk	**boys kon. sk.**	**girls exp. sk.**	**girls kon. sk.**
input measurements	152,9	154,4	138,6	136,5
output measurements	156	156,6	140,8	137,8
Moravec et al. (1996)	160,9		150,1	

Table 4 Statistical evaluation test long jump from place

Sample	Input the experimental/ control file		Output the experimental/ control file		Input-Output the experimental file		input the experimental /Moravec et al.1996	
Sex	B	G	B	G	B	G	B	G
t-test	*	0	0	0	**	*	**	**

***** = significantly improved - level $p < 0,05$ ****** = significantly improved - level $p < 0,01$ **0** = not significant

Neither physical performance at input measurements (experimental and control file) in the test extre-sed for 30s value was below the average population (Moravec-Kapmiller-Sedlacek et al., 1996). The fact is also reflected in surveys of statistical significance (Table 6).

Application file preparation combatives, we found that physical performance test extre-sed under 30s has significantly improved in the experimental group of boys as well as girls. This is again reflected in identifying statistical significance - in a group of boys at a significance level of p <0.01 and a group of girls at level p <0.05. On a positive note when the output measurements for us was the fact that the performance of the experimental group of boys has improved enough to achieve better performance than the average population of Slovakia (Moravec-Kampmiller-Sedlacek et al. 1996).

Table 5 Average values of the test extre-sed boys and girls file experimental and control file and an average population of Slovakia (Moravec-Kampmiller-Sedlacek et al. 1996)

	boys exp. sk	**boys kon. sk.**	**girls exp. sk.**	**girls kon. sk.**
input measurements	21,3	22,8	19,5	20,2
output measurements	24,8	23,2	21,3	21,1
Moravec et al. (1996)	23,3		21,6	

Table 6 Statistical evaluation of the test crunches under 30s

sample	Input the experimental/ control file		Output the experimental/ control file		Input-Output the experimental file		input the experimental /Moravec et al.1996	
sex	B	G	B	G	B	G	B	G
t-test	*	**0**	*	**0**	**	*	**	*

***** = significantly improved - level p < 0,05 ****** = significantly improved - level p < 0,01 **0** = not significant

During the pull-up endurance test, the input measurements showed that the experimental set of boys reached a lower performance than the average population – 1.7 seconds less; whereas an experimental group of girls 0.9 seconds less. These differences were statistically significant only in the experimental set of girls (Table 7). We did not record statistically significant differences in performance found in the experimental and the control group.

The positive effect of preparatory stretches was major in the experimental group of boys - an improvement of 2.9 seconds. This fact is also reflected in determining the statistical significance level at p <0.01. In the experimental group of girls performance has improved by 0.7 seconds. We did not record any statistically significant differences between input and output measurements (Table 7).

Table 6 Average values of the pull-up endurance test; considering the experimental and control sample of boys and girls and the average population of Slovakia (Moravec-Kampmiller-Sedláček et al. 1996)

	boys exp. sk	**boys kon. sk.**	**girls exp. sk.**	**girls kon. sk.**
input measurements	19,9	20,2	10,9	9,9
output measurements	22,8	21,3	11,6	10,7
Moravec et al. (1996)	21,6		11,8	

Table 7 Statistical evaluation of the pull-up endurance test

sample	Input the experimental/ control file		Output the experimental/ control file		Input-Output the experimental file		input the experimental /Moravec et al.1996	
sex	B	G	B	G	B	G	B	G
t-test	**0**	**0**	**0**	**0**	**	**0**	**0**	*

***** = significantly improved - level p < 0,05 ****** = significantly improved - level p < 0,01 **0** = not significant

CONCLUSION

Monitoring of the physical performance should be an integral part of the training and physical education process, as show the results of our work – kinetic performance is in many cases significantly lower than the average Slovak population in 1996. We agree with the opinion of several experts (Misárošová, 2003; Kanásová, 2005, Bartík, 2006; Hubinák, 2007; Kozaňáková, 2011) that not only hypokinesia, but also the unilateral initiatives of physical workload risk a creation of malfunctions. We have several options in developing kinetic

skills, but in the age of adolescence the form of a game and playful activities which include also preparation stretches are still more preferable.

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SUMMARY

This report deals with use of preparatory stretches in developing power abilities of 9-10 years old youth. Playful activities evoke pleasant, positive atmosphere and therefore allow a playful way to develop power capabilities. Their positive effect was recorded after 10 months in tests such as “crunches in 30 seconds”, “standing broad jump” and “pull-up endurance”.

THE ATTITUDE OF STUDENTS AT SECONDARY SCHOOLS TOWARDS SNOWBOARDING AND THE WAY OF TEACHING IT

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KEY WORDS: the course of outdoor sport activities with the winter sports specialization, snowboarding, students of secondary schools.

INTRODUCTION

The subject of physical education and sport education contribute to the development of main skills, mostly by cultivating these subject skills, which are: physical, cognitive, communicative, learning, interpersonal, perspective (Antala – Labudová, 2008; Michal).
The curriculums for secondary schools valid from 1996 are until 2008 considering only about teaching downhill skiing and cross country skiing. There is no reference of teaching snowbording mentioned.

Modrák – Nemčík (2006) had spoken about the necessity for insertion of the methodology and practice of snowboarding as a part of a possible inovation in directions from Ministry of education about organising the skiing training for primary and secondary school students. In the meantime directions from 1973 there is no reference about this discipline again.

Insertion of the „new“ seasonal activities into curriculums for primary and secondary schools and the change in preparation for future teachers of physical and sport education is recommended by Michal (2000) and Michal (2007).

In 2008 a new school law was approved, while current transformation of education is first of all based on decentralization of the school system, higher liberty, responsibility of teacher and strenghtening values of education. The compulsory content of education is realized through the state educational program and school educational program (Antala – Labudová, 2008).

Currently, under the physical and sport education in the state educational pragram for

Higher secondary education ISCED 3, belongs skiing and snowboarding into the module of Sport activities of movement regime and also into the field Sport activities described by moving in the natural environment by adapting to the changes of this environment.

We consider the insertion of snowboarding to be a step forward as a selective subject for teaching physical and sport education, in a similar way as Michal (2009) and Michal (2009c), to make physical and sport education more attractive for the present generation of young people.

METHODOLOGY

The questionnaire method was a main method we used in our research, since the best quality of questionnaire is, that we can speak to huge ammout of respondents and we can also get a high number of desired information.

Questionnaire was given to pupils of secondary schools in Martin district and it was anonymous. The aim was to find out opinions and interrest of students towards winter sports, teaching and realization of snowboarding under the course of outdoor sport activities with the winter sports specialization. It contained 20 questions, 3 of them were describing the research group. Questions were refering to gender, class in the school and the school itself, that students have atended. The rest 17 questions were of one's choice and respondents could also add another possible answer. In our results we present answers of the most essential questions.

Research took place in may 2012 and the research group consisted of 162 students (88 boys and 74 girls) from 7 secondary schools in Martin district. These schools put snowboarding into practice during the course of outdoor sport activities with the winter sports specialization.

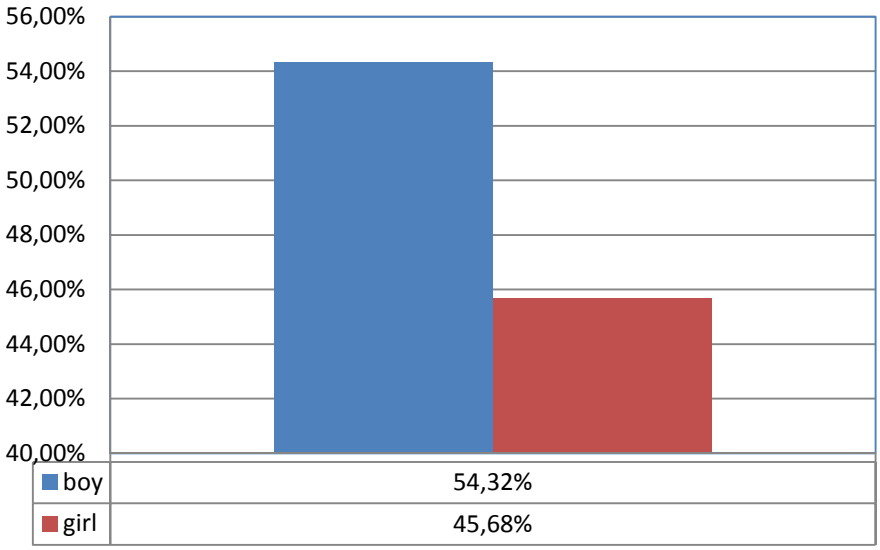
Students from these 7 schools participated in our research:

1. Bilingual high school Milan Hodža in Sučany,
2. High school Jozef Cíger Hronský in Vrútky,
3. High school Jozef Lettrich in Martin,
4. High school Viliam Pauliny – Tóth in Martin,
5. The combined school - Middle School and Wood Secondary School in Turany,
6. Middle school transport in Martin,
7. Secondary school in Martin.

RESULTS AND DISCUSSION

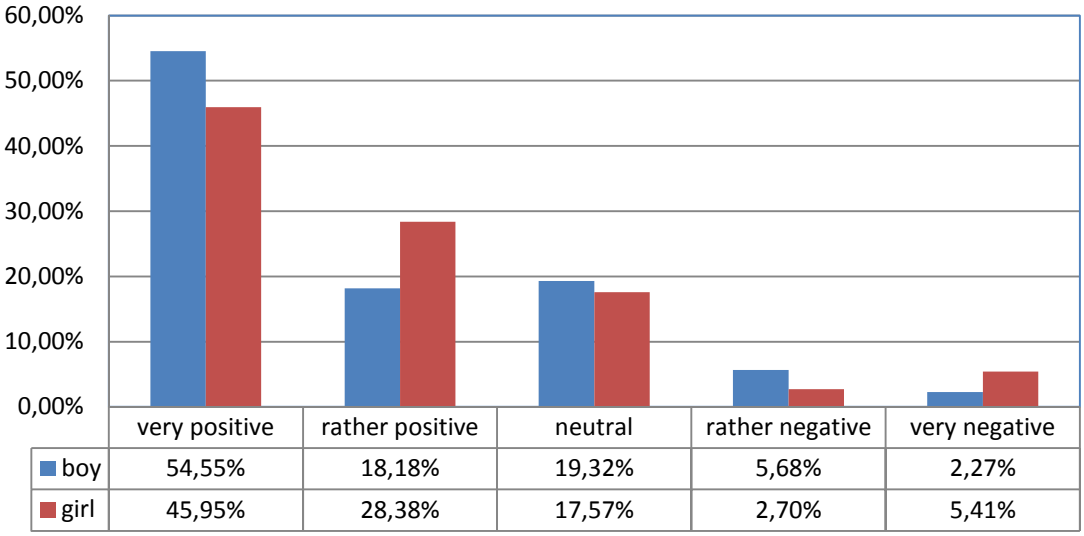
To find out all interrests and opinions of pupils from secondary schools in Martin district about winter sports and realization of snowboarding during the course of outdoor sport activities with the winter sport specialization (skiing course, snowboarding course) we used questionnaire method.

The research group consisted of 162 students (88 boys and 74 girls) from 7 secondary schools in Martin district. The percentage of boys and girls is showed in the picture 1. We have devided the individual student's answers from the view of intersexual relationships (among boys and girls).



Picture 1 Percentage of boys and girls in the research group of pupils

At the very beginning of the questionnaire we wanted to know what attitude towards winter sports had the students from secondary schools. Very positive attitude expressed 54,55% of boys and 45,95% of girls, rather positive than negative attitude had 18,18% of boys and 28,38% of girls (picture 2). Neutral attitude towards winter sports showed 19,32% of boys and 17,57% of girls. What do we find really positive is that rather negative or very negative attitude toward winter sports had only 7,95% of boys and 8,11% of girls, that together means 13 students. On the basis of the results we can figure out that winter sports are very popular among young people, which is for teachers of physical and sport education always a very positive message.



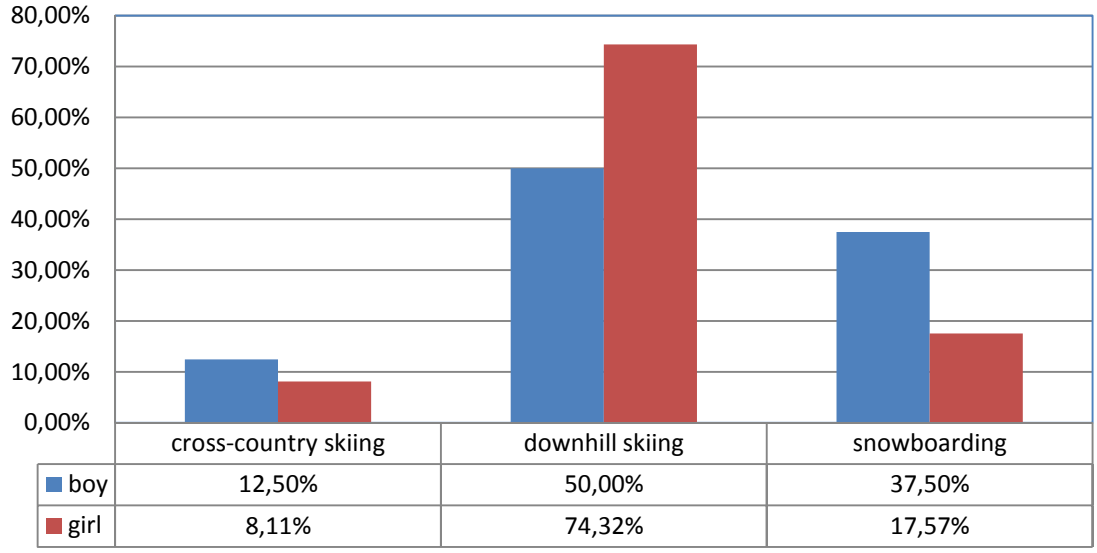
	very positive	rather positive	neutral	rather negative	very negative
boy	54,55%	18,18%	19,32%	5,68%	2,27%
girl	45,95%	28,38%	17,57%	2,70%	5,41%

Picture 2 Attitude of students towards winter sports

In the following question we wanted to know, which from the winter sports: cross country skiing, downhill skiing, snowboarding or other one is for the pupils from given secondary schools the most attractive one (picture 3).

On the basis of the results we can observe, that snowboarding is for both of genders more attractive than downhill skiing. Surprising is also the survey, that snowboarding is more attractive for higher percentage of girls (74,32%) than for boys (50%). The results confirm a big attractiveness of snowboarding, that Modrák – Nemčík (2006) had spoken about. With this result we can observe in a similar way as Melkus (2009) and Michal (2009a), that providing realization of a snowboarding course during the outdoor sport activities with winter sport specialization, was from the side of the Ministry of education a curriculum reform of physical nad sport education at primary and secondary schools and it was also an important step to make physical and sport education more attractive for present generation of young people. The higher attractiveness of snowboarding than of downhill and cross country skiing among boys at primary schools mentioned also Michal (2010b).

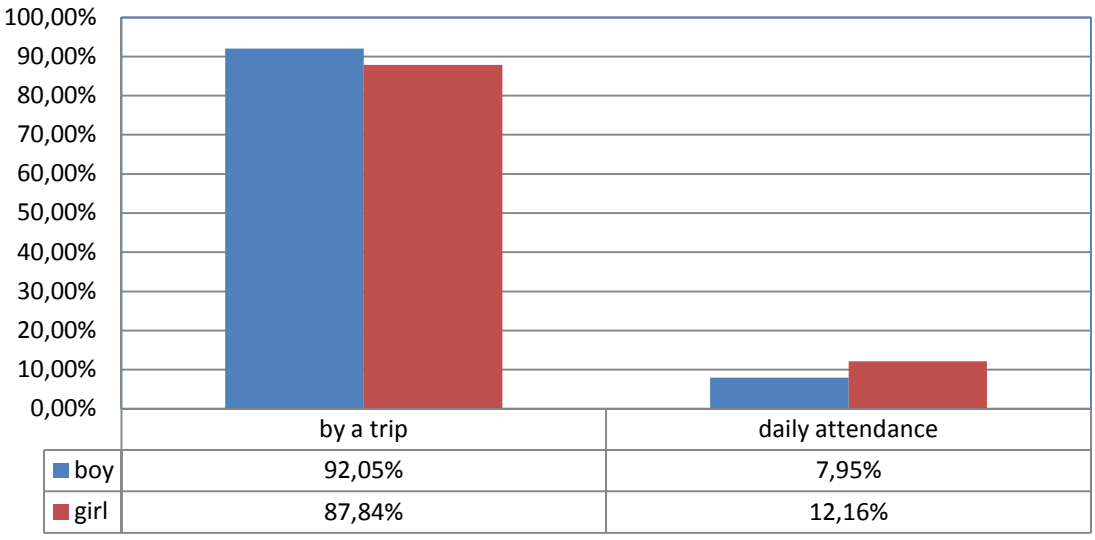
The smallest attractiveness had cross country skiing, it can be connected with the fact, that cross country skiing belongs into the cyclic sport activities and requires a lot of strength and perseverance.



Picture 3 Attractiveness of winter sports for students

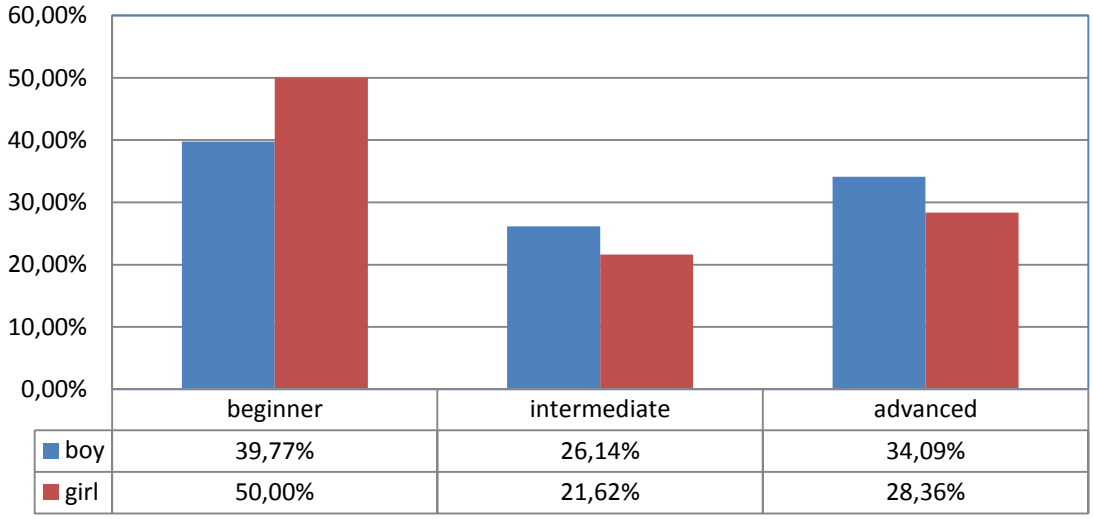
According to the state educational program snowboarding can be realized by a dual form, either by daily attendance or by a trip.

We were curious to know which form of organising a course prefer students of secondary schools. 92,05% of boys and 87,84% of girls prefer the form of organising a trip, whereas the form of daily attendance is prefered by 7,95% of boys and 12,16% of girls (picture 4). At the primary schools in Žilina district Michal (2010a) got similar results and he mentioned, that the form of organising a trip was prefered by 90,57% of boys and 95,65% of girls.



Picture 4 Form of organising a courses, which students prefer

During the teaching of snowboarding at the course of outdoor sport activities with the winter sports specialization we wanted to know, which groups were students devided into according to their skillfulness. The most of pupils were in the advanced group (39,77% of boys and 50% of girls), the least of pupils were in the intermediate group (picture 5). These results are encouraging mainly because of the high percentage of pupils (34,09% of boys and 28,38% of girls) who were in the group of beginners and wanted to learn new skills, this confirm the rising popularity and an increase of interrest in snowboarding among young people, as it was mentioned by Modrák – Nemčík (2006).

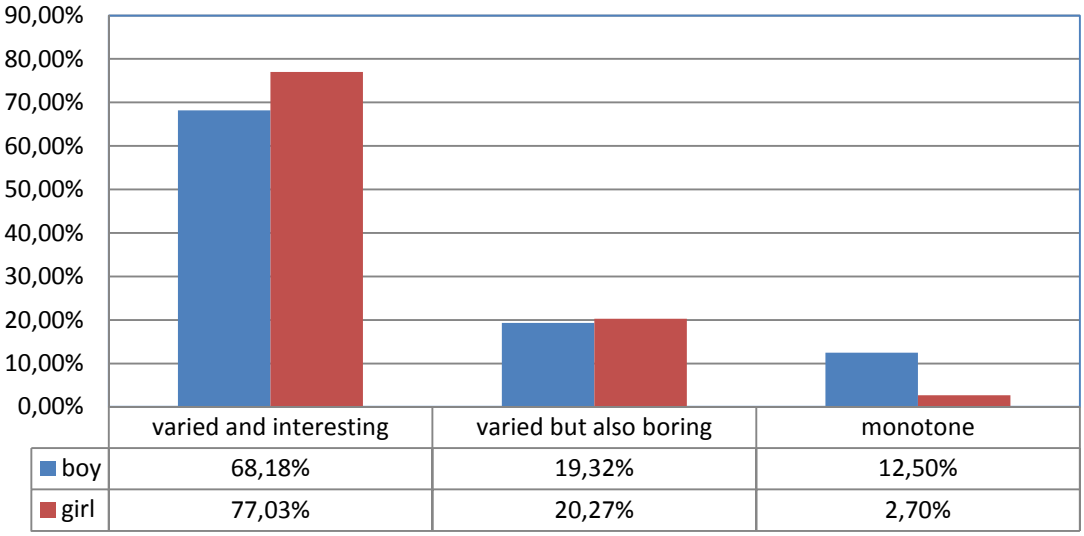


	beginner	intermediate	advanced
boy	39,77%	26,14%	34,09%
girl	50,00%	21,62%	28,36%

Picture 5 Categorization of students into groups during the teaching of snowboarding

We wanted to find out, which skills were students learning during the snowboarding lessons. Among skills, which stated almost all of the students belonged: how to carry snowboard, falling down, sliding, using a ski tow. Most of the pupils mentioned sidelog ride through the slope and around 65% of respondents learned the sliding drift.

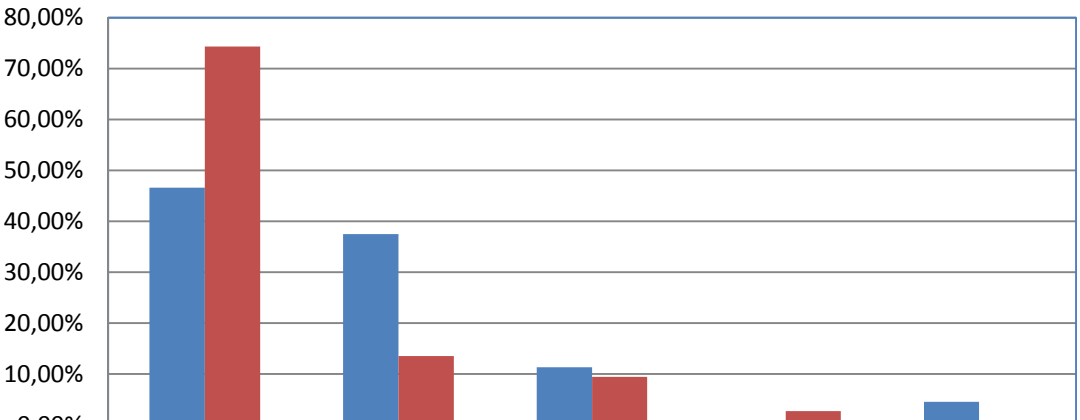
One of the things we were interested in was the attitude of students from secondary schools in Martin district towards the whole coure of outdoor sport activities with the winter sports specialization, especially towards snowboarding lessons. Absolute majority of the students (68,18% of boys and 77,03% of girls) considered course to be varied and interresting. Varied but also boring was this course for roughly 20% of boys and 20% of girls. With answer „monotone“ we have noticed just a small number of students (picture 6). We consider these estabilished results to be a compliment for teachers of physical and sport education and instructors, who taught students of secondary schools snowboarding through our research survey during the course of outdoor sport activities with the winter sports specialization.



	varied and interesting	varied but also boring	monotone
boy	68,18%	19,32%	12,50%
girl	77,03%	20,27%	2,70%

Picture 6 Attitude of students towards the course of outdoor sport activities with the winter sports specialization, which they joined

The option „definitely yes“, which means a progress in snowboarding skills expressed 46,59% of boys and 74,32% of girls from the research group of students, who participated in snowboarding lessons during the course of outdoor sport activities with winter sports specialization (picture 7).



	definitely yes	rather yes	I don´t know	rather not	definitely not
boy	46,59%	37,50%	11,36%	0,00%	4,55%
girl	74,32%	13,51%	9,46%	2,70%	0,00%

Picture 7 Individual rating of a change in snowboarding skills after finishing the course of outdoor sport activities with the winter sports specialization

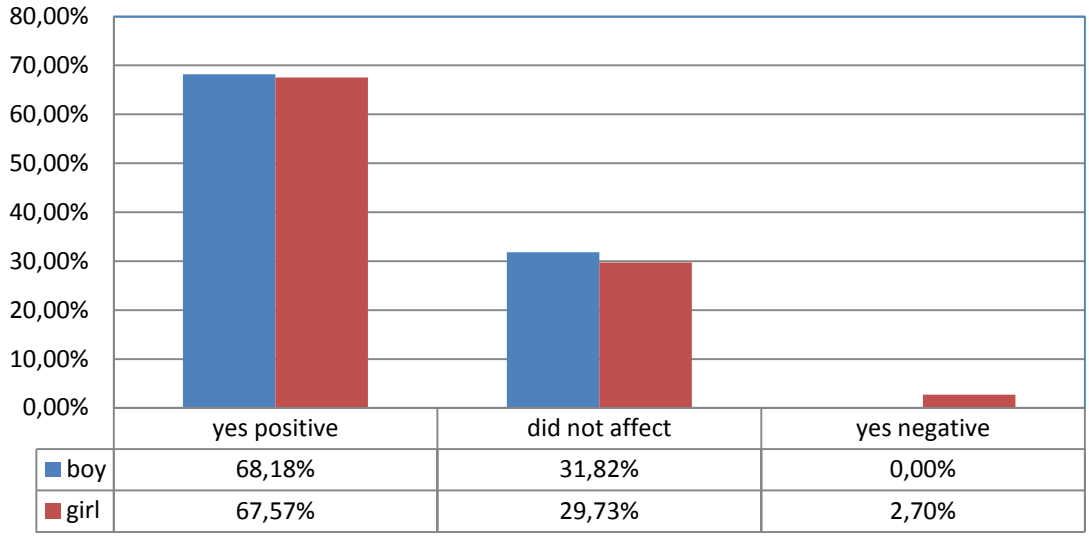
The option „rather yes a change than not“ in snowboarding skills after finishing the course mentioned 37,50% of boys and 13,51% of girls. 11,36% of boys and 9,46% of girls

was not able to express themselves. Similar results presents also Michal (2009b). Respondents in the research of Zemanovič (2011) showed 66% improvement in snowboarding skills after finishing the course.

These results also show the quality of teachers and instructors work during the snowboarding lessons.

Similarly as in the research of Zemanovič (2011), who presents that up to 60% of pupils expressed pozitive influence of the course at their attitude towards teaching winter sports, we can also observe very pozitive results. Even 68,18% of boys and 67,57% of girls attending secondary schools in Martin district had been positively impacted during the course and improved their attitude towards winter sports (picture 8). Finishing the course did not have any effect at about 30% of pupils, which is approximately the same in comparison with results of Zemanovič.

We suppose to say that this result can be connected with good ratings of the teachers work and their positive effect on students.



	yes positive	did not affect	yes negative
boy	68,18%	31,82%	0,00%
girl	67,57%	29,73%	2,70%

Picture 8 Influence upon students attitude towards winter sports after finishing the course of outdoor sport activities with the winter sports specialization

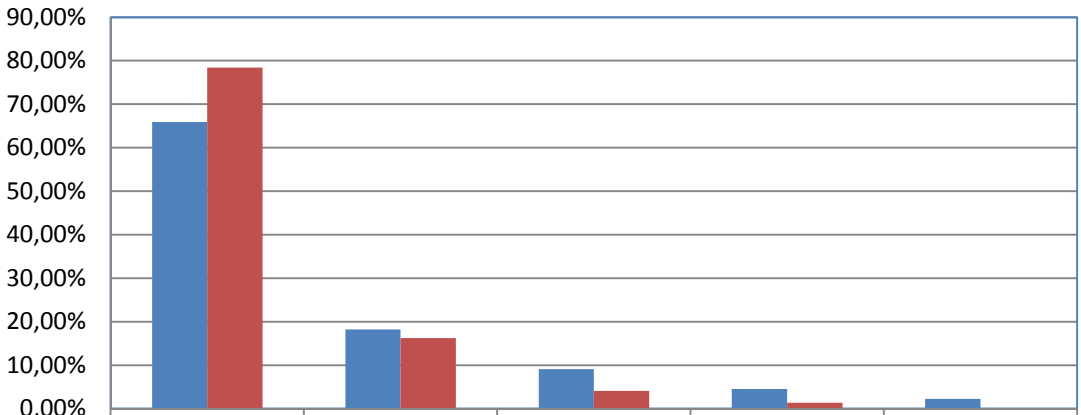
In 2006, Modrák – Nemčík had spoken about the need of insertion the snowboarding methodology as a part of the inovation into directions from the Ministry of education about organising a skiing training for students of primary and secondary schools. Therefore we were interrested in students opinions whether they want snowboarding to be regularly realized during the course of outdoor sport activities with the winter sport specialization.

From the questionnaire results presented in picture 9 we can see an obvious inerrest of

secondary students in Martin district in snowboarding and the regular realization of it during the course of outdoor sport activities with the winter sports specialization.

Positive attitude towards this question had 84,09% of boys and 94,60% of girls. 9,09% of boys and 4,05% of girls could not take a stand on this question and only few students had negative attitude.

Similar results are presented by Michal (2010), who presents that up to 89% of pupils is for the insertion of snowboarding into the course of outdoor sport activities with the winter sports specialization.



	definitely yes	rather yes	I don´t know	rather not	definitely not
boy	65,91%	18,18%	9,09%	4,55%	2,27%
girl	78,38%	16,22%	4,05%	1,35%	0,00%

Picture 9 Students opinion about the regular realization of snowboarding during the course of outdoor sport activities with the winter sports specialization

CONCLUSION

Not long after snowboarding became a popular sport, we can see from year to year even more fans of this winter sport, which is having more and more supporters around the world and it is becoming very attractive beside skiing. Results of our research are showing the current level of attitude which have secondary students in Martin district towards winter sports and teaching of them and realization of the course of outdoor sport activities with the winter sport specialization.

Through all questions in the questionnaire we have found out an enormous interrest of young people in snowboarding and teaching of it, not only because of its attractiveness but also because it is a part of a trend, which is spreaded in this modern age. On the basis of the research results we can agree with the opinion of Modrák – Nemčík (2006), which is assuming snowboarding to be a sport with a fast expansion and high popularity among young

people.

We also agree as respondents in our research with the regular realization of snowboarding lessons during the course of outdoor sport activities with the winter sports specialization.

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SUMMARY

The author of the article wants to find out opinions and interrests of secondary students in Martin district towards winter sports, teaching and realization of snowboarding during a course of outdoor sport activities with a winter sports specialization. The used research method was a questionnaire, which contained 20 questions. The reaserch group consisted of 162 students (88 boys and 74 girls) from 7 secondary schools in Martin district. These schools put snowboarding into practice during the course of outdoor sport activities with the winter sport specialization. The results, which author presents in the pictures and following discussion give an evidence that secondary students in Martin district show an enormous interrest in snowboarding lessons.

KNOWLEDGE LEVEL OF PRIMARY SCHOOL STUDENTS ABOUT FIRST AID IN THE ACT OF RESPIRATORY AND CIRCULATORY SYSTEM FAILURE

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KEY WORDS: cardiopulmonary resuscitation, first aid, primary school students.

INTRODUCTION

Resuscitative norms for a laic, but also professional medical public have been changing every 5 years. Therefore an enlightenment of general public – in school practise; of teachers and students – is very important in order to help an injured person when it is needed. To provide the first aid directly at the place of an accident often determines the next progress of the injured person. Cardiopulmonary resuscitation (CPR) is a first aid method which should be provided to every person whose vital functions have failed. A rescuer must lay emphasis on correct accomplishment of CPR and the following factors: promptness, accuracy, and right conclusion. It is very important to know what to do first, what steps should be followed after first aid rendered.

ISSUE

First aid general principles

Unexpected failure of health is also called unforeseen incident which can occur whenever and wherever. The main aims of first aid are to save life, speed recovery, and avoid of state of health worsening. Correctly provided first aid can cause a positive turn between life and death; between speed recovery and long-stay in hospital; or between temporary and constant disability (Stelzer, Chytilová, 2007). Consequently the basic rules of first aid should be the commonplace. It necessitates knowledge of theoretical information about basic methods, and practical skills.

Basic first aid is a set of special and technical precautions that are usually provided without specialized equipment. Among mentioned precautions belongs a call for a

professional medical aid and care about injured person until a professional medical care is present.

According to Koppla (2009) a plan of first aid belongs to first aid general principles:

- Evaluation of situation
- Secure the surroundings
- Render a help and first basic investigation

Injured can be divided into 2 groups according to the seriousness of the injury:

a.) injured in peril of his life (unconsciousness, shock, bleeding)

b.) injured out of peril of his life

- Secure a professional medical aid and treatment – a part of laic first aid is timely call for Emergency Medical Services (EMS), (Dobiáš, 2007).

CPR – Cardiopulmonary resuscitation

Nowadays children may be witnesses to a traffic accident or health deterioration of some person – often close relatives. Cardiopulmonary resuscitation is a basic method for moderating the most serious states of health. Younger children should be aware of steps how to unblock airways, and call a medical service. Older children should be able to provide cardiopulmonary resuscitation in practice themselves.

Definition of cardiopulmonary resuscitation (CPR): It's a series of interlinked actions that are intended to provide immediate restoration of circulation of oxygenated blood and prevent serious damage to vital organs during cardiac arrest (Mitka, Safar, 2003).

In 1990s there was an attempt to optimise a method of CPR and ensure its smooth providing. In 1992 International Liaison Committee on Resuscitation (ILCOR)[1] was founded. The reason for its foundation was an attempt to draw up the most effective, but also simple and internationally united proposals for providing CPR. Proposals are published in accordance with the previous preparation, evaluation of monitored surveys about effectiveness of individual methods of CPR. The most frequent reason for initiating CPR is a cardiac arrest that causes heart failure as a pump. It can be reversed by application of discharged voltage power. Therefore automatic external defibrillators (AED) are introduced in the U.S. during the 90's. In Slovakia the use of AED is limited (Mojha, 2005).

In 1993 ILCOR was established to revise international knowledge concerning CPR and to propose a consensus in recommendation for treatment. Methods of resuscitation and urgent

[1] Medzinárodný výbor pre spoluprácu v resuscitácii

medicine were approved as Guidelines 2000, the result of ILCOR operations. In 2010 new innovation has been implemented and hence new commands of European Resuscitation Council Guidelines for Resuscitation 2010 – ERC[2] – are created. The aim is to improve resuscitation practice and simplify the steps to improve retention and learning ability. (Nolan et al., 2010).

First aid at primary schools in accord with national educational program

First aid is included in national educational program for physical and sports education ISCED 1, 2.[3] One of the objectives in *Health and exercise* is to teach students to acquire knowledge about prevention as the main tool for the health protection, and to gain first aid skills. Learning physical and sports education is divided into 4 main modules:

- Health and its failures
- Healthy lifestyle
- Physical condition and kinetic performance
- Sport activities

First aid is included in a module *Health and its failures*. The aim is to understand the meaning of health for an individual and society. To understand the basic questions about occurrence of civilisation health failures and the principles of primary and secondary prevention. To implement theoretical knowledge and practical skills from sports in diseases prevention as the most effective way of care about own health. The main aim – for us the most important – is to be able to provide first aid (the basic principles of first aid).

According to themes overview first aid training is included under the topic *Seasonal activities*, which consist of exercise in nature, skiing, and cross country skiing. While exercising in nature students should acquire skills such a practical first aid providing (artificial respiration, heart massage, antishock precautions, recovery position, treatment of flesh wound, of fractures, of frostbites, and of burns) (Bebčáková et al., 2009).

The protection of life and health in primary schools is conducted through individual subjects and individual forms of learning.

[2] Európska resuscitačná rada pre kardiopulmonálnu resuscitáciu 2010
[3] Primary schools of first and second level

AIM

To find out the knowledge level of primary school students about first aid in the act of respiratory and circulatory system failure in accordance to the latest European Resuscitation Council Guidelines for Resuscitation 2010.

HYPOTHESIS

H 1: We suppose that primary school students do not have the latest knowledge in providing first aid according to the lates European Resuscitation Council Guidelines for Resuscitation 2010; we assume 50% successfullness in the number of correct answers.

METHODOLOGY

Observational group consisted of 126 primary school students of 8th and 9th grade. Students tested were from the following primary schools:

Associated School Spišska Stará Ves (Primary school, Grammar school, Eight-year Grammar school), Primary School Kráľovnej pokoja Haligovce, Primary School on M. R. Štefánik Street in Trebišov.

These grades were selected on purpose as assumed to have passed CRP training. We tested both genders (boys and girls).

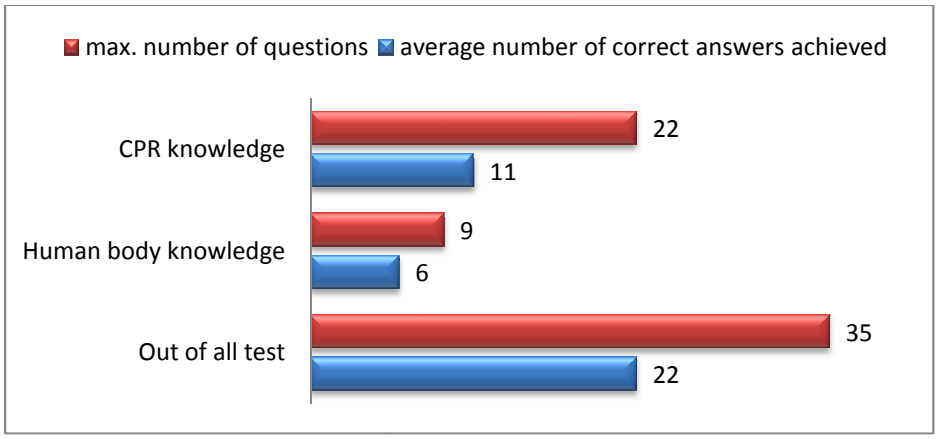
Anonymous knowledge questionniare was selected to find out students' knowledge. Questionnaire for primary school students consisted of 35 questions (30 with and 5 without answer choice). Answers were assessed as *right* or *wrong*. Questions were divided into three sub groups. First one about theory on rendering first aid, second aimed on human body and third one about CPR. Testing was done in December 2011 and January 2012 and took 45 minutes (1 lesson). We cooperated with Physical Education teachers.

Basic mathematical and statistical methods, average and percentage calculations were used to process and evaluate the results. Analysis, synthesis and comparison were used as for qualitative methods.

RESULTS

Primary school students achieved 22 correct answers out of 35 on average being 65% successful. This outcome shows their low knowledge level which might be caused by the fact that primary schools do not pay much attention to the first aid training. Knowledge level about human body was quite low as well while average successfullness was 66%. Students had problems mainly with question about the functions of veins and heart, and to say which

apparatus is the most sensitive towards the lack of oxygen. The poorest results were in CPR knowledge while average succesfulness of the correct answers was only 50% (11 correct answers out of 22). The resluts show that only every other primary school student would be able to provide CPR. The majority of incorrect answers were about resuscitation and unconsciousness.



Picture 1 Outcome of Research in Knowledge level of primary school students

In first sub group, theory on rendering first aid, 67% of students would be able to provide first aid. The remaining 33% of students lack the confidence in their own knowledge and practical skills which should be gained during educational process at school. Only 2% of students have ever provided first aid (e.g. to their mother while faint at home or to a friend bleeding on football pitch).

In second sub group, knowledge about human body, question about the function of heart in human body was incorrectly answered by 43% of students. Remaining students could describe the function of heart correctly. 90% of students correctly located heart on the left side of rib cage. Function of veins and blood circulation was known correctly by only 35% of students. *The most sensitive apparatus of human body towards the lack of oxygen is brain* – this answer was circled by 52% of students. This question relates to unconsciousness and its origin. *What belongs to airways?* was known by 80% of students and 84% knew the function of lungs (breathing and blood oxygenation).

In third sub group (CPR knowledge), 72% of students would be able to call EMS[4] on the correct number while 24% would call fire brigade. 83% of students managed to explain the term resuscitation. Only 21% of students would select the correct procedure in providing emergency medical treatment. Correct way of breathing detection was known by 50% of

[4] Emergency Medical Services

students but 94% would carry out artificial respiration incorrectly. Only 55% of students would be able to find out wheteher the person was unconscious. 60% of students don‘t know the recovery position. Signs of shock were clear to 86% of students. Knowledge level of shock is high and we are pleased that students know the signs of this life threatening condition. Question whether cardiac massage only was enough at resuscitation (according to the new European Resuscitation Council Guidelines 2010 it is enough to do cardiac massage only at resuscitation), was answered correctly by 8% of students only. We assume that this low amount of correct answers is caused by providing outdated information to students.

CONCLUSION

As the conclusion we can state that the aim of our research – finding out the knowledge level of primary school students about first aid in the act of respiratory and circulatory system failure – has been met. Hypothesis has been confirmed by the results. We used questionnaire method to find out the knowledge level. Questionnaire was filled out by 126 students of primary schools. Research showed that only 63 % of primary school students answered the questions correctly. We consider this low percentage of primary school students' knowledge unsatisfactory.

Questionnaires were divided into three sub groups; general knowledge of first aid, successful by 66% of primary school students; knowledge of human body met by 66% of primary school students, and only 50% of primary school students have the knowledge of Cardiopulmonary resuscitation. Low knowledge levels of students suggest the need of subject *First Aid* to be taught at every primary school or at least regular specialized courses. These can be done in cooperation between schools and professional and voluntary emergency services. There is a need of certain enlightenment to capture children's mind with first aid and hope that their concern will rise.

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SUMMARY

The article shows the outcomes of the knowledge level of primary school students about first aid in the act of respiratory and circulatory system failure. Given the questionnaire divided into three sub groups we have found out insufficient knowledge level of primary school students in composition and function of their own structure, and insufficient 50% knowledge level of first aid and providing CPR.

THE CHANGES OF GEOCACHING CACHES IN THE CITY OF BANSKA BYSTRICA IN YEARS 2010 AND 2012

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KEY WORDS: geocaching, game, GPS, aktivity.

INTRODUCTION

"Geocaching" is an adventure game for GPS owners, connecting via Internet thousands of people worldwide. It works thanks to the accuracy of today's GPS systems and the possibility of information exchange about new hiding places created among the participants. They can then with the help of length measuring and latitudinal coordinates of the hiding place go on a search. “That is the definition of the game called Geocaching on the Slovak official website (www.geochaching.sk). In addition to the above-described basic idea, the game also includes following benefits: game is practically limited, it can be participated by people of any age, anywhere in the world, by people who share a positive relationship not only to the GPS technology, but mainly to culture, tourism, sport, nature and the environment (www.geochaching.sk).

As Taylor writes (2010), a treasure hunt means for kids a lot of adventure, excitement, joy and is a great challenge for them. Geocaching is a modern concept of finding treasure in the form of small simple "toys" that are hidden by other people. It is an activity full of fun and adventure, but is safe for players of all ages as well.

GPS system has many potential uses for today and for today’s public it has become so important that it would be a shame not to go with the development of navigation technologies in schools’ education. Especially for geography, GPS is absolutely perfect and would be therefore preferable to incorporate it into education at primary and secondary schools. Just as with the development of computer technology, where computers had become a common mean of implementing practical stuff into education, the work with GPS should become standard in further education for example in geography, physical education and sports (Jiroušek, 2000).

We agree with Görner (1998), that the lessons would be highly enriched – it means, students would not just listen to facts and learn mechanically only the data, but would be better acquainted with the orientation in field, mapping and with the system of coordinates. While doing this, they would be devoted to greater physical activity in practice. Teaching would be focused rather on the outside of school benches and such work would be rewarding and fun for both the students and teachers. It would appropriately complement today‘s in many schools developing integrated learning system.

AIM

The aim of our study was to investigate the changes of geocaching caches in the city of Banská Bystrica and its surroundings in years 2010 and 2012.

METHODOLOGY

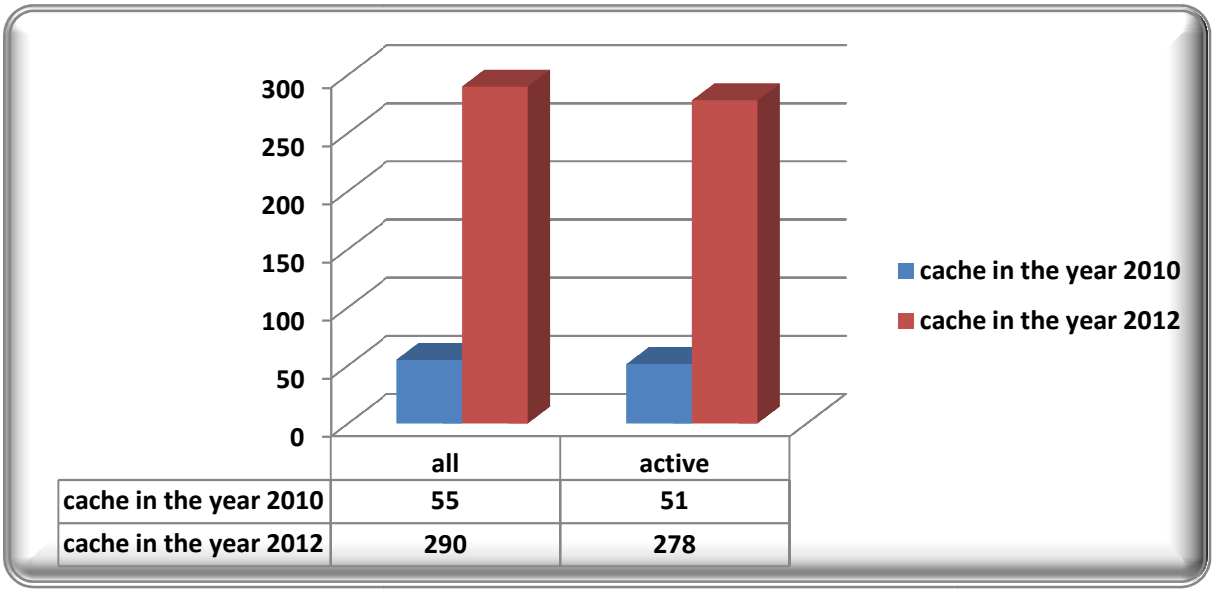
Throughout the search of particular caches, we used the following GPS receivers:

- Garmin eTrex Vista Color;
- Garmin Oregon 400t;
- ZTE Blade.

The actual mapping of the caches took place from June 2010 to October 2012. We mapped caches in a 7 km radius of the town of Banská Bystrica.

RESULTS

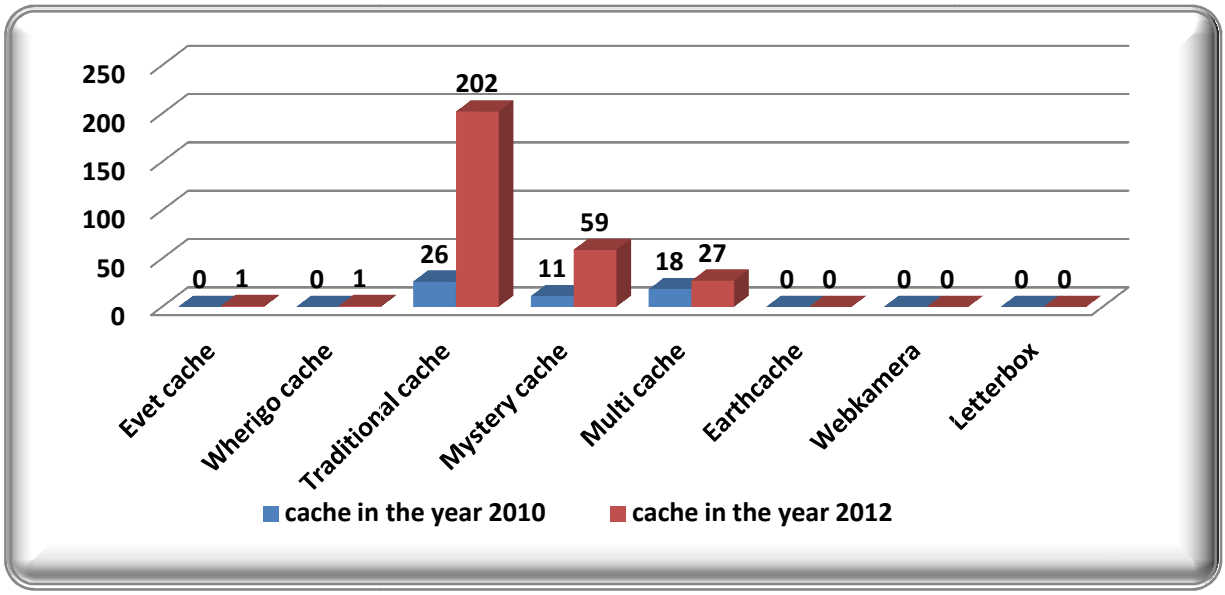
As of June 2010, there had been generally around 55 caches in the town of Banská Bystrica. Of these, 51 were active. As of 15.10.2012 however, there have been almost 300 caches of which over 270 were active (Picture 1).



	all	active
cache in the year 2010	55	51
cache in the year 2012	290	278

Picture 1 Number of caches in years 2010 and 2012

As presented in Picture 1, the total number of caches in the town of Banská Bystrica has increased almost six times. There have been changes in terms of caches nature, as well.

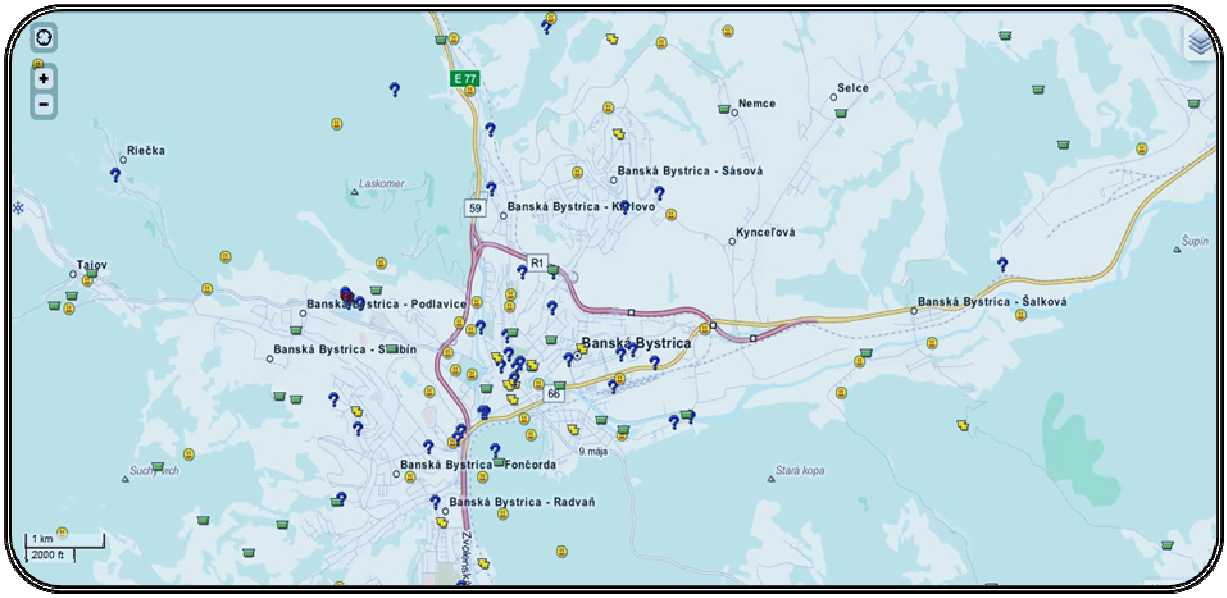


Picture 2 The number of caches in 2010 and 2012 in terms of their nature

The number of caches of traditional character grew almost ten times, mystery caches nearly six times. The image shows the increased number of multi-cache hidings, but the increase was not that eminent (Picture 2). It is gratifying that a Wherigo cache caled „Neverwhere“ was established in the town. This cache is loosely inspired by the book :

„Neverwhere“ by Neil Gaiman. It was founded only in February 2012 and it was already found by more than 80 seekers (geocachers).

In terms of topographical deployment of caches, increase was noticed not only in the center of Banská Bystrica, but especially on adjacent sites – let us say in villages – which have not been covered in 2010, or just very little. Coverage of today's Banská Bystrica and its surroundings is depicted in Picture 3. From Picture 3, it is clear that the greatest density of caches is being located in the city center; many caches are located around the Hron River, consisting mainly of a series of "boating" caches, due to recent years increase in popular descends of the river Hron.



Picture 3 Current distributions of caches in Banská Bystrica and its surroundings

In the town of Banská Bystrica, there have been many sights which in terms of geocaching were relatively well charted even in the year 2010. The caches mostly belonged and still fall into the category of multi or mystery caches. In the last two years there was an increase of caches in the city center which belong in particular to the series of Fountains & Cemeteries of Banská Bystrica. There was also increase in caches which belong to „Just Another Schoping cache" series, where the first of this series was a cache near Europe Shopping Center and then some others which were added near Tesco, Kaufland and Baumax.

Neither, the alone standing Roosvelt Hospital did remain uncharted for the last two years. At present, there is a total of five caches hidden bearing the names of the pavilions.

The panorama of Banská Bystrica, in year 2010 enabled caches placed at the Pánsky diel, Horný diel, Urpin, Horné Pršany, Malachovské skalky, as well as close to the Banská

Bystrica transmitting station. At present, the views from the perspective of geocaching offer caches placed on the Selčiansky diel, Podkonická pleš, Banoš and Graniar.

In year 2012, caches from the micro communities under the Pánsky diel have been added. The series of mentioned caches reaches a number larger than 50. They are mostly being considered as caches of traditional character.

Schools, where the cases are mainly located are the Faculty of Law at UMB, Joseph Gregor Tajovský High School and the Catholic High School of Štefan Moyses. Their number did not increase in the last two years. Perhaps, more caches in the area of Matej Bel Unsiversity and its Faculties will show up in the years to come.

CONCLUSION

"Geocaching" is a rapidly growing activity based on the principle of GPS. Some people talk about a game, the others moved this wonderful kind of movement to the level of sport. Apparently, it depends on the way how eager you jump into it." (Hojgr-Stankovič, 2007). Throug the medium of Geocaching, walks and tours gain new meaning. It is not only about inhalation of fresh air and walking through a few miles, but about the joy of effort spent while searching for a "cache". It is about the excitement of discovering interesting places, where geocachers have never been and where they would originally never thought to go.

Geocaching is not about winning and defeating the opponents, it is main idea is to ensure people enjoy it. Nobody evaluates who is better or even the best. It is up to the players themselves, how much time they want to devote to this game. "The only requirement is to follow certain rules" (Junger, J. et al., 2002).

LITERATURE

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SUMMARY

Article analyzes the game of geocaching navigation in the city of Banska Bystrica in and its surroundings in years 2010 and 2012. For a period of two years has been in and around Banska Bystrica significant changes in geocaching. Change is the most prestigious of new hiding places for nearly 300, was added in the new geocaching - wherigo cache that is available in the town. In the city itself, remain dominated by hiding traditional character, which is currently more than 200.

UNIVERSITY STUDENTS AND THEIR INTEREST IN TOURISM AND SPORT-MOTOR OUTDOOR ACTIVITIES

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KEY WORDS: Outdoor motor activities, university population

INTRODUCTION

Currently we see a rapid development of science and technology and human life thus becomes more comfortable. Formerly, a man in order to achieve a certain goal or to fulfil his need had to genereate some effort. Nowadays, in order to achieve a same goal a much less effort needs to be done. Such a way of life brings a motor passivity, which reflects the way the society looks like. Impaired health can be genetically conditioned or caused by the environment. In the latter case the loss of health is caused by the man itself, by his irresponsible approach to himself. Cavill-Kahlmeier-Racioppi (2006) state that a motor activity is the base of man´s psychical and physical health development. The risk of many non-contact diseases decreases and the quality of social relations increases. It also encourages self-esteem and forms the sense of belonging. Obviously, this is then transferred into further spheres of man´s and society´s life. Such formation of personality is also carried out in the leisure time. Its effective use largely depends on the strength of social environment in which the man exists. Without a meaningful use of this time there occurs a risk of asocial behaviour, especially in younger population. Nature is a unique environment that offers space for relax, options for sport, motor and leisure time activities and is an attractive change in comparison to a city life. Also, by its character it affects the emotional aspects of a man. Kompán – Görner, (2007) characterize outdoor motor activities as a range of activities that include tourism, outdoor sports, games and various exercises (outdoor activities, outdoor adventure, outdoor pursuits). They put here especially activities performed by one´s own strength (possibly with an assistance of a special equipment) while overcoming obstacles and which are performed with respect to a natural environment. In this aspect tourism has a significant

position, because, according to Prútka et al., it covers cultural-cognitive activities and it includes physical, health, and educational goals.

Various authors dealt with the position of tourism and motor games in nature, such as Görner - Mandzák (2011), Michal (1998), who compared their results with the findings of Zajac and Žižkay from 1987. Kompán (2008) oriented his attention to a direct application of various forms of experiential education in summer outdoor camps for physical education students, Dóžová (2003) summarized the effectiveness of leisure time of high school students, Záhorec (2000) observed psychical resistance and physical fitness in accordance to tourism and outdoor sports etc.

AIM

The aim of the paper is to find the position of tourism and sport-motor outdoor activities in the value chain of university students studying in the Banska Bystrica region.

METHODS

The survey was executed in the region, at universities regardless of the faculty and study programmes of the students. We distributed an on-line questionnaire and collected 151 answers, out of which 65 were male and 86 female respondents.

For the survey we used a standardized questionnaire according to Görner - Mandzák (2011) that was a part of the VEGA 2010 grant project. The questionnaire included 30 closed questions. Its content was divided into three areas.

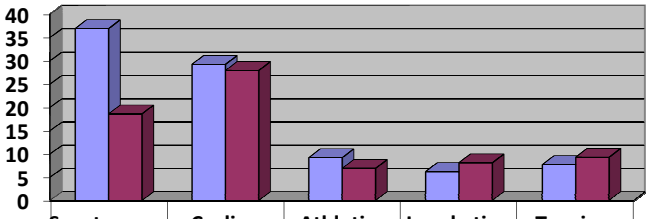
The first part included the personal characteristics of the respondents, their family environment, material conditions and the possibilities for outdoor sports performance in their surroundings. The second part was aimed at finding of their interests, leisure time spending, physical activities and their personal hobbies as well as hobbies of their family members. The third part was aimed at their opinions and attitudes towards tourism and outdoor motor activities.

We depicted the results in percentage and further described using logical methods, especially analysis and synthesis.

RESULTS

Due to the vastness of the results obtained in the survey we will pay attention only to the answers directly related to the paper.

From the answers we see that in the past the respondents preferred motor activities as sport games and cycling. Picture 1 shows the percentage of the males and females interest in motor activities performed in the past. We consider these activities to be the most interesting because of their modest material and spatial equipment.

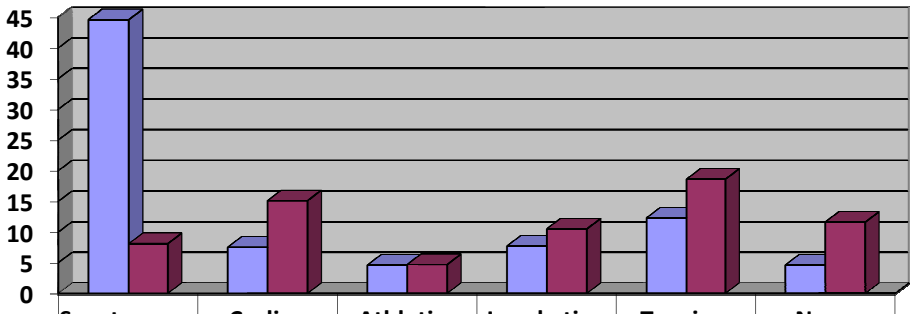


	Sport games	Cycling	Athletics	Ice-skating	Tourism
Males	36,9	29,2	9,2	6,2	7,7
Females	18,6	27,9	6,9	8,1	9,3

Picture 1 The most frequent sport activities of the respondents in the past

40.4% of males stated that they performed the given activities in an organized way, i.e. on a sports performance level in clubs and organizations supporting youth sport activities. In females similar results were obtained. In an organized way, but mostly recreational, 58.5% of girls were actively performing sports.

The opinions and attitudes of students change during their lifetime which was visible in their answers concerning their most frequent sports activities in the present. On picture 2 we can see that sport games in males are still the most preferred, but when comparing them to the past, the interest in cycling decreased in 21.5%. Also, 3 boys do not do any sport activity at present any more. In girls we observed an increase of tourism activities in app. 10%. Similarly as in boys, also here an increase of sport passivity was demonstrated.



	Sport games	Cycling	Athletics	Ice-skating	Tourism	None
Males	44,6	7,5	4,6	7,7	12,3	4,6
Females	8,1	15,1	4,7	10,5	18,6	11,6

Picture 2 The most frequent sport activities of the respondents at present

In the following questions we were finding in what ways the respondents spend their leisure time in the summer and winter months. Here they could choose a maximum of 3 options.

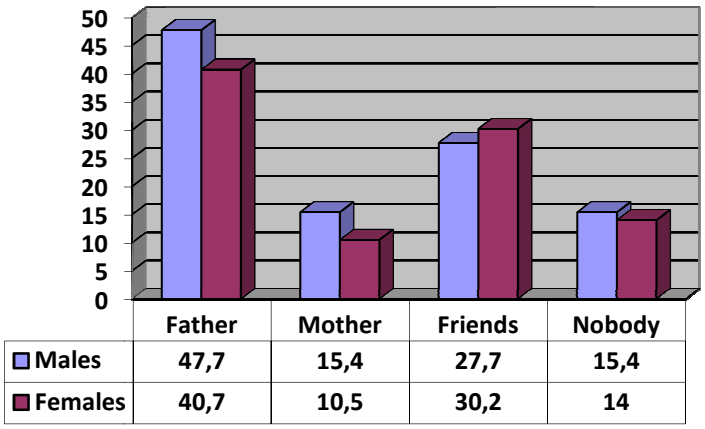
Table 1 The most frequent ways of spending their leisure time in university students in summer and winter months

	Activity	Males		Females	
		Summer	Winter	Summer	Winter
Workweek	Watching TV	35,4%	33,8%	30,2%	34,9%
	Reading books	30,8%	32,3%	45,3%	39,5%
	PC – internet	78,5%	80%	60,5%	64%
	Walks in their closer surroundings	20%	16,9%	26,7%	12,8%
	Shorter walks in the further surrounding	26,2%	16,9%	30,2%	14%
	Meeting friends	64,6%	58,5%	65,1%	50%
	Recreational sport performance (fitness...)	38,5%	20%	20,9%	14%
Weekend	Watching TV	26,2%	29,2%	27,9%	27,9%
	Reading books	23,1%	24,6%	32,6%	37,2%
	PC – internet	64,6%	73,8%	43%	54,7%
	Organized activities	16,9%	21,5%	7%	15,1%
	Shorter walks in the further surrounding	18,5%	15,4%	27,9%	14%
	Recreational sport performance (fitness...)	27,7%	24,6%	17,4%	11,6%
	Meeting friends	58,5%	55,4%	62,8%	58,1%

The results show that a nowadays generation spends its free time in summer and winter months meeting their friends and “internet surfing”. These interests are identical both in males girls. A more significant motor activity was proved in males in summer months. Girls, on the other hand, both in summer and in winter preferred reading books, especially in the

workweek. Even that this activity was often also during the weekends, it did not reach the level of 38%.

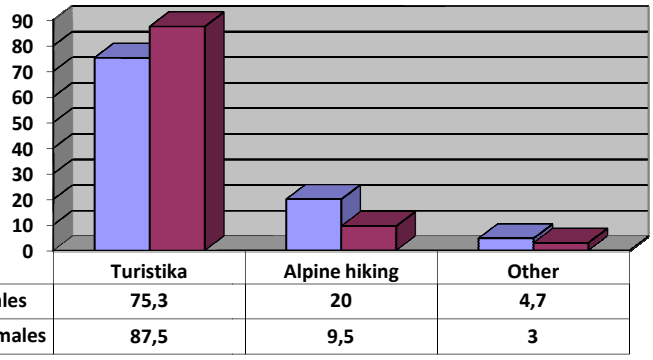
In terms of who lead the respondents to the sports activities we observed an influence of the environment on the formation of the attitude towards sport. On picture 3 we can see that the respondents were mostly influenced by their fathers, which described 47.7% of boys and more than 40% of girls. Another significant factor was friends, or their peers who have a significant influence at university. The smallest influence was discovered in mothers.



	Father	Mother	Friends	Nobody
Males	47,7	15,4	27,7	15,4
Females	40,7	10,5	30,2	14

Picture 3 Who lead the respondents towards motor and sport activities

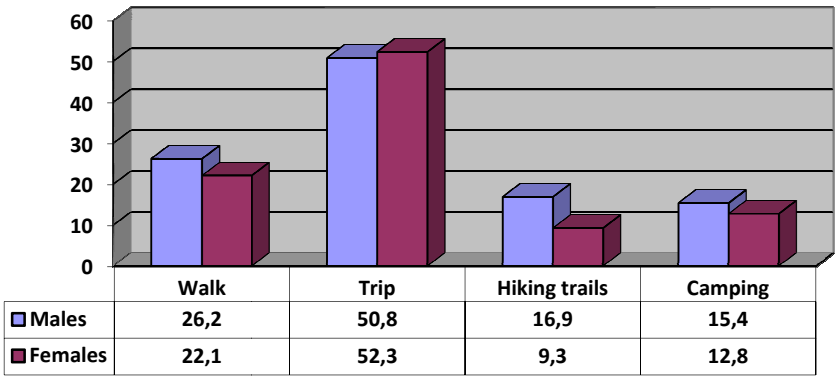
From the point of tourism activities performance we observed the preferences of the specific kinds. The results showed that the most preferred was tourism itself. We consider its significant position to be caused especially by modest material and spatial equipment. The boys tend to perform alpine hiking, too, but in a lesser extent.



	Turistika	Alpine hiking	Other
Males	75,3	20	4,7
Females	87,5	9,5	3

Picture 4 List of the most frequent forms of tourism

From the point of the forms are the most frequent both in boys and girls short walks into their surroundings. Tourism and camping did not overcome the level of 17%. In the answers of the boys and the girls we did not discover significant differences. As we stated above already, also here we want to say that the costs of the motor activity play a considerable role that significantly influences the effectiveness of the leisure time activities of the young generation.



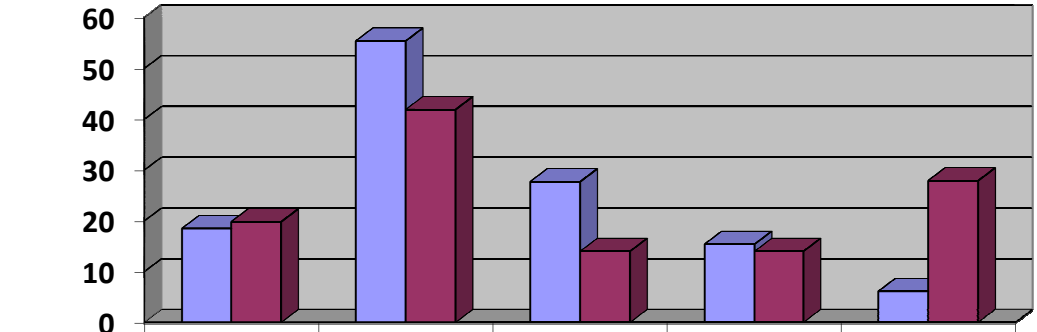
Picture 5 An overview of the preferences in tourism activities

As tourism is a specific activity performed in a natural environment we also asked what the purpose they do it for is.

Table 2 Main reasons for performing tourism activities

	Males	Females
Strengthening health	18,5%	3,5%
Development and maintenance of physical fitness	18,5%	5,8%
Exploring nature	26,2%	31,4%
Making and keeping friends	15,4%	9,3%
Learning culture	0%	4,7%
Emotional and aesthetic perceptions	21,5%	18,6%

The most frequent answer in boys and girls was exploring nature ad psycho-hygiene. Despite that the most of the boys states that they do not perform tourism and sport games in nature that much because of the lack of free time and a little interest of their closer society in these activities. Girls show a low will power and an increased motor effort.



	Other interests	Lack of time	No group	Insufficeint equipment	Unwillingness
Males	18,5	55,4	27,7	15,4	6,1
Females	19,8	41,9	14	14	27,9

Picture 6 Reasons why they do not perform tourism and outdoor motor activities

CONCLUSION

On the base of the survey results we can point to the fact that motor and tourism activities in our sample of the university youth in the Banska Bystrica region were preferred in their earlier period, under a certain influence of their parents. After starting university their activities are limited to the activities that are not demanding in time and material equipment. In present there are many ways of direct and indirect communication that is very popular and naturally sought. Especially various forms of motor outdoor activities (e.g. experiential education, team building) and properly chosen forms of tourism activities can be the right factors for activation of a whole social group towards physical activity.

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SUMMARY

The authors present the results of a survey that was aimed at finding of the position of the tursitika and sport-motor outdoor activities in the way of life of university students. We used a standardized questionnaire of a VEGA grant project to obtain the results. The results showed the preferred activities, which are the activities modest in financial cover. The most frequent reason of a low interest in motor activities is a lack of self-denial in physical load overcoming.

ANALYSIS OF SELECTED TRAINING TOOLS OF AN ATHLETE IN DUATHLON

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KEY WORDS: annual training cycle, training tools, volume and intensity of training load.

INTRODUCTION

Duathlon is endurance and wide-ranging sport, where racers run, cycle and run again with timing of total time (STÚ, 2012). Load varies from one hour in sprint duathlon to several hours in long distance duathlon. Character of movement in both disciplines is cyclic, but each discipline has its specificity.

ISSUE

Condition for successful handling duathlon is to have movement abilities and knowledge which are connected with both parts of duathlon. In case of top athlete, knowledge about planning of training, training cycle, expedient training tools, methods, volume and intensity of load is necessary and help balanced proceeding in the both parts by taking into account personality of each athlete of course (Formánek – Horčic, 2003). We can judge quality of sport training on the basis of achieved results in competition. The performance in duathlon is affected by many circumstances like segmentation of track and its distance, climate of surroundings, competition of athletes, technical equipment and also nourishment, fluid intake and sleeping. Athlete evaluates his/her performance on the basis of subjective feelings resulting from comparison with performance of other athletes or he evaluates himself by the time in running part, where distance and level of difficulty has to be taken into consideration.

AIM

The aim of this paper is to evaluate load and content of training tools and its representation in every single period of one year seasoned training cycle of an athlete in duathlon.

TASKS

1. Briefly characterize annual training cycle of a proband
2. Analyze general training indicators in one year training cycle
3. Analyze load and content of special training indicators in every period of one year preparation of an athlete in duathlon
4. Analyze representation of selected training tools in sport preparation in one year training cycle.

METHODOLOGY

We analyze training of concrete top athlete with initials E.H on the basis of his one year training records. He was 30 years old at the time of our research. We indicated intensity of training load in every part of basic and specific endurance on the basis of following indicators:

1. Weight: 73kg
2. Height: 180 cm
3. Morning HF:42
4. VC – Vital capacity: 4300
5. Anaerobic threshold: 175
6. W_{max}1 kg= 5,15
7. W_{max}= 390
8. Max HF= 195
9. Calm heart frequency: 54

One year training cycle consisted of 12 monthly cycles. It is characterized by one transitive month, 8 months of training, 3 months of racing period and 16 training load indicators. During the transitive period proband was resting passively to regenerate for the next season. This period is not recorded so we will not deal with it in the results. There were 3 top competitions during the period of training. It was National Championship in sprint duathlon held in Nové Zámky - essential for qualification to European Championship, European Championship in Austrian Blumau and National Championship in short duathlon.

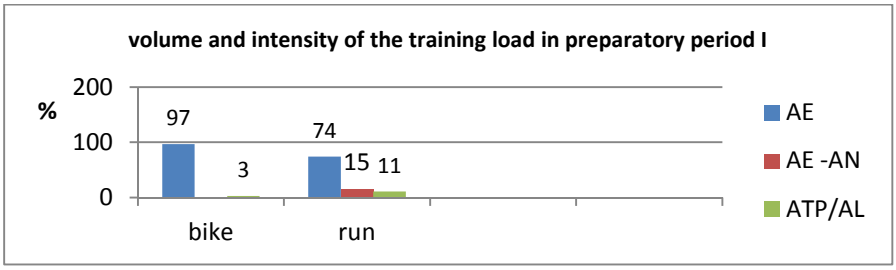
RESULTS

In this part we evaluate general and specific training indicators of sport preparation of our proband in every single period of training cycle that we present in tables and pictures. We

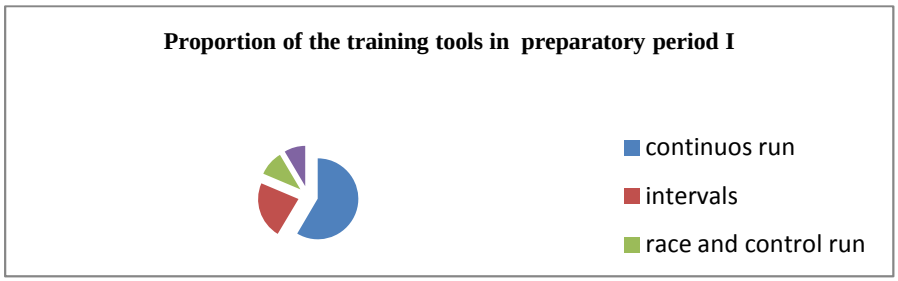
also evaluate the content of training tools and its representation in every period of one year training. We analyzed following selected training tools concerning running: long distance run, interval run and control run (including duathlon race run). As a specific training tool of the preparation we analyzed connecting training which means changing sport activity e.g. from running to cycling. Performance in this type of training is very similar to the performance during the race, so we use it to verify actual condition of athlete and to get the necessary habit associated with the start in race (Formánek, 2001). We evaluated the representation of these training tools in the number of training units. Concerning the number of hours spent by regeneration – we did not count stretching that most athletes performed before and after each workout, but especially a sauna and massage. Concerning the number of hours spent by an alternative sport activity we count mainly swimming, nordic walking and cross country skiing.

Preparatory period I

Proband had 82 days of training load in preparation period without any health problem. Quantity of training units from November till January kept increasing lightly. In November proband had 10 twice-a-day trainings, in December 15 and in January 14 twice-a-day trainings. The proband attended 5 races in this period. Three of abovementioned races were road running competitions and two were European Cup in winter triathlon. Total load in cycling and in running had decreasing tendency, which is unusual. Training focused on progress of aerobic exercise endurance in running and cycling represented the biggest part of the training volume. Running in aerobic part, mainly continuous free running on road or in terrain was main training tool of this period. Running in deep snow where he used take-off exercises for progress of lower extremities strength was also used. Running with different levels which was realized by proband in part of base endurance II mainly in stadium is another training tool. The prevailing methods were fartlek and nordic walking in low and moderate intensity. The proband carried out interval running with the number of 10 training units mainly in aerobic-anaerobic energetic cover. Proband exercised whole body twice a week for progress of power abilities. Due to the characteristics of the weather conditions proband used mainly mountain bike with even, fartlek methods in varied terrain but with low intensity. Due to the fact that our proband participated in winter triathlon competition he used to do cross country skiing a lot in his preparation period which was reflected in number of hours in alternative additional sport. In connecting training he used combination of unspecified disciplines of cross country skiing – mountain bike with classic run.



Picture 1 Volume and intensity of the training load in preparatory period I



Picture 2 Proportion of the training tools in preparatory period I

Preparatory period II

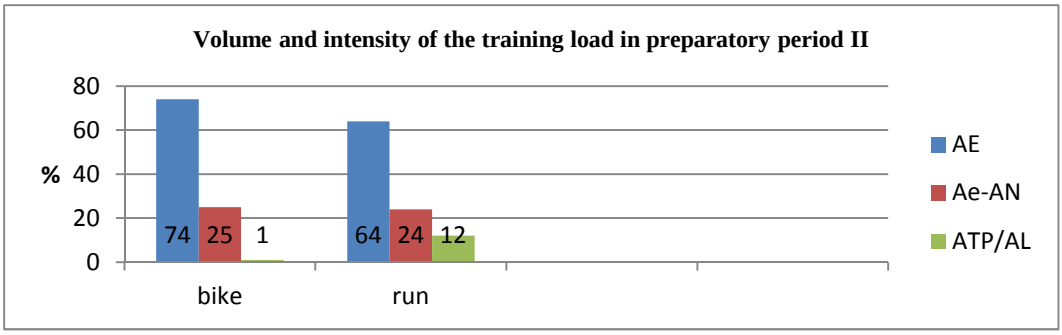
The volume of running and cycling in 133 training units was the highest in this period of the year. The most significant increase in mileage was recorded in 5th month of our observation (March), in which proband was in training camp in Spain. This warm climate enabled the increase of mileage in cycling and in all training parts, which was, of course, the aim of this camp. Every month proband participated in one race. At this period running was still dominant with the length of track between 11 km and 20 km with low intensity for developing aerobic endurance. We observed increase in mileage in aerobic-anaerobic energetic cover and specific race endurance, because of the following training tools: cycling in varied track, interval running (e.g. 10x400m, 5-10x1km, 2x3km, and 4x2km), fartlek, alternate running, and running with different levels. Next training tool was barefoot running in the sand. Specific training tool of this period is connecting training, whose intensity increased with oncoming race period, e.g. 20km cycling and 8km running.

Placement in competitions:

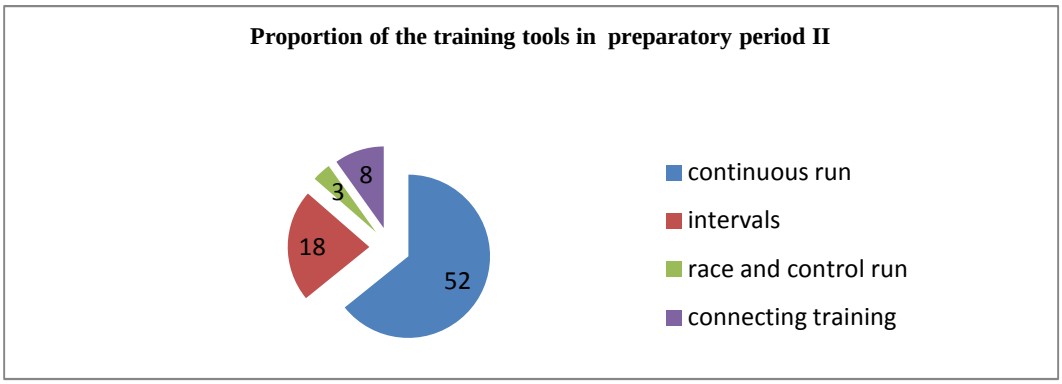
European Cup in winter triathlon – 9th place

Race in Benidorm city in Spain – 3rd place

Race from Devin to Bratislava (12 450m) – 17th place; time: 39:13min.



Picture 3 Volume and intensity of the training load in preparatory period II

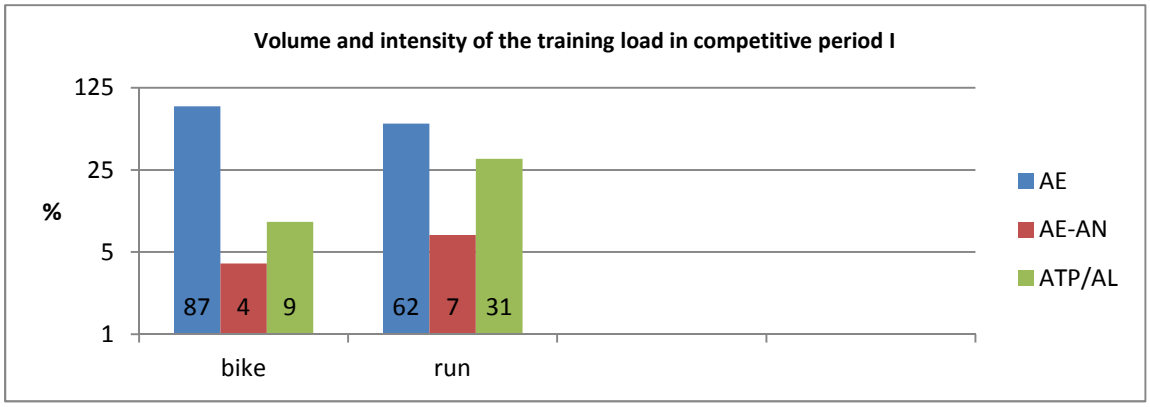


Picture 4 Proportion of the training tools in preparatory period II

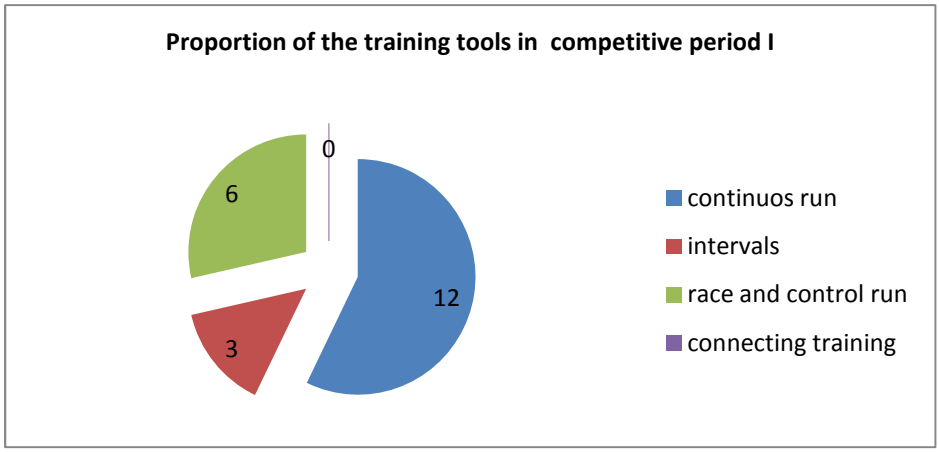
Competitive period I

Volume of mileage decreased significantly, but the intensity in specific race endurance increased, which is of course connected with completion the most important races of the season. In the main competitive period in May our proband attended 1 race in every micro cycle. As our proband did not pass the qualification for The European Championship he took part in only one race in road running in June and he made a cycle trip to Italy, which reflected in increase of mileage in cycling in June mainly in zone of basic endurance I. Concerning running preparation, there was mainly continuous running to keep good physical condition or to rest actively after race, intervals and race running. Connecting training was not used due to its characteristics close enough to race load.

At this time of year proband participated in four-day national training camp in Levice, held right after the competition in Nitra. In this camp he made control cycling 6.5km in 60km. Next day he experienced a control run of 5km. Both training tools were realized in high HF over the anaerobic threshold level in the race-specific endurance. After this camp the fatigue of our proband reflected in failure in qualification to European Championship in duathlon.



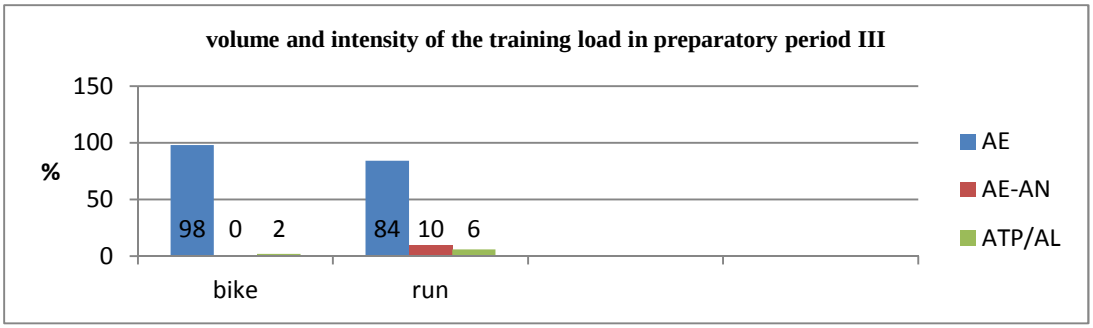
Picture 5 Volume and intensity of the training load in competitive period I



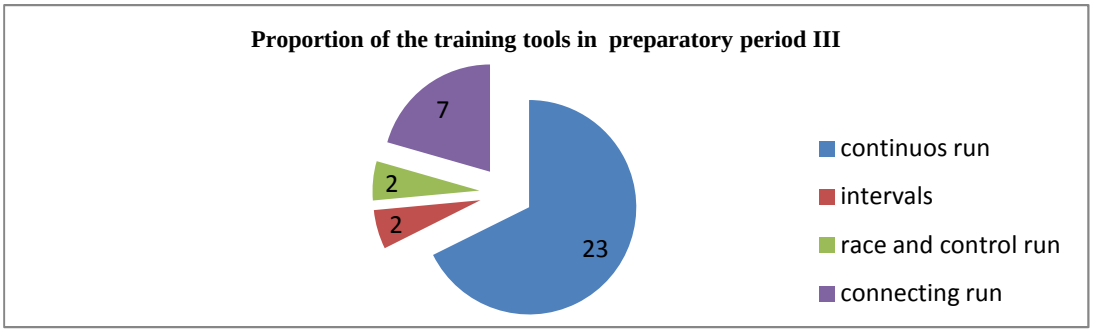
Picture 6 Proportion of the training tools in competitive period I

Preparatory period III

Volume of mileage in running increased in this period in comparison to competitive period mainly in aerobic endurance. In cycling we recorded decrease in volume and intensity caused by the fatigue of proband but also by relaxes after hard racing period. Main proportion on total mileage in running was recorded in small continuous method and its following tools: long continuous run in terrain and light run in terrain connected with jumping exercise to develop strength of lower extremities. Our proband also used Nordic walking as an alternative sport activity. With the approaching race period the proportion of connecting training increased, while proband switched mountain and road bicycle in connection with interval run, frequently at the level of anaerobic threshold at the stadium e.g. mountain bike (MTB) 15km – 10x200m interval part- 20km MTB.



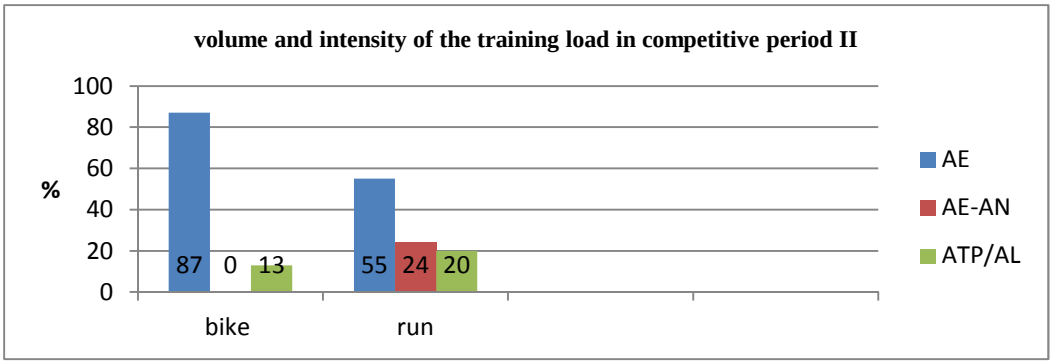
Picture 7 Volume and intensity of the training load in preparatory period III



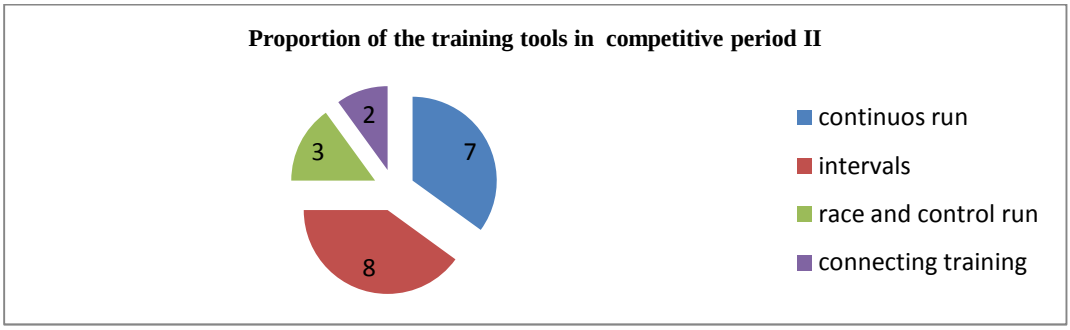
Picture 8 Proportion of the training tools in preparatory period III

Competitive period II

Interval running was dominant training tool with the number of training units 8. Proband used classic interval running method with the length of track 100-400m, with the frequency of repetition 6-10 times and 200m of light running. Continuous run consisted of 7 training units with low intensity to keep fitness. Connecting training consisted of two training units integrated at the beginning of the month and during the racing micro cycle replaced interval running. Concerning cycling proband was trained in varied terrain with low intensity. During this month proband participated in two races: Slovak National Championship in short duathlon and 6th round of Slovak Cup in sprint duathlon.



Picture 9 Volume and intensity of the training load in competitive period II



Picture 10 Proportion of the training tools in competitive period II

CONCLUSION

- Sport preparation of our proband was in spirit of generally valid principles of training in duathlon as recommended by Engelhardt (1999).
- Training consisted of 288 days of load with no medical limitations. It represents 406 training units. During observed year proband participated in 18 competitions – 8 duathlons, 7 road runs, and 3 winter triathlons.
- Volume of mileage in running was the highest in preparatory period II, concretely in 5th month (3 week training in Spain) as a result of approaching racing period. Volume of mileage in cycling was the highest in June. At this time proband did not fulfill his objective – qualification to European Championship and made a cycle trip to Italy. Due to the fact that proband did not participate in any competition we think that June should not be considered as a part of training period.
- Intensity of training load increased with the approaching main competitive period.
- Continuous method in training and its tools represented the highest proportion of the total mileage in training because it is basic tool for developing aerobic endurance as a base for high performance in duathlon.
- Connecting training as a specific tool of sport preparation in duathlon was used exclusively in preparatory period but not at all in main competitive period due to its characteristics concerning length and intensity which are very similar to specific load in race.
- We consider lack of regeneration as a main defect of training. Our proband had only 48 hours of regeneration compared to 602 hours of training load.
- We believe that participation in training camp in main racing period was not appropriate because it resulted in insufficient time for regeneration which is recommended to be 48

hours after race. The intensity in control training was highly above the anaerobic threshold level and without any following regeneration which influenced the performance in the most important race of the season.

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SUMMARY

Author in this paper deals with analysis of the volume and intensity of training load in the top athlete in duathlon. We analyzed special and general indicators of the training load and chosen training tools.

LEVEL OF KNOWLEDGE OF PHYSICAL EDUCATION IN PRIMARY SCHOOLS

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KEY WORDS: knowledge, primary schol, physical education.

INTRODUCTION

The part of physical education aim fulfilment on the First Grade of the Primary School, is the pupils´ familiarisation with the necessary knowledge quantity about PE as the factors of informative and non-informative effect. Knowledge in physical education process is one of the determining assumptions of conscious acquisition of motion habits and skills, developing of motion skills and educating of personality features.

Knowledge is the instrument of thinking and development of thinking, conscious physical, intellectual and moral improvement of pupils. This problem is solved: Biela, D (2005), Dobrý, L. (2010), Liba, J.(2003) and Majerský, O. (2006). It thoughtfully, clearly and concretely enables to define the aim, way and practice of acquiring motion activities and the development of pupils´ characteristic and to establish adequate conditions, means and methods of this activity.

In physical education process it seems up-to-date to apply such methods that would be a suitable indicator for finding out the knowledge level of pupils and would represent the information about the reserves in the area of self-education of teachers at the same time. We presume, that this indicator might be suitable, professionally administrated knowledge tests in the area of physical education.

AIM AND TASKS

The main aim of our research effort was finding out the up-to-date knowledge level from the theoretical requirements of physical education subject by pupils of first level.

Two following tasks emerged from the aim of our work: finding out the knowledge level from physical education and sport by pupils of 2nd and 4th grade of Primary School and

comparing obtained knowledge with the curriculum requirements and methodical manuals for physical education subject.

METHODOLOGY

The mean of knowledge level findings were the knowledge tests, that were set on the basis of valid curriculum and methodical manuals. The tests administration was realised during October – November 2012.

We used basic math-statistical methods (measures of central tendency and logic-pedagogical analysis) for the evaluation of achieved results.

We worked with two groups of respondents during the pre-research. First group were pupils of 2nd grade (256) and second were pupils of 4th grade (289) – pupils from four primary schools in the region of towns Martin and Žilina. Chosen schools have very good conditions for physical education realization. There were 20 questions in the questionnaire. In both groups we focused on health importance of physical education, concept and terminology, importance, technique and methodology of chosen motion activities, as well as basic information from traffic education.

On the basis of evaluation of content and formal appropriateness of pre-research tests, we eliminated too difficult and too simple questions.

After the completion of knowledge tests we realised the research with two groups of respondents - pupils of 2nd grade of Primary School (247) and pupils of 4th grade (301). The research was made at the Primary Schools in the region of towns Prešov and Košice. The grades were chosen on the basis of the same content of the curriculum for 2nd grade and 4th grade.

RESULTS

We might claim, the determining sign of reached knowledge level is not only the process of simple acquisition, but also the ability of its using for different tasks and situations.

Pupils´ active participation in physical education process is not thinkable without theoretical knowledge, their creativity, initiative, independence and self-improvement is not developing.

We realised the evaluation of pupils´ answers according to ours compiled field of questions orientated on:

1. Remedial physical education
2. Concept and terminology of physical exercises and physical education facilities

3. Meaning, technique and methodology of motion activities
4. Traffic education

We might claim quite a good knowledge level in the field of Remedial physical education, where we wanted to find out the rightness about the idea on body posture, as the body posture is a necessary assumption of balanced development of the body and mental aspect of growing child.

Particular replays to the questions gathering meaning, technique and methodology of motion activities document the corresponding pupil´s knowledge, excepting understanding the ball throwing technique and naming the run technique (pupils of 2nd grade). Pupils of 4th grade – where should be expected satisfactory knowledge related to technique and methodology of basic activities – have limitations shown in question relating to the long jump techniques, forward roll techniques and basic playing basketball techniques (only 47,1% of respondents new right that in basketball dribbling must the ball be led alongside the body). They had considerable problems with determining particular basic swimming techniques.

Even answers to questions aimed at terminology of physical exercises and physical education facilities point out to considerably unsatisfactory status. Pupils of 2nd and 4th grade had problems with question gathering the names of drawn physical education facilities, illustrating exercises as stretch arms sideways , pushup, bend arms backwards onto the nape. The mistakes appeared even in naming gymnastic facilities, especially jumping board.

Also, the questions from traffic education area caused many problems. Pupils did not know the basic traffic signs, e.g. give way, no entry for cyclists. The pupils have too little knowledge about meaning of particular traffic signs.

CONCLUSION

Particular results of the research has enabled us to state that contents and range of theoretical knowledge about physical education is understood by teachars differently and has not stable form and methodology of physical education process management.

Many teachers do not appreciate properly the theoretical aspect of pupils preparation in physical education subject.

We assume that the teachers on primary schools do not appreciate mostly the area of terminology which is often replaced by slang expressions. For the needs of practice, it is necessary to pay attention to informative physical education process aspect. It is the assumption for following formative physical education aims fulfilment.

We consider the knowledge tests as an appropriate and effective way of feedback about pupil´s knowledge level. It might have a educative but also motivational, diagnostic, didactic and prognostic function. That´s way there might be considered the possibility and necessity of its standardisation for the needs of physical education subject for the First Grade of Primary School

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SUMMARY

The main aim of our research effort was finding out the up-to-date knowledge level from the theoretical requirements of physical education subject by pupils of first leve. We consider the knowledge tests as an appropriate and effective way of feedback about pupil´s knowledge level. It might have a educative but also motivational, diagnostic, didactic and prognostic function. That´s way there might be considered the possibility and necessity of its standardisation for the needs of physical education subject for the First Grade of Primary School

LONG STANDING JUMP AS THE MOST APPROPRIATE METHOD OF EVALUATION OF EXPLOSIVE STRENGTH OF LOWER LIMBS

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KEY WORDS: strength, trial, vertical jump, long jump, norms.

INTRODUCTION

All human movements contain to some extent the components of strength, speed, coordination, time dimension of performance, complexity and range of physiological motion.You can, therefore, differentiate their specific functional and motor aspects such as strength, speed, endurance and coordination [Bompa,1989].All these aspects are connected with the process of releasing energy, namely the attainment of strength, which belongs to the speed capability, imitating the ability of the organism in regards to the movements of the whole or part of the body in space as soon as possible, and therefore depend largely on the proportion of muscle fibres (FT) energy sources efficiency, neuromuscular coordination, as well as the proportion of bone lever.

Maximum anaerobic effort as well as speed of the movement are complex functional features consolidating many elementary structures and functions of the organism in the nervous and muscular systems (Szopa et al., 2000). According to Chu (Chu, 1996) strength is a forcing disposition (dynamic power), being an optimal combination of strength and speed for creating a body move.

Throws and jumps in athletics, most of gymnastics elements, diving, fencing and many other disciplines requiring bouncing, high jump, stroke or overarm are main recipients of the benefits coming from developing anaerobic strength not lactic acidic (Bompa,1989).

It is difficult to imagine the activities of physical recreation and physical education for people in different age according to the program, which does not take into account the practice of gymnastics, athletics demanding jump, bouncing etc.In the course of their implementation there are movements, which are associated directly with the development of maximum not lactic acidic anaerobic power.

It should be borne in mind that the lesson of physical education and physical recreation activities do not have much in common with a sports training (Guła – Kubiszewska, Lewandowski,1998). Each person leading a sport activity, however, should monitor the efficiency of motor ability of the exercised taking into consideration one of the links of the praxeological chain, which is the diagnosis.To assess the maximum, not lactic acidic anaerobic power, we can use very popular indirect tests such as a standing jump and vertical jump as well as more time - consuming and complicated direct tests (laboratory).

AIM

The work compares two tests: a standing jump and a vertical one, as measures of maximum not lactic acidic anaerobic power. The results obtained in both tests by the examined, specifically their level will not have in this case, the importance of assessing the status of the team state of preparation.The aim of the research is an attempt to clarify whether the tools of research, which differ in the direction of the bouncing, give comparable information about the level of this motor capacity, as well as which of them you may need to use for 13 – year - olds taking into account the results obtained by the tested and making a review of the field tests in the light of these trials.

METHODOLOGY

Studies have been carried out in December 2009 in Public School No 22 in Radom. There were 121 girls and 128 boys at the age of 13 participating.

Vertical jump was carried out at the gym, students were facing to the wall at the point of placing the board. Standing on the whole feet and stretching the arms up, they were touching the board – a measure, with wet fingers.Then, sideways to the wall they were performing a squat swinging with an arm andnext, a jump with a touch at the highest possible point at the board. An attempt was performed twice with a 5 minutes break. A better result was taken into account, which was the distance in centimeters between the trace left after the jump and the trace left in the standing position.

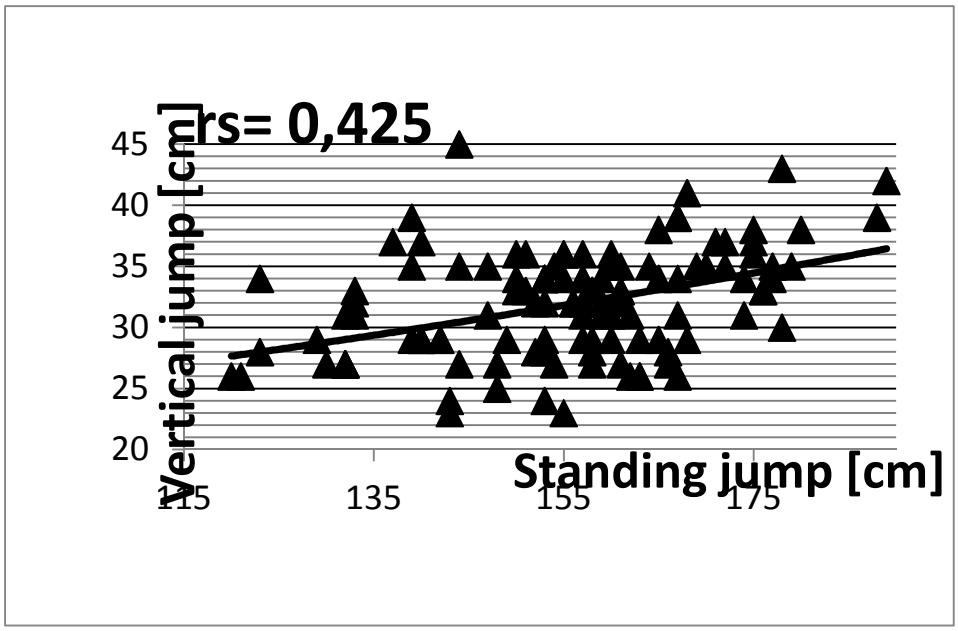
Anattempt in the standing jump was carried out in the gym. The students were standing in the given line, the feet together with the knees bent doing a swing of the arms they were performing a jump with a move of arms forward. An attempt was done twice with a 5 minutes break. A better result measured in centimeters was taken into consideration. It was a distance from the line of the jump to the back of the heel after the jump.

To compare both tests, Pearson's correlation coefficient method was used and the results obtained by the test were compared to the standards prepared with the help of the Dutch Fitness Test and Czech Fitness Test (Drabik,1997), which have been selected at random.

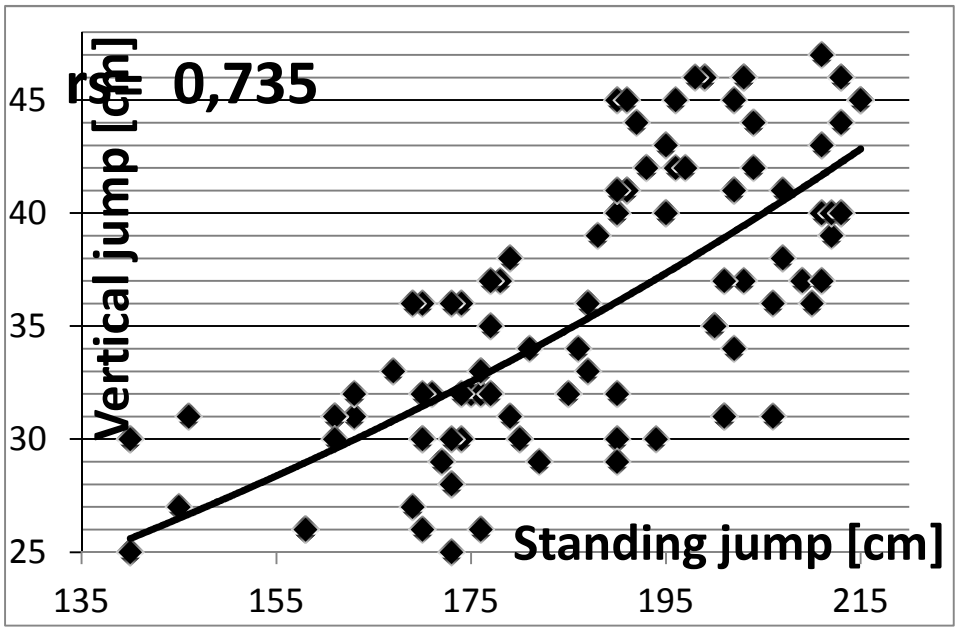
RESULTS

The results of the research allow to make a number of observations for the assessment of the level of power with the help of various research tools which are a high jump and a standing jump.

Control of the power levels among the students of the first grade was carried out by means of two tests: the vertical and the standing jump. The aim of carrying out the tests was to verify whether both tests may be used interchangeably to diagnose the power of thirteen – year – old boys and girls. Despite the fact that both tests vary in the direction of the bouncing as well as the way of carrying it out, in the case of boys a high correlation coefficient (0,735) has been achieved, as far as the girls are concerned, the level is moderate (0,425) (Zaczyński, 1997). Relationship is presented by pictures 1 and 2. Lower rate among girls is connected with their lower move activity, because none of the tested girls attended recreational or sports activities. Among the surveyed boys, most of them were football players in a sports club MSPN "Radomiak 1910".



Picture 1 Relationship between the long jump and a vertical jump of the first grade girls of gymnasium



Picture 2 Relationship between the long jump and a vertical jump of the first grade boys of gymnasium

The average score for boys in the long jump was 181,1 cm, and in a vertical jump 35,7 cm and similarly for girls 156,0 cm and 32,2 cm. The real champion among boys obtained 215 cm long and 47 cm, and the weakest of the tested – 140 cm and 23cm. Among girls, the best result is 189 cm and 46 cm and 120 cm and the weakest 120 cm and 23 cm. The results

are shown in the table 1. To assess the results obtained by the pupils in the long jump the standards developed for Czech Fitness Test were used, while in the vertical jump - the standards developed for the Dutch Fitness Test (Drabik,1997).

On the basis of the standards in the mentioned tests the boys definitely gained better results in the trial of the standing jump, and weaker in the vertical jump. Girls on the basis of the same standards reached better single results in the vertical jump than in the standing one, but in general, as the average of the group better outcome obtained in the standing jump.

Table 1Results and standards of the vertical and standing jump on the basis of Czech and Dutch Fitness Tests

VERTICAL JUMP					
Result	**Weak**	**Average**	**Medium**	**Good**	**Very good**
Standards (boys)	< 35 cm	36-39 cm	40-41 cm	42-45 cm	>46 cm
No of students (128)	19	38	41	24	6
Medium result (boys) **– 35,7 cm;** *The best result*– **47 cm;** *The weakest result*– **23 cm.**					
Standards (girls)	< 35 cm	36-37 cm	38-40 cm	41-43 cm	>44 cm
No of girls (121)	32	38	27	20	2
Medium result (girls) **– 32,2 cm;** ***The best result*** **– 46 cm***; The weakest result* **– 23 cm.**					
STANDING JUMP					
Result	**Weak**	**Average**	**Medium**	**Good**	**Very good**
Standards (boys)	< 146 cm	147-167 cm	168-189 cm	190-210 cm	>211 cm
No of students (128)	4	19	55	41	9
Medium result (boys) **– 186,1 cm;** *The best result* **– 215 cm;** *The weakest result* **– 140 cm.**					
Standards (girls)	< 139 cm	140-160 cm	161-182 cm	183-204 cm	>205 cm
No of girls (121)	19	52	43	7	0
Medium result (girls) **– 156,0 cm;** *The best result* **– 189 cm***; The weakest result* **– 120 cm.**					

DISCUSSION

Browsing the literature concerning the use of mentioned attempts, you can find different information about the possibility of evaluation of the effect. Presented information on the measures, indexes, and tests that evaluate the individual motor capacity can be helpful in deciding, which of the tests is more frequently used and which is more reliable.In most research tools evaluating motor abilities, the tests assessing motor power in the form of the standing jump or vertical one can be found. The review of the research tools used for evaluation of strength is also interesting. Tests of Polish authors – Fitness Measure by T. Mydlarski – contains a sample of strength assessment which is a high jump performed after the run – up in the straight line among the three trials occurring in Measure of Fitness byR.

Trześniowski, where two of the four attempts are: a high jump and a long jump after the run – up with the use of any technique.Test of Physical Fitness of Z. Chromiński does not have these trials – there are three testing other abilities. Test of Motor Efficiency by L.Denisiuk – in which one of the five trials are a vertical jump or a long one, standing jump–an alternative whether to use one or another is given by the author to the one, carrying out the test. Index of Physical Fitness by K. Zuchora– one of the five trials are the standing jump, in contrast, Test of General Fitness INKF where one of the five trials are a vertical jump and the Scientific and Research Test of the resort problem no 101 - one of the seven trials is a standing jump.Physical Fitness Test for adults – two from seven attempts are a standing jump and a vertical jump– the author does not propose the selection, but requires carrying out both!TKKF Test for adults – one of the four trials is a vertical jump. In Europe, an overview of the most popular tests evaluating the capacity of the motor skills should be started from the "Eurofit Test" – where one of the eight trials is a standing jump, an English Fitness Test-among the ten trials one is a standing jump.Czech Fitness Test – one of the six trials is a standing jump, EAST- GERMAN Fitness Test – where one out of seven trials is a vertical jump and the other a standing jump. Hungarian Physical Efficiency Test contains one of the seven trials which is a jump with a rotation around the axis of the body or a vertical jump.The tests creators from other continents also took into consideration in their research tools the ability which is power, and so the International Fitness Test – one of the eight trials is a standing jump, Test ICSPFT for people in the age of 6 to 32 of L. Garson – one of the seven trials is a standing jump.Test of Minimal Physical Efficiency of Kraus – Weber (USA) – includes six trials, but there aren't any evaluating power! The Youth Efficiency Test of the American Alliance for Health, Physical, Recreation and Dance Education, includes five tests and one of them is a standing jump. Asian Fitness Test – one of the four trials is a standing or long jump. Japanese Fitness Test – one of the seven trials is a vertical jump and Singapore Fitness Test – where one of the six trials is a standing jump.

An overview of the selected tests developed both in Poland, Europe and worldwide evaluating motor capacity including power, shows that in almost all tests appear the power trials and very often this is a standing jump as well as a vertical jump. The authors of these tests are not unanimous and some propose one attempt to assess the power –a standing jump, while others propose performing a vertical jump.However, the creators of Physical Efficiency Test for adults require realization of both trials. Test of the Minimum Physical Efficiency of Kraus Weber received by many specialists as a measure of health,does not provide for any

attempt to assess strength, therefore, it is concluded that as the motor ability, the power is of secondary importance for health.

Table 2 Chosen tests of Polish authors containing jumps measuring power (Makuch, 2008)

No	TESTS OF POLISH AUTHORS	TESTS ASSESSING STRENGTH				
		Long, standing jump	Vertical jump	High jump	Long jump	Triple jump
1	Instructions For Testing Physical Capacity **(carrying out both attempts)**			X	X	
2	Measure of Physical Efficiency T. Mydlarski			X		
3	Measure of Physical Efficiency R. Trześniowski **(carrying out both attempts)**			X	X	
4	Test of General Fitness INKF T. Ulatowski		X			
5	Method of Assessing General Fitness of Male Students S. Pilicz	X				
6	Method of Assessing General Fitness of Female Students S. Pilicz	X				
7	Test of General Fitness of the Flying Staff S. Pilicz	X				
8	Test of Motor Ability by L.Denisiuk***(carrying out one of the attempts)***	X	X			
9	The Index FitnessK. Zuchory	X				
10	„Check your fitness", Test TKKF S. Pilicz, J. Żmudzki		X			
11	Universal Fitness Card M. Demel; S. Pilicz ***(carrying out both attempts)***	X	X			

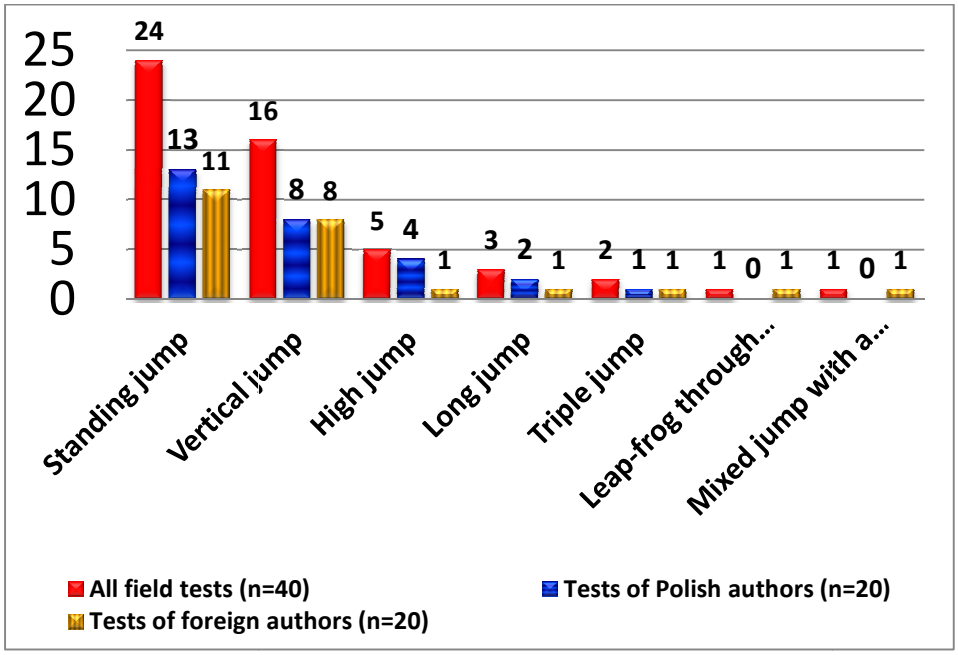
12	"Fitness means Health" S. Pilicz ***(carrying out one of the attempts)***	**X**	**X**			
13	A set of tests defining the level of mobility features L. Makuch		**X**			
14	Test of the general fitness of children and young people in the age from 8 to18 S. Pilicz	**X**				
15	Test of the general fitness for different age groups B. Matias ***(carrying out all of the three attempts)***	**X**	**X**			**X**
16	Test of Physical Efficiency Z. Waśkiewicz, A. Zając	**X**				
17	Test of Physical Efficiency K. Emmerich, I. Ryguła	**X**				
18	Physical Efficiency Test Of Wroclaw B. Sekita	**X**				
19	Test of Motor Efficiency for boys aged 8-9 years R. Kapera	**X**				
20	Test of General Fitness of Tajet J. Talaga ***(carrying out one of the attempts depending on the age)***		**X**	**X**		

Table 3 Chosen tests of foreign authors containing jumps measuring power (Makuch, 2008)

N0	**TESTS OF FOREIGN AUTHORS**	**TESTS ASSESSING POWER**						
		Standing jump	**Vertical jump**	**High jump**	**Long jump**	**Triple jump**	**A leap-frog through the cord**	**Mixed jump with a turn**
1	A Method of Testing Locomotor Potential C. McCloy'a		**X**					
2	AAHPER Test (American Association for Health, Physical	**X**						

	Education and Recreation) P.A. Hunisicher, G.G. Reiff							
3	Fleishman's Test E.A. Fleishman						**X**	
4	Test of Physical Efficiency H. Richter, F. Beuker		**X**					
5	International Fitness Test L. Larsona	**X**						
6	Test Of The International Olympic Committee L. Larsona	**X**						
7	Hungarian Mobility Test introduced by the National Institute of Pedagogy in Budapest ***(one of the two attempts depending on the age)***		**X**					**X**
8	The European Fitness Test „Eurofit" for children and the youth	**X**						
9	The European Fitness Test „Eurofit" for adults		**X**					
10	English Fitness Test	**X**						
11	Czech Fitness Test	**X**						
12	East – German Fitness Test **(carrying out both attempts)**		**X**			**X**		
13	MOPER FITNESS TEST - Dutch Fitness Test		**X**					
14	The Youth Efficiency Test of the American Alliance for Health, Physical, Recreation and Dance Education	**X**						
15	Asian Fitness Test ***(one of the two trials)***			**X**	**X**			
16	Japanese Fitness Test ***(one of the two trials depending on the age)***	**X**	**X**					

17	AAHPERD Youth Fitness Test (American Alliance for Health, Physical Education, Recreation , and Dance)	**X**						
18	Singapore Fitness Test	**X**						
19	Unifittest - Fitness Test K. Mekota, R. Kovar	**X**						
20	Test of Power Measurement United States Tennis Association		**X**					



Picture 3 The frequency of occurrence of individual tests that measure the explosive strength in 40 tests of Polish and foreign authors 40 (Makuch, 2008)

The authors of the tests assess the explosive strength on the basis of the standing jump, a vertical jump, a long jump, a high jump, a triple jump, a leap-frog through the cord and a mixed jump with a turn. By far the most common is the use of two trials, i.e.the standing jump and a vertical one. Other tests are much less popular among creators of tests (picture 3).

CONCLUSIONS

1. Taking into account obtained correlation coefficient can be deduced that both tools may be used interchangeably as an attempt to assess the strength, because in the case of boys a

high correlation coefficient (0,735) has been achieved, while the correlation coefficient among girls is at the moderate level (0,425).

2. On the basis of the standards of the Dutch and Czech Physical Efficiency Test both, girls and boys came off better in the standing jump trial.
3. In almost any research tool developed for the purpose of assessing the motor abilities the trials of testing power appear, but this is not always a vertical jump or a standing jump.
4. Much more often the standing jump occurs and it is present in the research tools such as the European Fitness Test and the International Fitness Test, which are most commonly used in scientific research.
5. The standing jump is the easiest research tool in population tests.

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SUMMARY

It is hard to imagine motive activities led according to the program which does not take into account gymnastics, athletics as well as sports team games requiring jump, strike, bounce etc. While doing all these exercises, some motions appear, which are directly connected with

developing maximal strength. Everyone should monitor the level of fitness, which is changing with the lapse of time, situation or training. Strength, usually called dynamic force, is associated and strongly connected not only with sport but also with physical reaction and physical education. The aim of the undertaken studies was an attempt to solve the problem of finding a proper test of diagnosing strength, Sargent's vertical jump or a long jump. The research was carried out among 121 of schoolgirls and 128 schoolboys of the junior high school. The participants of the tests were asked to make the attempt of the vertical jump as well as the long jump twice. The obtained data were analyzed by comparing the results of the mentioned tests with the help of the Pearson's indicator. Mean value, the minimal and maximal, was also counted up and compared to the norms elaborated in the open for general use fitness tests. The review of the field tests with reference to both tests was also made. Research tools of the Polish and foreign authors were analyzed with regard to the strength diagnosis. Taking into account the Pearson's modulus of correlation, it can be claimed that both tests can be used interchangeably. Analysis of the fitness tests used in Poland, Europe and in the whole world shows that in almost every research tool elaborated for the needs of accessing motor abilities, the test of strength can be found, although it does not always have to be a vertical jump or a long jump. However, the findings accomplished by the junior high school students analyzed on the basis of the norms enclosed in the Czech and Dutch Fitness Tests and the review of the field tests show that more reliable and easier to be carried out is the trial of a long jump.

PHYSICAL ACTIVITY PERFORMANCE OF ELEMENTARY SCHOOL PUPILS ENROLLED IN SWIMMING TRAINING

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INTRODUCTION

Constantly improving processes of development of individual areas of social life supported by globalization bring development also in the sportsmen training and sports themselves.The active swimmers preparation also undergoes these processes, especially from the scientific and pedagogic point of view. In order to survive hard competence it is necessary to follow the newest trends in testing sportsmen and to apply them in practical performance in the way of realizations of methods needed for evaluation of their success, especially to be established in real life with the required effect. Sport swimming has recently undergone an almost revolutionary change which shows as constant breaking of world records. This is not only the result of technological changes in the production of swimming suits but mainly scientifically performed long-term training.A very important part of swimming and realization and evaluation of the training process is watching and following the levels of fitness.

ISSUE

A diagnosis of general and specific physical activity performance is the basic methodological problem.A correct planning and controlling of the training should be based on the knowledge of the structure of a physical performance but also from the overall motor performance (Jursík, 1990). The motor activity performance can be evaluated objectively by means of suitable test batteries. Nowadays it is possible to achieve reliable information with the help of general or specific motor tests. Platonov (1974) in his work claims that swimming performance of swimmers can be tested several times per year in regular intervals.

In the 20th century several anthropology researches took place within the Czechoslovak teenage population. Very often researchers used test batteries containing motor tests. "The first big representative testing of motor performance of school population was realized under the supervision of Pávek" (Procházka, 2003). According to Moravec (1990) in 1987 another survey of physical, functional and motor development took place on a representing sample of the Czechoslovak school population.

According to Procházka (2003) the biggest issue from the point of view of comparing the works of different authors is the lack of uniformity of test batteries. The International organization for testing as well as the VMR ČSTV Commission have been trying for several years to create a unified system. They created the UNIFITTEST for individuals from 6-60 years of age composed of four tests: standing long jump, sit-ups in 60 seconds, alternative for a 12-minute run, endurance shuttle run and 2-km walk, and a test according to the age (from 6 to 14 shuttle run 4x10m, men from 15-25/30 number of push-ups, women from 15 to 25/30 endurance in push-ups, and men and women from 25/30 – bending in sitting). The UNIFITTEST also contained some somatic parameters (height, weight, subcutaneous fat).

The swimming test batteries used in Slovakia (Macejková, Svoboda, 1985, Záhorec, 1995, Ružbarský, 2003, Michal, 2000) were taken from the Russian literature (Bulgakova, 1986, Timakovova, 1985). When testing the character of physical activity skills mostly motor and specific swimming tests are used.

In the years 1986-1989 testing in four basic areas took place within the framework of representative meetings of swimmers: general and specific physical activity performance, physical development, functional disposition and psychic presuppositions. The results were evaluated in details and published later (Záhorec, 1995).

In Slovakia we are currently using a battery of tests recommended by methodology commission SPF (Ružbarský, 2003) to test general motor performance (50 m run, 2 kg ball throw, standing long jump, forward bending depth, 6-minute run, 12-minute run, sit-ups for 1 minute, and push-up endurance) and specific motor performance (3 times 25 metres crawl, 4 times 50 metres from water crawl, 200 metres Medley swimming, 800 and 3000 metres crawl).

AIM

The aim of this research is to test selected parameters of general and specific motor performance of 7-13 year-old pupils in Považská Bystrica who are enrolled in swimming

training, to compare them with UNIFITTEST 6-60, Moravec (1990) and special performance standards for sports classes in swimming and to evaluate them.

METHODOLOGY

Our researched group consisted of 15 pupils (born between 1997 and 2003) of elementary schools enrolled in swimming training in the region of Považská Bystrica. All subjects received training from two trainers who together plan, and perform the whole training process, which secures the homogeneity of the selected group. The contents of the general fitness training on land in the volume of 3 hours per week during the previous RTC were uniform for all subjects. A group of 12-13 year-old subjects had at certain times during the RTC one training unit added on land to develop specific motor skills.

The specification of swimming training in water depended on the length of the training, level of swimming skills and on the period of RTC in which the subjects were. The tests were administered in February 2011.

Methods of gaining facts

Testing Methods

General motor skills were diagnosed by means of standardized motor tests for motor performance according to Moravec (1990) and UNIFITTEST 6-60 according to Měkota, Kovář et al. 2-kg ball throw, standing long jump, sit-ups, 12 minute run, shuttle run 4x10 m.

Specific swimming skills were diagnosed by means of much used and recommended tests according to Ružbarský (2003):

- 3 x 25 m from water craul – maximum speed. Only the best attempt is recorded. Resting interval between repetitions is 1 minute.
- 4 x 50 m from water craul - *specific* endurance. All four 50´s are recorded. The resting interval between the sections is 10 seconds. The average of the recorded times is considered.
- 200 m Medley swimming (100 m Medley swimming) - general swimming skills. Start from blocks. The resulting time in seconds is measured.
- 800 m, (400 m crawl) - general endurance. Start from blocks, the resulting time in seconds is measured.

Facts Elaborating and Evaluating Methods

To elaborate and evaluate the data and times we used a number of methods – logical analysis, synthesis, comparison and basic mathematical statistical methods (average, standard

deviation, minimum, maximum, and variance). The statistical methods were used mainly for the basic characteristics of the group by means of the received data which we tried to specify for individual respondents by means of other above mentioned methods.

In the swimming tests the FINApointscalculator.exe programme was used to calculate the measured time into performance points. For a better interpretation of the results we displayed them in forms of different graphs.

RESULTS

General motor performance of 7-13-year-old pupils in PB enrolled in swimming

Measured values in motor tests including the basic statistical evaluation are given in table 1. The diversity of results is not only due to the age difference but also due to the different length of specialized training.

For a better evaluation we chose to compare the results of the subjects with other population of the same age (table 1) and we used a scoring evaluation of both each test and total according to the UNIFITTEST standards (table 2).

Table 1 General motor performance of 7-13-year-old pupils in PB

Name	Age	Standing long jump [cm]	Sit-ups/ 1 min	12 min. endurance run [m]	Shuttle run 4x10 [s]	2kg-ball throw [m]
H.B.	7	115	24	1300	14,32	3,3
H.M.	7	134	32	1650	13,27	3,6
J.M.	8	107	29	1600	13,61	3,4
K.A.	8	177	32	2200	12,92	4,1
J.A.	9	130	33	1650	13,85	3,7
H.T.	9	127	33	1600	13,95	3,4
K.L.	9	147	38	2200	13,06	4,1
K.M.	9	115	33	1350	14,2	3,9
V.L.	9	107	18	1200	14,65	3,3
K.M.	12	197	41	2400	11,48	9,8
R.J.	12	155	40	2400	12,36	5,5
V.P.	12	183	47	2700	11,95	6,5

K.M.	13	185	61	2700	11,61	5,5
V.M.	13	160	48	2200	11,92	7,2
Ć.J.	13	184	56	2750	11,57	7,9
Basic statistical data - swimmers	age	Standing long jump [cm]	Sit-ups/ 1 min	12 min. endurance run [m]	Shuttle run 4x10 [s]	2kg-ball throw [m]
average	**10,00**	**148,20**	**37,67**	**1 993,33**	**12,98**	**5,01**
standard deviation	**2,16**	**30,36**	**11,16**	**522,77**	**1,06**	**1,94**
minimum	7	107	18	1200	11,48	3,3
maximum	13	197	61	2750	14,65	9,8
variance	6	90	43	1550	3,17	6,5

The comparison of our results and the results of Moravec et al. (1990) showed that the amount of diversity of individual parameters as a matter of age corresponded to overall Slovak representative sample from 1987 (table 2). Individual tests performance increased with increasing age and increasing period of training.

Table 2 Comparison of general motor performance of 7-13-year-old pupils in PB and Slovak school population from 1987 (Moravec, 1990)

Age	**Number**	**Standing long jump [cm]**		**Sit-ups/ 1 min**		**12 min. endurance run [m]**		**Shuttle run 4x10 [s]**		**2kg-ball throw [m]**	
name	**n**	**x**	**s_x**	**x**	**s_x**	**x**	**s_x**	**x**	**s_x**	**X**	**s_x**
7	824	130,09	17,32	21,99	8,2	1736	372,01	13,03	3,07	2,63	0,64
H.B.		**115**		**24**		**1300**		**14,32**		**3,3**	
H.M.		**134**		**32**		**1650**		**13,27**		**3,6**	
8	676	139,2	16,55	26,71	7,92	1936	382,15	11,52	2,65	3,08	0,65
J.M.		**107**		**29**		**1600**		**13,61**		**3,4**	
K.A.		**177**		**32**		**2200**		**12,92**		**4,1**	
9	832	147,2	18,59	29,03	9,46	2107,55	396,29	11,25	2,08	3,62	0,8

J.A.		**130**		**33**		**1650**		**13,85**		**3,7**	
H.T.		**127**		**33**		**1600**		**13,95**		**3,4**	
K.L.		**147**		**38**		**2200**		**13,06**		**4,1**	
K.M.		**115**		**33**		**1350**		**14,2**		**3,9**	
V.L.		**107**		**18**		**1200**		**14,65**		**3,3**	
12	888	175,12	21,02	37,56	8,98	2311,94	371,23	9,35	1,59	5,24	1,1
K.M.		**197**		**41**		**2400**		**11,48**		**9,8**	
R.J.		**155**		**40**		**2400**		**12,36**		**5,5**	
V.P.		**183**		**47**		**2700**		**11,95**		**6,5**	
13	872	184,19	21,85	39,54	9,94	2363,53	388,88	9,12	1,42	5,98	1,33
K.M.		**185**		**61**		**2700**		**11,61**		**5,5**	
V.M.		**160**		**48**		**2200**		**11,92**		**7,2**	
Ć.J.		**184**		**56**		**2750**		**11,57**		**7,9**	

In our researched group we reached different results for individual motor tests when compared to the population.

In the standing long jump test there were only 5 pupils better than the population average. 8 pupils performed perceptibly worse. The worst was the category of the 9-year-olds.

In the sit-up test all pupils except one were better than the population average. Of these four were markedly better.

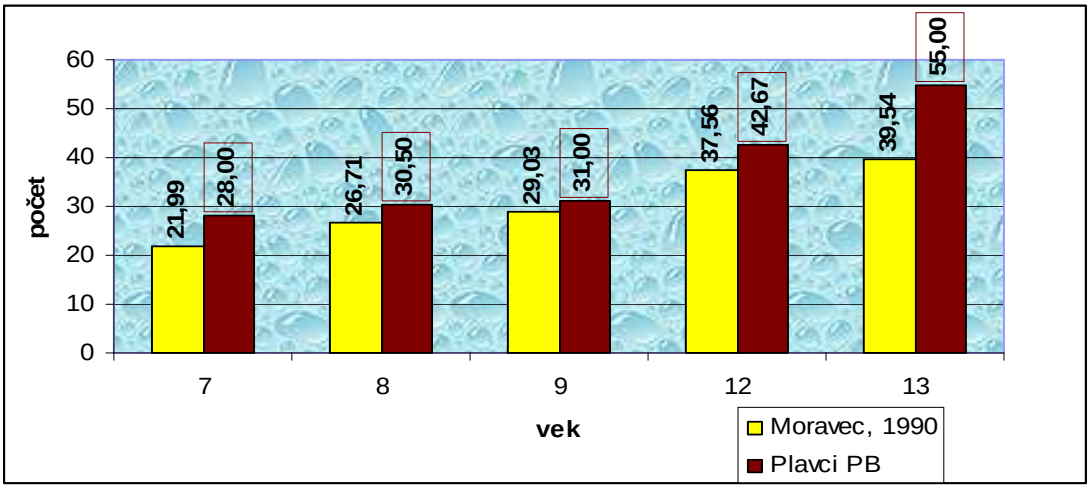
In the 12-minute run test 7 pupils were above the population average. It is interesting that out of 9 pupils under 9 years of age only two were better but in the category 12-13 years of age all but one pupils were better.

4x10 m shuttle run test was the worst for pupils, all of them were remarkably worse than the average population in 1987.

In the 2kg-ball throw test all except three swimmers were above the average.

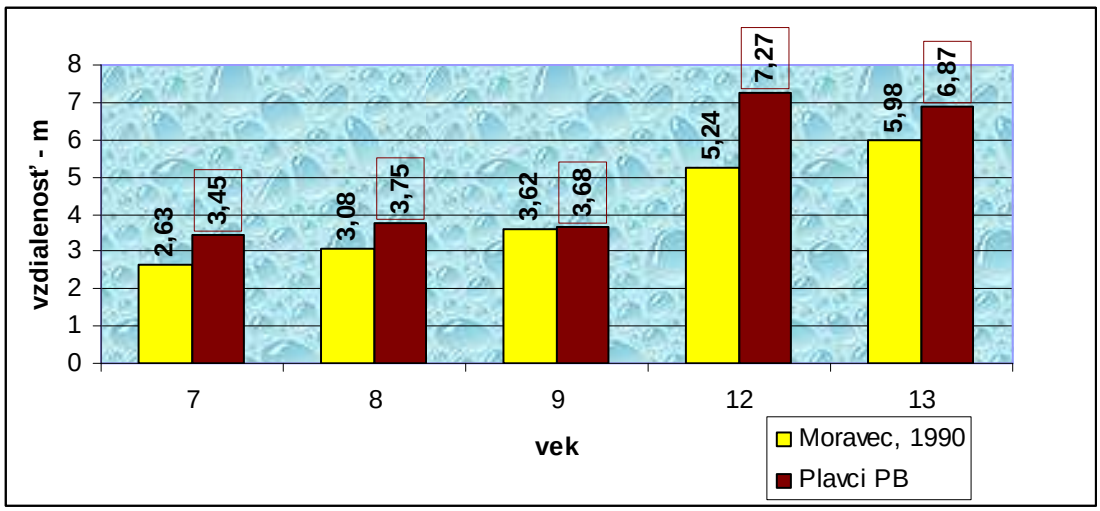
In the used tests we can characterise the tested group of 7-13-year-old pupils from the point of view of their motor skills as follows: we think that the results of the motor tests of our tested group correspond and reflect the current trend in the society – less physical activity (decreased number of physical education classes at elementary schools, school facilities, fewer sporting possibilities, worse financial accessibility of sports for lower social classes,

different interests of pupils – TV, computers, hanging out with bands without much physical activity).



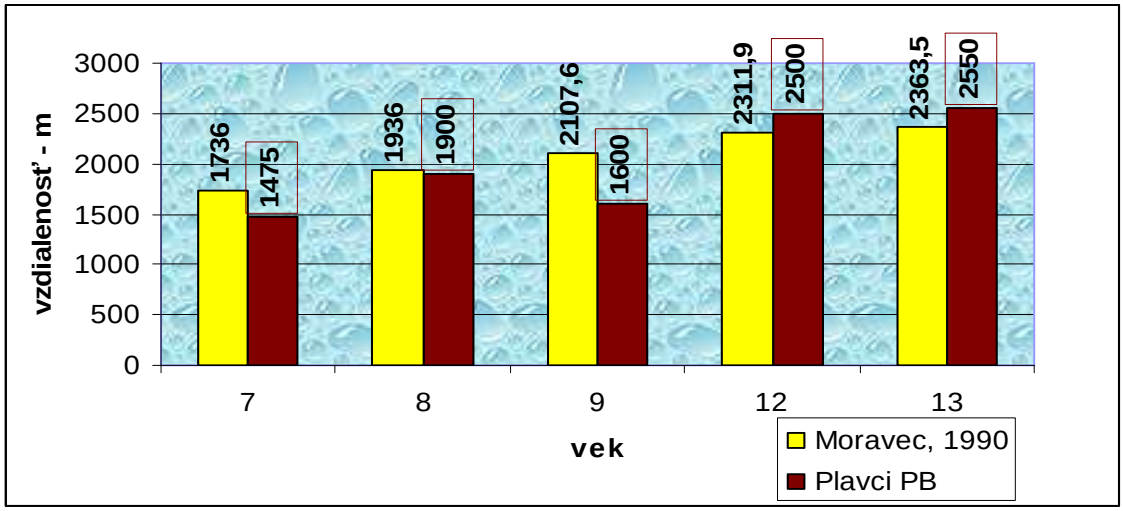
Picture 1 Comparison of pupils in PB and Slovak school population in the sit-up test

At the same time we can see that in our tested group there is a positive trend in increasing the performance in single tests with increasing age. The specification and contents of the long-term training is reflected in the results of all pupils, even of the youngest. Exercises which are used often – trunk and upper limbs work out performed as very good results in the sit-up (picture 1) and 2 kg ball throw (picture 2) performance tests.

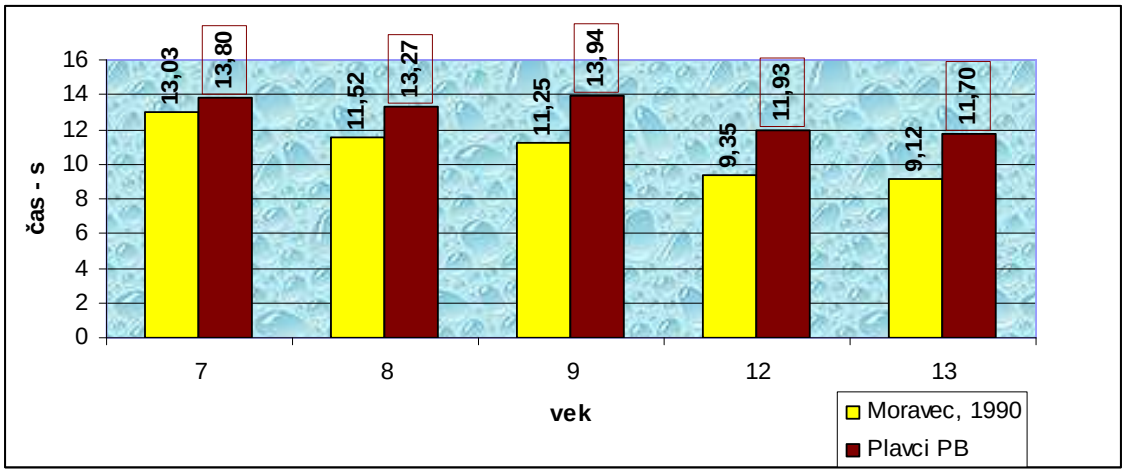


Picture 2 Comparison of pupils in PB and Slovak school population in 2 kg ball throw test

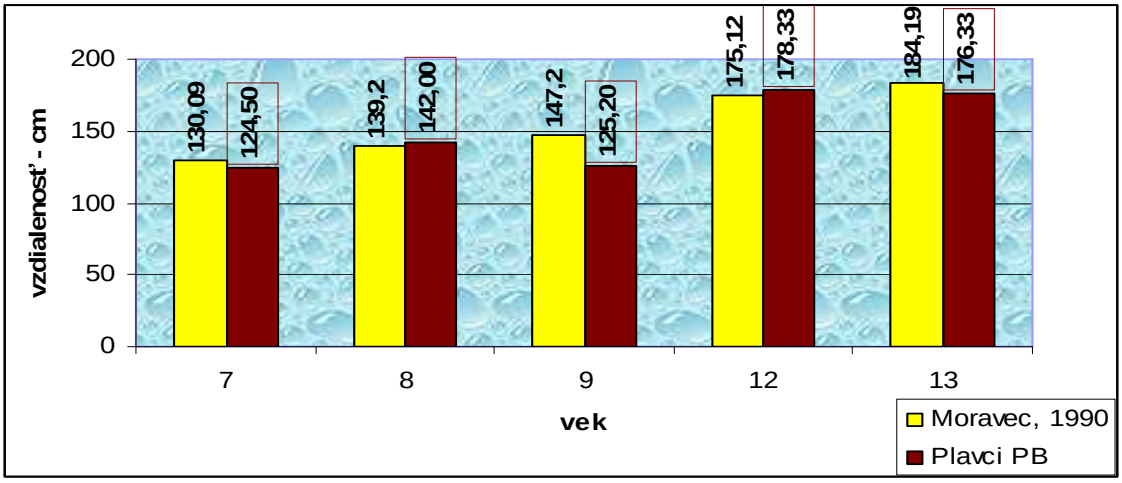
Endurance skills (12 minute run - picture 3), which are trained constantly by pupils enrolled in specific training in swimming showed an increase in performance with the increase of age.



Picture 3 Comparison of pupils in PB and Slovak school population in 12 min endurance run test



Picture 4 Comparison of pupils in PB and Slovak school population in 4x10 m shuttle run test



Picture 5 Comparison of pupils in PB and Slovak school population in standing long jump test

We got a surprising results from shuttle run tests (picture 4) and standing long jump (picture 5) since the dry training was focused on the development of coordination and velocity skills (gymnastics, sprint run, different obstacle courses, rope skipping). We suppose that either the training should have been multiplied or theses results correspond to the overall character of swimming - relatively slow (in the sense of inhibition) and cyclic motion with a strong endurance attribute.

Evaluation of general motor performance of 7-13-year-old pupils in PB enrolled in swimming training according to UNIFITTEST 6-60

The general motor performance evaluation of the sample group was based on the selected tests of Unifittest (6-60) - the measured performances were given points and evaluated in wording according to the norms of the test (table 3). Both the total evaluation of the sample group and individual performances of pupils in single tests corresponded to the population average. We chose this type of evaluation in order to create a range of tested pupils in the sense of motor skills levels and to compare it with swimming performance in the last six months.

5 respondents achieved more than average score,

4 respondents achieved average score,

5 respondents achieved below average score,

1 respondent performed markedly below average (table3).

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Table 3 The general motor performance evaluation of 7-13 year-old pupils in PB according to UNIFITTEST 6-60 (Měkota, Kovář et al., 1996)

Scoring by UNIFIT-TEST	age	standing long jump [cm]		Sit-ups/1 min		12 min. endurance run [m]		Shuttle run 4x10 [s]		Evaluation by UNIFITTEST	
Name	n	performance	Points	performance	Points	performance	Points	performance	Points	4 tests average	Word evaluation according to UNIFITTEST
H.B.	7	115	4	24	6	1300	3	14,32	3	4	below average
H.M.	7	134	6	32	8	1650	5	13,27	6	6,25	average
J.M.	8	107	2	29	6	1600	4	13,61	4	4	below average
K.A.	8	177	10	32	7	2200	7	12,92	6	7,5	**more than average**
J.A.	9	130	3	33	6	1650	3	13,85	3	3,75	below average
H.T.	9	127	3	33	6	1600	3	13,95	3	3,75	below average
K.L.	9	147	5	38	7	2200	6	13,06	5	5,75	average
K.M.	9	115	2	33	6	1350	2	14,2	2	3	below average
V.L.	9	107	1	18	3	1200	1	14,65	1	1,5	markedly below average
K.M.	12	197	8	41	7	2400	6	11,48	6	6,75	**more than average**
R.J.	12	155	4	40	6	2400	6	12,36	4	5	average
V.P.	12	183	6	47	8	2700	8	11,95	5	6,75	**more than average**
K.M.	13	185	6	61	10	2700	7	11,61	5	7	**more than average**
V.M.	13	160	3	48	7	2200	5	11,92	4	4,75	average
Č.J.	13	184	5	56	9	2750	8	11,57	5	6,75	**more than average**

We found out that all subjects who achieved more than average score are (except one) participants of the Slovak championship (as a matter of fact their placement in the range of performance in swimming disciplines was within first five places). From the subjects who achieved average only 4 subjects fulfil this criterion. We think that this fact shows a poor level of Slovak swimming. The best score was achieved by KA who is the best in Slovakia in his age category in backstroke disciplines.

Specific motor performance of 7-13 year-old pupils in PB enrolled in swimming training and its evaluation according to standards for swimming classes at elementary schools.

We were not able to compare the specific motor performance of these pupils with the population average. The norms for evaluation of specific the performance of specific swimming skills do not exist. There are different evaluation standards (e.g. Antala et al., 1997) where the swimming distance is stated or different skills which a child with specific swimming training should achieve at a certain age. From the point of view of these testing scales the pupils are always scored with the highest possible scores. We do not consider such evaluation as adequate. For this reason we accepted the performance standard testing norms valid for sports classes of elementary schools and 8-year sport grammar schools (table 4, Ružbarský et al., 2003). We realize that due to better conditions at sport schools especially for number of physical education classes neither this evaluation is perfectly suitable; however it gives more realistic view on the tested subjects.

Table 4 Performance standard for sports classes and sports grammar schools in specific motor performance (Ružbarský et al., 2003)

Specific tests - water	Preparation less than 10 years of age	Junior pupils 11–12 years of age	Senior pupils – boys 13–14 years of age	Senior pupils - girls 13-14 years of age
3 x 25 m from water – best performance	24,0	18,0	16,0	17,0
4 x 50 m from water, i 10s. - calculate the average	---	44,0	39,0	40,0
200 m Medley swimming	III. VT	III. VT	II. VT	II. VT
400 free stroke	III.VT	---	---	---
800 free stroke	---	III. VT	II. VT	II. VT

Table 5 shows the test results according to our chosen methodology together with the score calculation and classification in a performance class. Data which satisfy the performance standards for specific swimming classes are given in red.

Because in our tested group – particularly in the preparation course there were pupils from 7 to 10 years of age, we modified the 200 m Medley swimming test into 100 m Medley swimming test for pupils between 7 and 9 years of age. This allows us to calculate the performance into scores and thus clearly evaluate it based on the given standard.

It is obvious from the results in table 5 that performances (expressed both in times and scores) increased with the increasing age of subjects. An overall look at the results in table 5 confirms our previous hypothesis that there are better presuppositions for short disciplines for the tested group. Almost all subjects confirmed the performance standard in the test 3 x 25 m crawl in their categories. At the same time the pupils achieved excellent scores in the test of specific swimming endurance (4 x 50 m crawl). The worst result (no conformity with the standard) was achieved in the test of swimming versatility.

We think that this may reflect the fact that testing took place at the beginning of the season and previous training which lasted one month was oriented for free crawl swimming. At the same time the trainer's opinion was confirmed that despite very good technical skills of all subjects in all 4 disciplines there was not anybody markedly exceptional in medley swimming. Endurance test 800 m (or 400 m) crawl again confirmed our hypothesis that only one of the pupils (VP – confirmed standard) has special skills for endurance swimming.

The results confirmed that current level of specific motor performance of 7-13 year-old pupils enrolled in swimming preparation course in PB, evaluated by sports schools standards did not reach the required standard in most of the tests.

No pupil performed the standard in all tests, 1 subject fulfilled 3 standards (VP), 5 subjects fulfilled two standards, and 7 subjects fulfilled one standard. Two subjects did not meet any of the standard requirements (table 5).

Table 5 Performance evaluation: 7 – 13 year-old pupils in PB in swimming tests with the help of swimming standards for sports schools (Ružbarský et al., 2003)

specific swimming tests	age	3 x 25 m from water: best performance	4x50m from water, i 10 s. average	200 m Medley swimming 10 –years old and older 100 m Medley 9-years old and younger		400 m Medley swimming 10 years old 800 m Medley swimming 11 years old and older	
Name	n	performance	performance	performance	points/VT	performance	points/VT
H.B.	7	20,86	---	2:27,06	41/--	---	---
H.M.	7	25,93	---	2:48,51	27/--	---	---
J.M.	8	20,54	---	2:38,51	32/--	---	---
K.A.	8	20,7	---	2:10,60	58/--	---	---
J.A.	9	22,66	---	2:35,96	34/--	---	---
H.T.	9	27,38	---	3:10,22	19/--	---	---
K.L.	9	18,95	---	1:58,64	78/--	---	---
K.M.	9	20,82	---	2:33,61	36/--	---	---
V.L.	9	24,63	---	3:06,44	20/--	---	---
K.M.	12	13,91	38,29	3:08,96	205/--	12:05,14	228/--
R.J.	12	16,36	45,09	3:42,41	126/--	13:32,15	162/--
V.P.	12	14,51	37,24	3:01,51	232/--	11:20,54	276/III. VT
K.M.	13	14,82	38,94	3:02,80	227/--	11:57,41	236/--
V.M.	13	14,13	38,26	2:58,39	244/--	11:17,21	280/--
Ć.J.	13	13,92	35,99	2:56,02	254/--	11:09,14	291/--

Legend: – performance standard fulfilled

CONCLUSION

The author in the contribution analysis of the data of selected indices of general and specific motor performance in 7-13 year-old elementary school pupils enrolled in specific swimming course in PB enriches the field of knowledge about testing the swimming motor skills of pupils from the point of view of their physical development. The results confirmed

that current level of specific motor performance of 7-13 year-old pupils enrolled in swimming preparation course in PB, evaluated by sports schools standards did not reach the required standard in most of the tests. No pupil performed the standard in all tests. The worst result (no conformity with the standard) was achieved in the test of swimming versatility. We think that this may reflect the fact that testing took place at the beginning of the season and previous training which lasted one month was oriented for free crawl swimming.

Practical recommendations

Based on our results we can state several recommendations for practice:

- general skills testing, specific swimming skills testing and following the pupil's physical development contributes to the objectivity of testing and evaluation as well as to planning the training processes and is definitely not a "waste of time",
- the test battery should always correspond to the age and physical training of a subject,
- tests must be used in accordance with standardized procedures in order to receive objective results,
- the interpretation of the motor test results must reflect a subject's personality
- the issue of general motor skills testing in Slovakia is well elaborated and many motor tests are available for comparison,
- the issue of specific swimming skills testing is also well elaborated, however, in our opinion there is a need for more evaluation scales and standards of the highest quality, which would be supported by research in the field.

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SUMMARY

Research, evaluation, and analysis of the data of selected indices of general and specific motor performance in 7-13 year-old elementary school pupils enrolled in specific swimming course in PB enriches the field of knowledge about testing the swimming motor skills of pupils from the point of view of their physical development. We hope that our research not only contributes to the topic with new data but also enriches the field with new facts in the field of swimming diagnostics. Our aim was also to show simple ways of improving trainers´ activities and performance and their outcomes from the point of view of long-term sport training.

CONCENTRATION OF ATTENTION AND CREATING A PSYCHOLOGICAL CHARACTERISTICS OF CZECH NATIONAL MEN TEAM IN BIATHLON

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KEYWORDS: biathlon, biathlon shooting, psychological characteristics, testing.

INTRODUCTION

The goal of biathletes is to finish the running track as soon as possible and if possible complete accurate shooting at targets with minimal penalty load (Ondráček; Paugschová 2000). Material and training conditions of the participants in the highest international competitions in biathlon are getting balanced. The success or failure in the race is decided more on the track than on the shooting point, in the shooting process. One shooting failure under certain conditions, means 10 to 15 drop in score list and each next missed target excludes the biathlete from the fight for the first places in the overall standings (Ondráček; Hřebíčková; Paugschová, Meznik, 2011) Shooting success in biathlon is determined not only by quality training workout, but to a large extent by mental condition of the athlete, his resistance to external and internal influences. In case of failure there is a decrease of achievement motivation, lack of public interest, criticism and negative audience and surroundings reaction appear (Blahutková; Pacholík 2008).

ISSUE

Improving of performance is one of the main principles of sport (Korvas 2009). The aim of our study was to establish, for the needs of Couches of the Czech national biathlon men team (NT), personal characteristics of the athletes and determine the degree of concentration of attention, in order to improve their shooting performance. Examining of individual athletes as well as the whole group took place both in current training conditions and in the stress

situations of the highest competition categories as well. The condition of the successfully carried out research was effective collaboration of coaches and members of the NT, which was completely fulfilled.

METHODOLOGY

The research was conducted within the project "Concentration of Attention as one of the Prerequisites for success in biathlon shooting", approved in the category "Support of Grant Opportunities of the Specific Research at Masaryk University." Testing was performed on eight Czech senior representatives in biathlon, designated as TO1 - 8, using psychological tests.

The first part of the test was administered once. There were four tests included and have been used in normal training conditions. They were non-performance tests, to determine the temperament and characteristics of tested persons, and the performance tests to determine disjunctional reaction time and attention.

The second part of the test was administered repeatedly and consisted of two tests. The first of these was non-performance test to determine the subjective emotions, and the second - the performance test - to determine the concentration of attention. Tests were completed in different locations depending on where testing athletes attended the biathlon races. It was always the highest category race, such as the World Championship, World Cup races (WC), the World Winter University Games (WWUG), or National Championship (NC). The condition for taking part in the test was their participation in the respective races.

The first part

Temperament (temperament test) by: A. Belov. Description: The test is developed for personality typology based on the resolution of four basic temperament types: choleric, sanguine, phlegmatic and melancholic. Furthermore, there is the combination of the two determined, e.g. sanguine-phlegmatic type, where in the first place always more dominant of the two possible types is.

DRČ DRT (Disjunctive Reaction Time), by J. Vonkomer. Description: A quick test of discrimination on the lines, detecting the concentration of attention on activities that focus on maximum speed and readiness for simple spatial orientation.

BoPr BTA (Bourdon Test of Attention) Authors: J. Senka, J. Kuruc, M. Evening.

Description: The concentration of capabilities test and loading capacity of monotonous activities test. Operating curve analysis allows detection of learning effects, fatigue and personality traits of tested person TP.

SPARO BPSSP (Basal Psychological System of Self-regulation of Personality) author: O. Mikšík. Description: The test for the diagnosis structure and dynamics of basal self-regulation and integration of internal and external activity of personality, its physical endurance.

The second part

TKP CAT(Concentration of Attention Test), by M. Kucera. Description: time-saving test for measuring the performance of attention and perceptual-motor pace, based on the principle of correction of the test

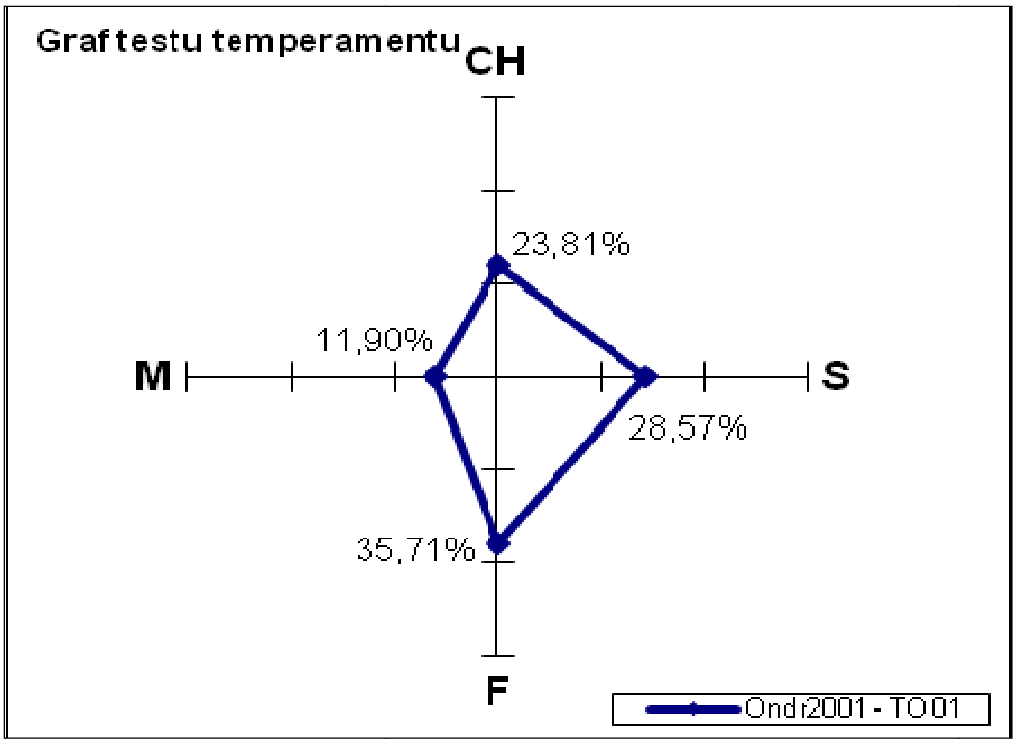
SUPSO SES (Subjective Experiences and States), author: O. Mikšík. Description: The dynamic interaction of the subjects towards environment is observed in the test With its help, this structure and dynamics of mental states can be evaluated and interpreted.

RESULTS

As an example of testing biathletes we preset a athletes characteristic labeled **TO1**.(tested person 1) Characteristics of all tested persons is found in the work of Vitek (2011).

Temperament

The test subject shows a predominance of phlegmatic temperament type. He probably prefers Endurance activities with lower load intensity and longer duration. Characteristic of this temperament is more relaxed approach to the unexpected, problem and conflict situations, but also slower activation, longer preparation for the performance, difficult injection to the new situations and adaptation to them (picture 1).



Picture 1 Graph showing the temperament TO1 (source: Vitek, 2011)

DRC

Score: 1

Gross score: 60

Maximum: 60

Errors: 0

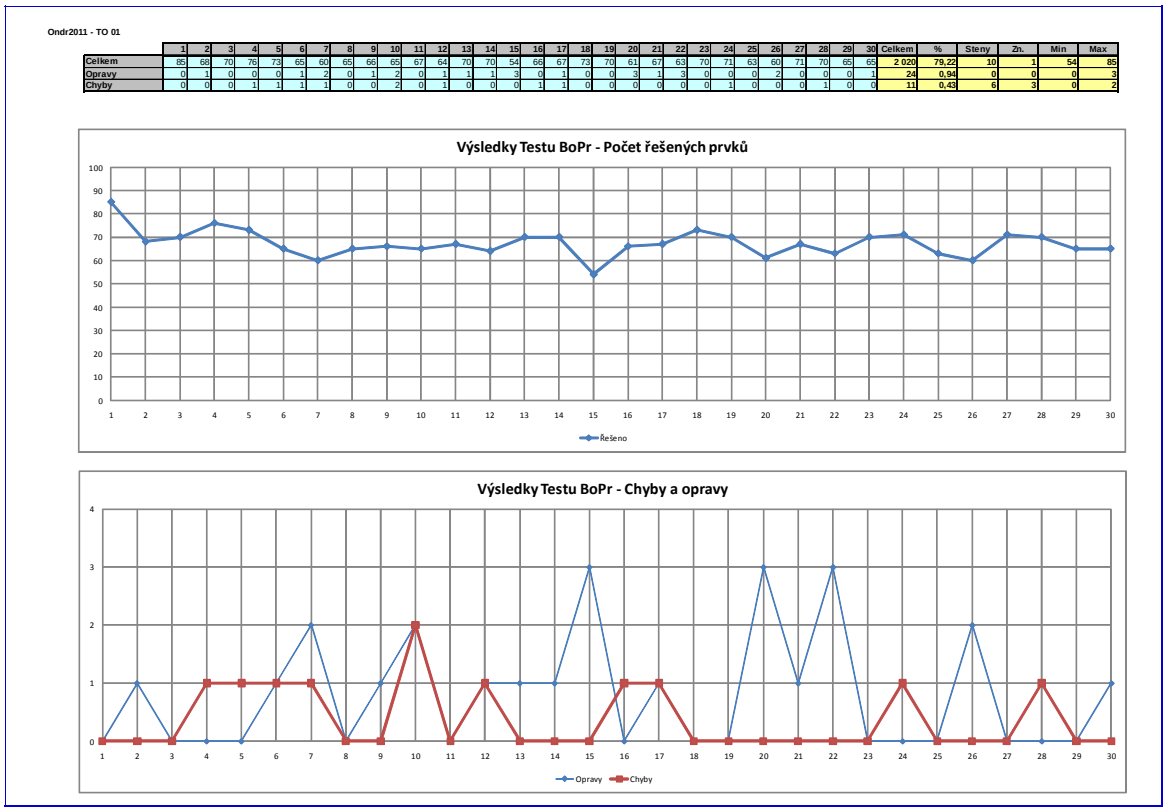
BoPr

Quantity (mark 1 - 5 / walls 10-1) excellent (1 - 10)

Quality (mark 1 - 5 / walls 10-1) Average (3-6)

Variation: sustained performance. In the first attempt, TO achieved a very good result for 85 elements. In the next tests, the performance was reduced and maintained stable tendency without significant fluctuations (picture. 2)

Monitored athlete does not show fatigue of attention during prolonged tasks or failures during his performance.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Celkem	%	Steny	Zn.	Min	Max
Celkem	85	68	70	76	73	65	60	65	66	65	67	64	70	70	54	66	67	73	70	61	67	63	70	71	63	60	71	70	65	65	2 020	79,22	10	1	54	85
Opravy	0	1	0	0	0	1	2	0	1	2	0	1	1	1	3	0	1	0	0	3	1	3	0	0	0	2	0	0	0	1	24	0,94	0	0	0	3
Chyby	0	0	0	1	1	1	1	0	0	2	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	11	0,43	6	3	0	2

Picture. 2 Results of recorded character and graphic illustration of TO1 (source: Vitek, 2011)

TKP

Date: 12.2.2011

Form: A

Solved: 89 (sten 5) **Bad**: 0 (sten 6)

Correct: 89 (sten 6**) Total Errors**: 0 (sten 9)

Skipped: 0 (sten 8) **S/R**: 1.0 (sten 9)

Conclusion: psychomotor tempo range is average. The performance is flawless in all respects. It shows conscientiousness of tested subject, good differentiation capabilities during normal pace.

Date: 13 2.2011

Form: B

Solved: 89 (sten 5**) Bad:** 0 (sten 6)

Correct: 89 (sten 6) **Total Errors**: 0 (sten 9)

Skipped: 0 (sten 8) **S/R**: 1.0 (sten 9)

Conclusion: The same as the previous measurement of 12.2.2011

Date: 11.3.2011
Form: C
Solved: 74 (sten 7) **Bad**: 2 (sten 5)
Correct: 69 (sten 8) **Errors Total**: 5 (sten 7)
Skipped: 3 (sten 7) **S/R**: 0.932 (sten 6)

Conclusion: the tested person has a slightly higher solution speed, but in comparison to the written forms of test an increase in error can be seen. It is normal because C form is differentiation more difficult. The test subject does not show signs of problems with the ability to quick visual differentiation. Attention is on good level, psychomotor pace is adequate.

SUPSO

In line with the prevailing placid temperament type,TO1 has a lower tendency to significant mental status changes before the race and after the race. Only in the first race, 29.11.2010 there is a strong change in mental fatigue showed (range D -depressivity). Consistently with an increase of depressivity, tendency to impulsive abreaction lowered (range O - abreaction)

These changes are probably due to the negative feeling of the race and a significant depletion (a pleasurable experience: "it is over")

In the second race (12th 12th 2010), the tested person showed mainly score reduction at scale U (anxious anticipation - before the race as usual), which is probably associated with the end of the race and "good feeling of race" while realizing the shortcomings (unnecessary charge).

Before the third watched race (19th 12th 2010) the default values are back to normal. After the race we noticed a significant reduction in U scale (anxious expectation) and a slight decrease in O scale (relaxation, impulsivity) and an increase in N scale (mental restlessness, moods).

Before the race on 12th 2nd 2011 a slightly higher level of anxiety is seen. After the race there was its lowering, also an increase range of P scale is seen (psychological well-being)

Before the race on 13th 2nd 2011 we find all values within the normal range. After we have seen some significant changes: an increase in range of P scale(psychological well-being), a significant reduction in scale A (activity, creative energy) and scale D (depressivity), increasing the scale N (mental restlessness, moods) and a significant increase in scale D (depression, mental exhaustion).

Also in the race on 11th 3rd 2011 we find some significant changes. These are mainly growth with scale S (depression), and N scale (restlessness, moods). Among other changes we reported reduced scale A (activity, creative energy), increase of scale O (relaxation), reduced scale U (anxiety) and reduced scale P (psychological well-being). Overall, these changes suggest rather the negative experiences of the completed race, which is also confirmed by a comment of the athlete, "a feeling of helplessness over the result."

DISCUSSION

Using the test, we tried to build personal characteristics of tested persons. For easer evaluation some of the results are labeled with "grade". As the evaluation is similar to school classification, which is based on the wall (scalable) result. Grade 1 represents the best performance rating, grade 5 weakest performance.

Temperament personality

For most of the test subjects a significant superiority phlegmatic-sangvinic temperament type is reported, with a predominance of the phlegmatic folder. Particularly significant is the response at TO7. Sangvinic part is the most significant represented by a TO4 TO6, choleric part is pronounced in TO5. Only TO6 and TO8 have higher melancholic temperament representation than other TO.

A more detailed description:

- **Phlegmatic temperament component** is represented most. Almost all of subjects reaching a value of 35% (only for TO5 reaches 32%), in TO3 exceeds 40%, and in TO7 extending nearly 60%

- **Sangvinistic temperament component** is represented a bit less, but also a high percentage. InTO4 and TO6.it is approximately 35% in TO1,TO2,TO3 a TO5 approximately 30%, which is collectively very significant representation. Also in TO8 with almost 25% and TO7 with almost 20% is this component quite strong,

- **Choleric temperament component** is not significantly represented in the most of TO,only in TO5 is almost the 30%, in the rest of participants it is about 20% and in TO6 has even lower value of less than 10%

- **Melancholic temperament component** is represented least. In five TO it is in the range of 10% or less. Slightly stronger it occurs in TO6 and TO8 in which it is just above 20%, and in TO2 it approximates to 15%.

Overall characteristic of phlegmatic sangvinic-type temperament with a significant component of phlegmatic part can result in preference endurance activities with lower load intensity and longer duration, together with greater resistance to interference mental stability, endurance and stamina. Characteristic for this temperament is more relaxed approach to the unexpected, problem and conflict situations, but also slower activation and longer preparation for performance (physical and mental). Some progress can also be negative by less psychomotor tempo, harder injected in to the new situations and adapt to them.

DRC – disjuntion reaction time

For shooting in biathlon, reaction time is very important, especially at the most critical moment of the very shot which is triggering and immediate response of the finger on the trigger on the current image of the sights and the target sights. In the most of the tested subjects, reaction time is excellent.

Result: Five TO gained grade 1, one TO got grade 2, one grade 3 and one TO got grade 4

BoPr - the concentration of attention

The test result is determined by both the number of completed characters, ie quantity, both the correctness of individual operations - number of errors and corrections, thus the quality of the performance.

The analysis of the results does not show obvious trend of the group in the variation, rate and pace of work in progress. But what is obvious: most of the tested subjects prefer quantity over quality. The exception is perhaps TO3 and TO2 (lower rate), showing good results in both the work rate (quantity), as well as a small number of errors (quality). A significant discrepancy between the quantity and quality was achieved by TO6. TO8 also had a high error rate and high number of repairs

SPARO - personality characteristics

T-test of differentiation between the athletes and the general population in the questionnaire showed some statistically significant differences. Surprisingly, the test results do not indicate a higher level of aspiration, which we assumed in elite athletes. The research indicated statistical significance, for example. α = 0.1 (the results of a = 0.1). Research has shown that test subjects show:

- **Higher RE (control variability),** α = 0.1, ie less self-control and consideration of the possible consequences of actions
- **Lower VZ (touchiness),** α = 0.1, ie lower touchiness and suspiciousness to the area,
- **Higher PV (emotional arousal, spontaneity),** α = 0.5, ie a tendency to gravitate to the dynamic interactions associated with intense psychological energizing,
- **Higher IP (intensity of internal feelings),** α = 0.1, ie the tendency to seek inner excitement, intense emotional experiences and the experiences and enjoyment of them,
- **Higher PN (motor restlessness),** α = 0.1, ie. delight in the activities and interactions with the environment that promises to live the "battle excitement" rivalry, danger and adrenaline adventures
- **Higher SD (social disinhibition),** α = 0.5, ie the greater social independence
- **Higher OS (general stimulation of the organism),** α = 0.5, ie taste for higher situational dynamics a higher tendency to seek change
- **Lower AC (anticipation level),** α = 0.1, ie lower level considering the possible consequences of inadequate decision-making appears to be a higher tendency to risky choices,
- **Higher OR (general level of acceptance of risk activities),** α = 0.1, seems therefore a higher level of individual risk. It links with less anticipation to accept the consequences of their actions and greater tendency to rely on luck
- **Higher TN (tendency to rely on luck),** α = 0.1. It manifests itself in situations where you can not predict the outcome of a selection and the decision is more a matter of inclination of levity, belief in fate. A higher score indicates a tendency to select the risky option in situations where the individual himself can expect little chance of success. A typical approach is "what if ..."
- **Lower UR (effective capacity of reason)**, α = 0.5. This is not an evaluation of intelligence, but the ability to use that capacity of the sense that the individual generally has. It is an indicator of resistance to mental effects of situations, relation of cognitive and emotional (feelings and thought processes). A lower score indicates a lower ability to maintain the gravity of the situation rationally

- Lower RR (level resistance to disturbing stimuli), α = 0.5. Largely corresponds to the range of UR (effective capacity of reason). Reduced ability to realize goals in new incurred emotional situations probably associated with lower ability to rationally act in such situations. The point is how much the will the individual continue to monitor its objectives when e.g. any new threat appear as a consequence of this action,

- Lower RF (Rigidity vs. Flexibility), α = 0.1. A lower score indicates less flexibility to their personal attitudes and beliefs

- Lower LO (Frivolity vs. Responsibility), α = 0.1. Represents a higher level of irresponsibility and recklessness, but also some uncertainty and casual in relation to the tasks, people, etc..,

- Lower NU (Exuberance vs. Homestead), α = 0.1. A lower score indicates a greater degree of self -indulgence, carelessness,

- Lower FC (Frustration vs. Goal-focusing), α = 0.1. A lower score is typical for individuals with more impulsive, situationally frustrated schemes interactions with volatile or situationally submissive schemes "matching" behavior

- Higher KI (Correctness vs. Impulsiveness), α = 0.5. To some extent, uncontrolled, emotionally impulsive behavior (restless, neurotic and choleric)

- Lower U.S. (Suppressed confidence vs. High confidence), α = 0.5, ie lower levels of confidence,

- Lower TO (Gloom.vs Optimism), α = 0.5. Score indicates a higher degree of optimism. There is a typical situational optimism, zest of life, the prevailing state of well-being and overall life satisfaction.

TKP

Determining the level of concentration of attention is again given by speed and pace of work, that is, by number of scanned characters and accuracy of evaluation (error rate), thus omitting characters nm by number of fixes strikethrough characters. The results show that most of the test subjects in a test range are moving from average attention level upwards.

The higher rate of activity combined with high error rate, which shows a preference for quantity over quality, has TO4 in all forms.

A lower rate of labor with low error rate, which prefers the thoroughness over work rate is particularly evident in TO2.

Increased pace of work with low error rate show tests filled by TO1 in the form of A and B.

Increased pace of work with a slightly higher error rate reported by all tests by TO8 and TO6 in the form of A and B.

High-speed performance and also low error rate was reported primarily by TO5 (one test is completed only). TO6 also reported, in all forms, high ability to concentrate attention. Other tests range in average values.

Evaluation of SUPSO questionnaires.

We conducted a T-test of differentiation between groups of all SUPSO questionnaires completed before individual races and group of all SUPSO questionnaires completed after the races. These results reveal some typical changes in mental status before the race and after. Also in this test statistical significance is indicated, e.g. $\alpha = 0.1$ (the result is $\alpha = 0.1$). As characteristic changes can be described:

- A reduction in range of values of scale A (activity, creative energy), $\alpha = 0.1$. Scale A is described as "feelings of power and energy associated with hankering after the event". Higher values of this scale before the race are probably caused by a deliberate and targeted activation of the body, a kind of "fighting mood", which is desirable for sports performance,

- Increase in scale D (depression, mental exhaustion), $\alpha = 0.1$. It is a complex of feelings and states, whose most distinctive feature is the reduced readiness to interact with situational variables (ie, the tendency to passivity, resignation) with apathy (zero tension). This tendency can be explained by the intensity of the race, which brings mental and physical fatigue,

- Decrease in scale U (anxious expectation), $\alpha = 0.1$. It is a complex of such feelings and expressions of human feelings such as uncertainty, experiences psychological stress, mood anxiety, fear of the possible consequences of the future, and such. Before the start of the race, some uncertainty, perhaps even a slight fear of the race or its outcome is likely to occur in athletes. After the race, these conditions easing, perhaps in connection with knowledge of results (whether good or bad) and by expiration of reason for concern and uncertainty

- Increase in scale S (depression), $\alpha = 0.5$. Depression is understood as "passive experiencing of the negative consequences of mental stress, the effects of situational variables (ie, conversion of psychological stress experiences rather not out to interactions with the environment, but inside" (Vitek, 2011). This is a shift from an active approach to experiencing mental states. Individual does not attempt to resolve the situation, nor any way to actively relax, but delves into his thoughts and experiences these states internally. From

questionnaires it is usually not noticeable outcome of races, means their own performance We believe, however, that these feelings can influence the scale S (depression) However, it may not necessarily be the effect of the unsatisfactory outcome of sporting activities, but also the negative feelings of psychological stress (stress exposure situations demanding race), which is reflected in both the physical fatigue mental status of the athlete.

CONCLUSION

Physical, running and preparing of top biathletes in principle derives from a similar scenario, where in each phase of the preparatory period athletes receive alpine training on dry land, preparing on the first snow in optimal conditions, eg.at Dachstein, and the long phase of preparation in northern Scandinavia snow conditions. From there the biathletes usually go straight to the first WC races.

Differences in the preparation or some reserves in preparation of individual athletes must therefore be look for t in shooting practice, and especially in the psyche of athletes in strengthening it and in the degree of level of mental preparation. Among technically, tactically and physically balanced competitors wins the one who is mentally doing better at the moment (Vitek, 2011).

For the purposes of Czech men biathlon team we conducted several psychological tests so that they can be used by coaches to enhance the psychological state of athletes, especially with regard to the optimal management of the shooting part of the biathlon race. The aim of this initial investigation was to perform personality characteristics of athletes and determine their level of concentration of attention.

Survey results should therefore be understood as an initial part of a comprehensive approach to strengthening the mental status of athletes in the field of biathlon shooting, because the best defense against the adverse effects of negative mental states occurring in the extreme conditions of sport training and competitions, is a sophisticated and consistently applied system of mental preparation.

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SUMMARY

Psyche plays important role in biathlon, especially during the performance of shooting. We have done the testing of members of the Czech Men´s national team of biathlon for concentration of the attention in order to establish their psychological characteristics. Our findings shall help trainers to find reserves in the work with sportsmen especially in shooting part of biathlon.

THE OPINIONS OF STUDENTS ON EDUCATION PROCESS OF RHYTHMIC GYMNASTICS AND DANCES IN CHOSEN SECONDARY SCHOOLS IN ŽILINA COUNTRY

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KEY WORDS: the rhythmic gymnastics, dance, teacher, student, educational process.

INTRODUCTION

There is new require in the system of physical education that is to increase the quality of moving ability on the same level as the require on physical performance and motoric fitness. The main purpose of pedagogic acting is to achieve aesthetic movement between children and young people. One of the most effective mean how to achieve beautiful movements and engage the physical culture is the connection between the movement and the music. The department which connect music anf moving culture is called musical- motoric education. One of the discipline is also the rhythmic gymnastics which influcences also with dances on the development of the human-being mainly from the aspect of creativity and of aesthetic feeling.

The person who knew values of good and bad from his birth is aware of the value of aesthetic vision and looking on the things and cases around him. The individualists are learning to aesthetic vision during all his life and he also learn to see and to detect beauty from commonness and inexpediency. The person concentrated on the aesthetic feeling is more full-value, impressible, beautiful and better.

ISSUE

Dropčova and Tvrdoň (1992) presents that the physical education in considerable criterion improve aesthetics, mainly in musical-motoric education by the rhythmic gymnastics and the dance. The aethetic side od this discipline consists in cultivation of moving badge which conntected with the fastening habit of the correct posture and with improvement the physical mainly the coordination skills that is rhythmic, reaction, physical-differential,

orienting, ability to mentain a balance (balance ability and combination of movement with music.

By sophistication and the aesthetic values the rhythmic gymnastics become an unchangeable component of the physical education annd it has its foundation in curriculum of education of the physical education at all school levels.

We agree with the opinion of Halmová (2000) that musical-motoric education can be reagrded as a branch of the aesthetic education. The purpose of connectedness of the music and movement also prove it for example: in modern and sport gymnastics, figure skating, dances on the ice, in synchronized swiming and of course in the zone of the rhythmic gymnastics and dance. The specific feature which has the main function in musical-motoric education is the music (the play of repetiteur, CD player) without which we can not realise this kind of education.

Berdychová (1981) presents that the rhythmic gymnastics nd the dance is a source of the aethetic education (also with art, education of music and literary education). The musical beauty – melodics, tempo, rhythm is movement inspirator, which is specified and coordinated by its connection and become the aesthetic badge. The purpose of the rhythmic gymnastics and dance is to learn children the co-ordinative badge in connevtion with the music and its tempo, rhythm, melody and Dynamics, to deepen more musical.motoric sense and to improve its main chances and to contribute in raising of physical performance, culture of the movement and music.

AIM

The purpose of the grant was to analyse the opinions of students on educational process in the rhythmic gymnastics and dances at physical education courses at chosen secondary schools in Žilina.

METHODOLOGY

The examined object was presented by 50 (100%) probands of the secondary school: Obchodá akadémia, the grammar school in Žilina, and 25(50%) of female probands and 25 (50%) male probands. The averaged age was 18,6 years.Conditions of the secondary school Obchodná akdémia are not suitable for physical education process. The school has not any gym instead of the multifunction park where students practise many sports as soccer, volleyball, basketball, handball and others. The building situated near of the school i sused for realisation of the physical education where students have to move every lesson and course.

The Grammar school Hlinska have suitable conditions for physical activity of the students. The grammar school has in disposition a big gym with dataproject by wchich they practise aerobics and zumba to students, fitness hall. The school has also the athletic stadium with the baseball park and it also offers the swimming and ski courses. This grammar school acquired an assessment for co-operation connected with the olympic festival of cildren and young people. The festival is accomplished during the summer and its purpose is to impress children and young people into physical activities.

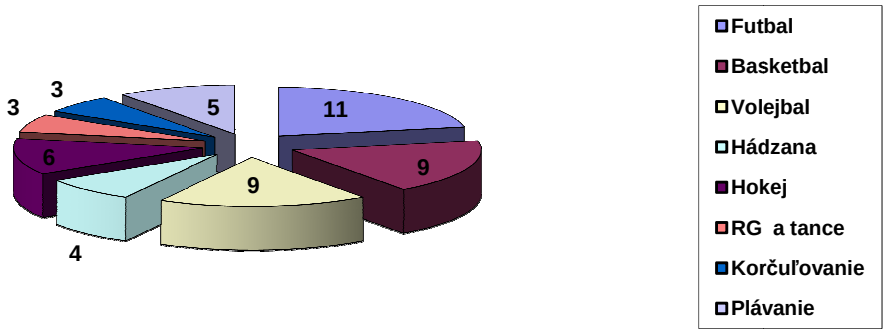
The symposium which was given out to students contained 10 questions. By the symposium we wanted to discover attitudes and opinions od the students on means of musical – motoric education on physical education courses, their interest for the rhythmic gymnastics and also attitudes od students to physical education and we assessed also their interest for physical activities outside the school.

RESULTS

By the first question we find out the sport in which the students are interested in in their free time. We have discovered that 11 (22%) probands is interested in football, 9 (18%) probands is interested in basketball and volleyball. 4 (8%)probands are interested in handball, 6 (12%) probands are interested in ice hockey. 3 (6%) probands are interested in the rhythmic gymnastics and dances, roller skating, 5 (10%) probands are interested in swimming.

Table 1 The physical activities in leasure time

	Students of male gendre)	Students of female gendre	together
Soccer	7	4	11 (22%)
Basketball	6	3	9 (18%)
Volleyball	3	6	9 (18%)
Handball	4	0	4 (8%)
Ice hockey	4	2	6 (12%)
RG and dances	1	2	3 (6%)
skating	0	3	3 (6%)
Swimming	0	5	5 (10%)
Together	25	25	50 (100%)



Picture 1 The physical activities in leisure time

Secondly, we were interested in students´favourite physical activity during the lessons of physical education. 9 (18%) probands are interested in soccer, , 8 (16%)probands are interested in basketball, 16 (32%) probands are interested in volley ball and a 4 (8%) probands are interested in handball and ice hockey. . 2 (4%) female probands are interested in the rhythmic gymnastics and dances, floorball and the atheltics and a 3 (6%) probands are interested in dodgeball. We ascertained by analyses that students are more interested in sport games as in the rhythmic gymnastics and dances.

Table 2 The most favourite physical avtivity in the physical educaiton process

	Male students	Female students	Together
Football	7	2	9 (18%)
Basketball	6	2	8 (16%)
Voleyball	4	12	16 (32%)
Handball	4	0	4 (8%)
Ice hockey	4	0	4 (8%)
RG and dances	0	2	2 (4%)
Dodgeball	0	3	3 (6%)
Floorball	0	2	2 (4%)
Athletics	0	2	2 (4%)
Together	25	25	50 (100%)

The next question is excited if students have sometimes done dance and if they are still practising it or not.

We detected that the majority of male students have never done activity like dancing but female probands are more interested in dances than male probands (students). 14 (28%) probands have been interested in dance and a 23 (46%) probands have never been excited by dances.

Table 3 The concerment in dance in leisure time

	I have been interested in dance but now I am not	I have been practising dance and I am still practising it	I have never been interested in dance	Together
Male probands	4	1	20	25
Female probands	10	12	3	25
Together	14 (28%)	13 (26%)	23 (46%)	50 (100%)

The next question contains information that which dance style is popular among students and into which they are interested the most. We asseessed that male probands presented that they have never been practising any dance style (like question before) and only5 (%) probands marked the modern dance instead of female probands are interested in many dance styles. 19 (38%) probands are interested in modern dance as hip – hop, disco and break dance. 2 (4%) female probands are interested in ballroom dancing, 6 (12%) female probands are interested in folk dances and 23 (46%) have never been interested in any dance style.

Table 4 The interest in dancing styles

	Modern dance	Ballroom dancing	Folk dance	No dance	together
Male probands	5	0	0	20	25
Female probands	14	2	6	3	25
Together	19 (38%)	2 (4%)	6 (12%)	23 (46%)	50 (100%)

We assessed by the question about the classification of the rhythmic gymnastics into the pgysical education lessons that 20 (%) male probands and 25 (%) female probands have

been carried on the rhythmic gymnastics and dances during physical education courses what presents predstavuje 45 (90%) of all the probands.

Table 5 The classification of the rhythmic gymnastics into the physical education process

	Yes	No	Togethes
Male probands	20	5	25
Female probands	25	0	25
Together	45 (90%)	5 (10%)	50 (100%)

39 (78%) probands were interested in excercises with skipping rope, 7 (14%) probans were interested in excercises without skipping rope, 6 (12%) probands were interested in dancing steps as polk dance, waltz and 10 (20%) female probands were interested in the aerobics.

Table 6 The content of the rhythmic gymnastics

	Male probands	Female probands	Together
Exercises with the skipping rope	20	19	39 (78%)
Exercises without sport equipment	0	7	7 (14%)
Exercises with sport equipment	0	0	0 (0%)
Dance steps	0	6	6 (12%)
Aerobics	0	10	10 (20%)
Others	5	0	5 (10%)
Together	25	42	67 (134%)

The raised question what students liked the most at physical education courses we elaborated answers mainly from female probands and male probands explained that the rhythmic gymnastics is not their favourite physical activity and they rather did the others physical avtivities. 6 (12%) female probands liked exercises with the stripping ropes, 2 (4%) female probands liked all the contentof the rhythmic gymnastics, 4 (8%) female probands have favourite dancing steps (polk dance, waltz) 9 (18%) female probands are interested in

aerobics, 3 (6%) female probands can not declare their answer and 26 (52%) probands did not like the courses of the rhythmic gymnastics.

Table 7 The favourite elements of the rhythmic gymnastics

	Male probands	Female probands	together
Excercises with skipping rope	0	6	6 (12%)
They liked everything	0	2	2 (4%)
The Arrangement of dance	0	4	4 (8%)
Aerobics	0	9	9 (18%)
Not answer	0	3	3 (6%)
Unlike	25	1	26 (52%)
Together	25	25	50 (100%)

The last question was interested in the fact if the male probands should be interested in the rhythmic gymnastics and dances- We assessed that že 17 (%) male probands answered no, and only len 6 (%) male probands thing that they sould practise the rhythmic gymnastics at physical education courses. Contariwise to female probands who think that male probands should be interested in the rhythmic gymnastics because they will miss it in the future to be in use of the society. 2 (4%) probands did not 22 (44%) probands answered that male probands should not be interested in the rhythmic gymnastics and 26 (52%) probands maintained that male probands should attend the courses of the rhythmic gymnastics at physical education courses.

Table 8 The male probands should be concerned into the rhythmic gymnastics

	Can not answer	They should not be interested in	They should be concerned	together
Male probands	2	17	6	25
Female probands	0	5	20	25
Together	2 (2%)	22 (44%)	26 (52%)	50 (100%)

CONCLUSION

The results of the experimental seeing signify that students have interest in the rhythmic gymnastics. The most probands 39 (78%) are interested in the excercises with the

skipping rope. Female probands are excited in many dancing styles. 19 (38%) probands are interested in modern dance like hip hop, disco, break dance. 2 (4%) female probands are interested in ballroom dancing, 6 (12%) female probands are interested in folk dance and 23 (46%) probands have never practised dancing style.

The preparation for the course of the rhythmic gymnastics is more difficult from the teacher´s point of view, because he or she has to prepare not only the special equipment but also music, which becomes very important during the educational process. The choice of the music makes the success of the course. There are no suitable recording for the rhythmic gymnastics at schools and that is why teacher is the main indicator who prepares the music. These reasons infulenced the fact that the rhythmic gymnastics is not tought as the curriculum dictates. There are only gramphone records which teachers do not prefere for courses.

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SUMMARY

By the analysis of experimental monitoring we ascertained that the rhythmic gymnastics is touhgt as a component of subject survey gymnastics. Results which were acquired have showed that teachers of physical education prefer the rhythmic gymnastics more in edcuational process of girls than in process of education of boys, because girls are more interested in lessons and courses of this type. We have assessed by the answer sheet that teachers have strong relationship to the rhythmic gymnastics and dances and they also accepted i tas a mean of development of physical abilities.

THE LEVEL OF EMOTIONAL INTELIGENCE IN WOMEN'S VOLLEYBALL TEAM

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KEY WORDS: emotional intelligence, communication, solution of a conflict.

INTRODUCTION

Sportsmen in teams are taught the standards and merits of the group, they learn to cooperate with their team-mates, deal with frequent conflicts in pressure situations in competitions. In team sports, different types of personalities meet in a team and it is important for a coach and players themselves to recognize it. The coach needs to know how players in his team deal with pressure situations, resolve the conflicts, and which the best way of leading the team is, etc. Knowledge and awareness of own motives and strategies of coping with stressful situations can help players understand their own reactions; also can contribute to more effective communication with team-mates and so on.

ISSUE

According to Svoboda, B., Vaněk, M. (1986), cooperation in team presupposes not only anticipation of rival's intensions but also adjusting own goals and particular activity with team-mates and also subordinating to the aims of group. These facts bring along different problems in use therefore psychology of sport pays attention to mechanisms that take place in team sports.

Correct communication among members of a group themselves and between sportsmen and coach plays important part. Communication, social exchange in a group is a way of delivering information and emotions. There are three basic types of social exchange; *verbal exchange* – information, opinions and attitudes exchange; *non-verbal exchange* – mimicry, gesticulation, position of a body and its parts; *acts* – attitudes, opinions, emotions, intentions expressed by acts, particular action (Sekot, A., Leška, D., Oborný, J., Jůva, V., 2004).

These authors mention further that sport teams in the area of performance sports and first rate sports belong to secondary or formal groups. They are formed in order to take part in sports competitions and their goal is to reach the best possible results and best placement. Relations in sport teams are formalized following strict regulations and sports rules. Outside matches we can distinguish these relations: during work out process, in private life and during the match.

In the structure of sports team there is social position, status and social part. The structure of a group is influenced by various factors – nature of a group, function in the society, its size, etc. Social status expresses the individual's position in terms of requirement, significance, prestige and value for the group. Every position has its own status. Some positions have higher status (e.g. forwards closing the game). Social part expresses behaviour expected from the player depending on their position. During the match every player has their own set position and carries out their part. This structure is not static, can change depending on the game situation, for example by the coach's decision. The way of meeting each part in particular position depends on individual player. Sports teams are driven by relations of cooperation given by the common aim – to deliver the best possible performance and to win the match (Sekot, A., Leška, D., Oborný, J., Jůva, V., 2004).

AIM

The aim of our research is to analyse the structure of women's volleyball team on the grounds of emotionalism and communication level.

HYPOTHESIS

H 1: We suppose that the level of emotional intelligence (including emotional potential for sports) is the highest in those players achieving the highest number of affirmative answers in sociometric test.

H 2: We suppose that emotional potential for sports is on high level in all players.

METHODOLOGY

We observed women's volleyball team ŽP Šport Podbrezová for our research. Selected group consists of 11 women of different age and different length of sports activity. The average age of players is 23 years. Four players are employed, rest of the team are students. Team ŽP Šport Podbrezová started taking part in competitions organized by Slovak Volleyball Federation in the season 2001/2002. They moved up from local competition to 1st

volleyball league in two years, and in the next three years to extra league – highest Slovak volleyball league.

To discover emotional intelligence and social skills of players we used emotionalism and communication test. Based on the test we could determine levels of positive self-concept and cogitation, emotional resistance, emotional potential for sport, ways of performance, and models of dealing with conflicts.

RESULTS

The results of emotionalism and communication test showed that majority of players, i.e. 73% think and perceive themselves optimistically to highly optimistically, and 17% of players perceive themselves on mediocre level. In regards of emotional resistance, again 73% of players expressed medium to high optimism and 17% are in the middle.

Table 1 Outcomes of emotionalism and communication test in particular players

Player	PSC	ER	EP	DP (%)	BP (%)	CP (%)	DP (%)	T(%)	S(%)	F(%)	T(%)	O(%)
1	4	4	0	10	35	35	20	68	32	76	68	64
2	6	1	4	10	20	55	15	56	32	42	36	64
3	3	1	2	20	20	45	15	76	3	84	68	88
4	5	2	2	10	20	30	40	78	36	52	42	32
5	3	3	0	10	45	25	20	72	72	76	68	48
6	5	0	5	10	60	15	15	72	68	68	64	72
7	5	1	4	10	55	15	20	52	68	68	56	72
8	6	2	4	20	25	35	20	60	64	64	56	60
9	5	4	1	40	20	35	5	56	42	42	34	60
10	7	0	5	20	60	10	10	32	76	76	36	72
11	5	2	5	10	55	20	15	32	64	64	60	48

Table 2 Evaluation of emotionalism and communication test – *emotional resistance*

Evaluation	Optimistic (%)	Average (%)
Positive self-concept and cogitation	73	17
	Optimism (%)	**Middle (%)**
Emotional resistance	73	17
	Very good (%)	**Average to negativism (%)**
Emotional potential for sport	55	45

We assumed that emotional potential for sport should be on high level in all players however findings were completely different. Only 55% of volleyball players have very good emotional potential for sport and nearly half, 45% average potential, and 2 players reached level 0 meaning predominance of pessimism up to negativism. If the level of emotional potential is 1 or less, it is appropriate to start emotional intelligence and social skills training. Interesting is that players **1** and **5** who belong to older, more advanced ones having enough experience reached this level of emotional potential.

Table 3 Evaluation of emotionalism and communication test – *communication typology*

Evaluation	Yes (%)	No (%)
Directive Performance	0	100
Businesslike Performance	36	64
Conciliatory Performance	9	91
Docile Performance	0	100

Table 3 evaluates communication typology. Directive performance shows confidence and trust in one's success, a man signifies what he wants and follows the aim directly. Too high level shows inclination to impatience and stubbornness, lack of interest towards others' opinions. Results show that no player manifests directive performance. Another type of performance is businesslike when higher level means ability to induce trust and being convincing. One can get others to fulfil one's goals, however too high level leads to manipulation of others. This performance is typical for 36% of players, while none of the players' score reached high levels. Next one is conciliatory performance meaning that if a man can anticipate other's feelings, he can understand others, however too high level shows

credulity towards others and certain indecision in performance. Only 9%, i.e. one player manifested herself this way. None of the players act in docile way; it means they have no fear towards refusal or lack forcibility. Higher score in this performance means the ability to wait patiently for their turn and reaching their goals slowly and without pressure.

Table 4 Evaluation of emotionalism and communication test – styles of dealing with conflict

Evaluation	Yes (%)	No (%)
Avoidance (turtle)	19	81
Competition (shark)	0	100
Compromise (fox)	45	55
Adaptation (bear)	0	100
Cooperation (owl)	36	64

Table 4 evaluates the styles of dealing with conflict of particular players. 19% of them are characterized as so called turtle. It's a style when a person doesn't want to be involved in any conflict, he tries to avoid it. No player acts like a "shark" – player does her best to assert her right and defeat the other side. Almost half of the players are characterized as a "fox". They try to reach a point when both sides gain something quickly. Again no player acts like a "bear", which means she doesn't make an effort to adapt to the other side by different strategies. 36 % of players act like an "owl". The aim of this strategy is a long-lasting cooperation with the other side, and mutual benefits. We may assume according to emotionalism and communication test that the level of emotional intelligence of this team is very high as no player acts at extreme levels of mentioned typologies and styles and as they think and see themselves optimistically.

We supposed that the level of emotional intelligence would be higher in players with the highest number of positive choices in sociometric test. Our supposition was correct as players **2**, **4** and **10** – with the highest number of positive choices in sociometric test – also reached the highest level of emotional intelligence in emotionalism and communication test. A player **5** was the exception as she reached the lowest level of emotional intelligence even though she had positive sociometric results. This player also reached zero level of emotional potential for sport, which indicates pessimism up to negativism in sport.

CONCLUSION

Based on the outcomes we can state that the aim of our research – to analyze the structure of women's volleyball team ŽP Šport Podbrezová, their interpersonal relations, levels of emotionalism and communication among these players – has been met.

Players with the highest number of positive choices in sociometric test reached the highest level of emotional intelligence in emotionalism and communication test as well. There was only one exception, the player who chose mostly positive answers in sociometric test however she manifested one of the lowest levels of emotional intelligence in the team.

Communication among team members is on sufficient level. Players are honest and open to themselves and happy to meet on trainings and outside of them. Good relations in team are very important in team sports. Positive interpersonal relations lead to good cooperation and communication which is important for players themselves but mainly for coach. The coach should be aware of interpersonal relations and team parts of his wards in order to know how to deal efficiently with conflicts in various stressful situations, or to depend on the player who is accepted as a leader by others. The coach should also know the structure of his team on the grounds of observations, conversation or usage of sociometric or psychological methods.

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SUMMARY

In our research we have analyzed the structure and cooperation within women's volleyball team on the basis of emotionalism and communication level. We have analyzed the quality of relationships in this team on the basis of a test aimed at positive self-concept and cogitation, emotional resistance, emotional potential for sport, ways of performance and solving conflicts. According to the test, we have concluded that their quality of relationships alongside other aspects indirectly affect the performance of the team.

FACTOR MODEL OF MOTOR ABILITIES IN PRESCHOOL CHILDREN

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KEY WORDS: factor structure, motor abilities, preschool age.

INTRODUCTION

Motor abilities are usually thought to be a relatively stable characteristic or trait. As stated in Schmidt - Lee (2005), they can also be conceptualized as representing limitations on performance, or as defining a person's potential for success and attitude to own health.

The period of age from 3 to 7 is the basic phase of forming continuously developing motor functions in children and it is characterized by morphological maturity and development of functional capacities of central and peripheral parts of the motion analyser. For the first time, the harmony of children's movements becomes a sign of motor behaviour at the age of about five.

Davis (2001) reported the period of 5 and 8 years of age appears to be a transitional period in the development of motor performance. According to Gallahue - Donnelly (2003) perceptual-motor abilities are rapidly developing and refining fundamental movement skills during this period. Cross-lateral movements often present more difficulty than unilateral movements. Gross motor control is developing rapidly and occurs sooner than fine motor control. However, with an appropriate instruction and opportunity for physical activity in educational environment during this period movements may become very efficient and coordinated.

On the average, sex differences are generally small but consistently favor boys for running, jumping, and throwing. Girls perform better, on the average, in tasks that require balance, such as hopping. The differences between boys and girls are relatively small, however, and there is much overlap (Malina et al., 2004). The physical growth of girls and boys are very similar when we view from a posterior position (Haywood - Getchel, 2005).

A variety of tasks can be used to document levels of motor performance. But emphasis is placed on standardized tasks that can be used in the field or school setting, in contrast to those limited to the laboratory (Malina, 2003). That is considered to be very important point for selection of motor tests in preschool children.

Information on attained levels of motor performance is not as extensive for early childhood as it is for adolescence. There is much intraindividual and interindividual variability in the level of motor abilities among young children. Changes in mean levels of performance with age should be viewed with this variability in mind (Malina et al., 2004).

Nevertheless, the essential problem is most probably related to the issue of homogeneity of motor "capacity" examined in preschool children. There is an ambiguity in approaches to application of individual test issues within this age group. It is necessary to stem from the premise that a child is not a smaller model of an adult. Due to these reasons methodological approaches used with this age group are diametrically opposite and their results are difficult to compare (Davis, 2001; Kroes et al., 2004).

AIM

The aim of study was to evaluate, compare and analyze a factor structure of motor and physical indicators in preschool children.

METHODOLOGY

Within the research objective, there was the motor performance of 5 and 6-years-old nursery school children diagnosed using 7 motor tests. 124 children participated in the study, 60 girls and 64 boys. Tested children were randomly selected from nursery schools in the Region of Prešov and Sabinov in the Slovak Republic during years 2006 – 2008. A selection of the tests was based on *Eurofit* (Adam et al., 1988) test battery (1, 4, 6, 7) and on motor tests for coordination abilities (tests – 2, 3, 5) (Hirtz, 1985; Měkota - Blahuš, 1983). Selection of motor tests resulted from the thesis that condition and coordination motor abilities represent a complex and their research corresponds with this principle. Preschool age is a specific development period within which gradual maturity of motor centres occurs. With respect to this fact the issue of sensitivity of some tests has to be addressed.

The following tests were performed: 1. Plate tapping - *frequency speed of an arm*, 2. Bench turns - *dynamic balance*, 3. Arrhythmical tapping - *rhythmical ability*, 4. Sit and reach - *joint flexibility of a trunk*, 5. Run for balls - *orientation ability*, 6. Standing broad jump - *explosive strength of lower limbs*, 7. Shuttle run 50 m - *running speed with the change of*

direction, 8. Body weight, 9. Body height, 10. Sum of 5 skinfolds. According to the authors (Hirtz, 1985; Měkota & Blahuš, 1983), the reliability of the motor tests of coordination abilities (2, 3, 5) for age ranged from 5 – 18 is 0.7 to 0.8.

Explorative factor analysis was applied to uncover the latent structure of examined variables. It enables to identify, and to reduce an internal status within the examined space (Blahuš, 1999). As stated Darlington (2002), the aim of factor analysis is to isolate from the range of variables simple concepts which could represent and reproduce the observed variables. This method helps to formulate and differentiate a hypothesis about a structure of internal relations within the variables and factors without any prediction (Wood - Zhu, 2006).

Interpretation of factors is based on evaluating of factor loadings. Criterion was stated at the level of > *0.3*. Factors contain the same information as a correlation matrix, but in a different form. There are rotated into the position, in which is presented the simplest relation among variables and factors. *Varimax rotation* was applied. Statistical analysis was realized by SPSS version 16.0.

RESULTS AND DISCUSSION

Results of applied factor analysis are given in tables 1 and 2. In a factor matrix is the whole information, but the sense can be vague. Therefore, there is a percentage of factors illustrated in pictures 1, 2.

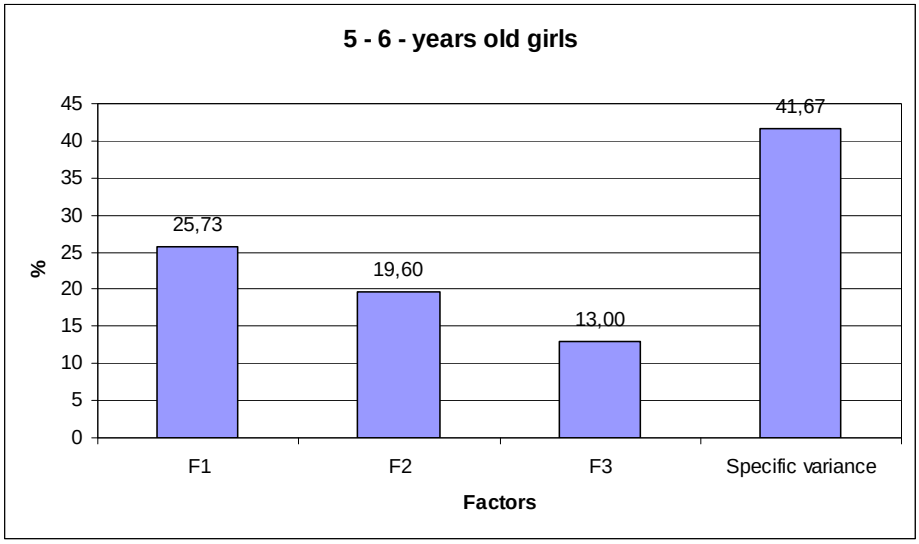
Table 1 Factor analysis of motor and physical indicators in 5-6-years old girls (n = 60)

VARIABLES	Factor 1	Factor 2	Factor 3	Communality
Plate tapping (sec)	**-0,60**	0,29	-0,14	0,47
Bench turns (n)	**0,58**	-0,11	-0,02	0,36
Arrhytmical tapping (n)	0,06	-0,18	**-0,83**	0,73
Sit and reach (cm)	**0,50**	-0,01	**0,31**	0,35
Run for balls (sec)	**-0,58**	-0,19	0,22	0,42
Standing broad jump (cm)	**0,80**	0,14	0,04	0,67
Shuttle run 50 m (sec)	**-0,75**	-0,06	0,02	0,57
Weight (kg)	0,08	**0,86**	-0,15	0,77
Height (cm)	0,02	**0,86**	0,13	0,76

Sum of 5 skinfolds (mm)	-0,12	**0,40**	**-0,71**	0,69

In both examined groups there are similar factors *(F1)* saturated by power, speed, and coordination. In both examined groups there are physical factors *(F2)* with a share of more than 20 % on the whole variance. These factors indicate an importance of physical development during this period of motor development.

There is observed a higher number of factors in a group of boys, and it may indicate their more differentiated motor performance at that age. This can be stated also due to superior share of a specific variance in girls (41,67 %) in a comparison to boys (30,96 %). Relatively high values of specific variance in both examined groups suggest that there are other factors which determine the level of motor performance in children but which we could not encompass.



Picture 1 Percentage of factors in a group of 5-6-years old girls

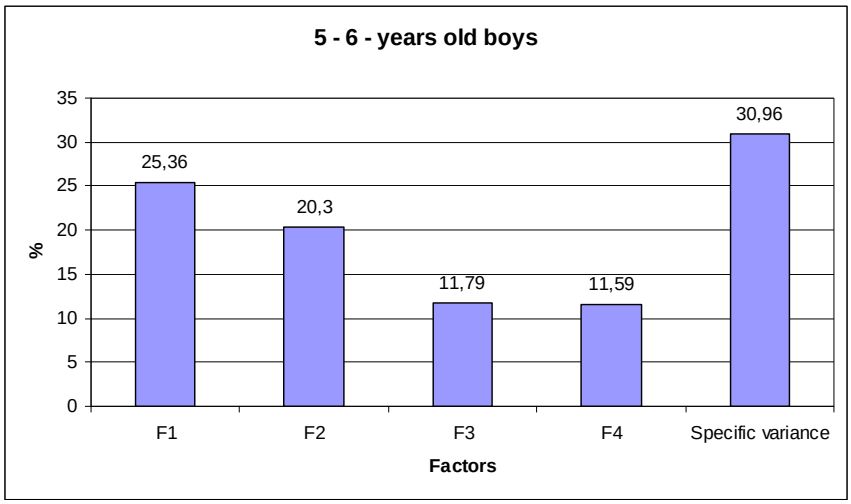
Factors *(F3, F4)* in a group of boys can be called as coordination factors with a similar „weight“ in a motor space. The internal structure of the studied variables proved some distinctions in boys and girls. Such a differentiation cannot be detected by applying only partial analyses. However, there is a difficulty in interpreting so-called condition and coordination factors as there is still unclearly defined relationship between individual abilities and due to limited discriminatory value of some ability tests for this age period.

Small communality values (0,35 – 0,47) of some indicators such as *Plate tapping*, *Bench turns*, *Run for balls*, *Sit and reach* in a group girls strongly suggest their lower relevance within the factor model. Similarly, low communality of *Shuttle run 50 m* and *Bench turns* may indicate their lower predicative relevance within the age period in boys.

Table 2 Factor analysis of motor and physical indicators in 5-6-years old boys (n = 64)

VARIABLES	Factor 1	Factor 2	Factor 3	Factor 4	Communality
Plate tapping (sec)	0,03	0,23	**0,80**	0,25	0,77
Bench turns (n)	0,11	0,23	**-0,70**	0,06	0,57
Arrhytmical tapping (n)	**0,38**	0,15	**-0,56**	**0,41**	0,66
Sit and reach (cm)	0,01	0,11	-0,06	**-0,84**	0,73
Run for balls (sec)	**-0,50**	-0,25	0,21	**0,50**	0,61
Standing broad jump (cm)	**0,80**	0,06	-0,13	-0,01	0,67
Shuttle run 50 m (sec)	**-0,54**	0,02	**0,41**	0,15	0,49
Weight (kg)	0,25	**-0,87**	-0,07	0,10	0,84
Height (cm)	**0,67**	**-0,50**	0,16	0,07	0,74
Sum of 5 skinfolds (mm)	-0,28	**-0,83**	0,03	0,03	0,78

Our results correspond to some extent with research results of Bala et al. (2003). Their results proved that within the motor performance structure of children aged 6 – 7 years the main role play a factor saturated by fast motions, maintaining balance and motions which need energetic components. In girls, coordination abilities and flexibility were shown as the key domain of motor space.



Picture 2 Percentage of factors in a group of 5-6-years old boys

It should be emphasized that during this specific period of motor development movement outcomes for the children are evidence of their undergoing biologically-driven growth and intersection of the underlying movement capacity of coordination with the learned performance of motor skills (Miller, 2006).

Motor performance is influenced beside physical characteristics by motivational factors, opportunity for practice, habitual physical activity, and other in the cultural environment. There is a need to consider all these factors while assessing motor performance differences. These variables may be especially relevant in the context of examining sex differences in performance (Malina, 2003).

CONCLUSION

The application of multidimensional mathematical and statistical methods enables more complex identification of the quality aspect of motor performance during ontogenesis. In recent decades, several attempts to compile diagnostic means enabling understanding specific and unevenly developed motor performance in preschool children with higher or lower level of indefiniteness have been implemented. “Applicability” at nursery schools remains an important factor together with the ability of children to pass these tests.

There are various approaches focusing on the best possible "understanding" of the motor ability’s principle at this age group. Each partial piece of knowledge at different level of present analyses enables more critical knowledge not only of practical part but also to extend the theoretical basis for the examination of motor part within the given age group. In research studies of preschool age motor development there have been many motor tests

applied. It has been showed, however, that their feasibility is problematic particularly with respect to specifics of motor development at this age period.

The process of childhood growth and motor development is predictable in terms of universal principles and sequential progressions. However, children show considerable individual variation due to a variety of environmental and hereditary factors. It must be considered the individual appropriateness of the movement activities we employ in the physical education programs.

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SUMMARY

The process of childhood growth and motor development is predictable in terms of universal principles and sequential progressions. In order to identify the substance of a complex of motor abilities not only the information on specific elements is important but also on mutual relations between them and their structure. We have tried to define a factor structure of motor and physical indicators in preschool children by motor performance diagnosing. Test battery consisted of items that are probably determining indicators of condition and coordination abilities. Although the investigation of the statistical significance in motor performance between the group of girls and boys proves their considerable identity, the latent variables indicate different internal structure in the group of girls and boys only with the application of multidimensional method.

SHOOTING SUCCESSFULNESS OF A TEAM FROM THE POINT OF VIEW OF THE REALIZATION OF THE SHOOTING AND ITS LOCALIZATION

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KEY WORDS: football, shooting analysis, localization, observation, evaluation.

INTRODUCTION

Every footballer has to prepare to successfully function in the game. Preparation must be based on the requirements of a particular activity. However identifying special requirements of football games is possible only after a thorough analysis of the game and players' performances. Because such analysis is only valid for some time it must be repeated in order to make more actual conclusions for practice.

The result of the game is decided mostly by goals which make football so attractive. Shooting is the most problematic game activity. It defines a team's level of efficiency and determines the outcome of football matches. The shooting successfulness of an individual depends on many internal as well as external factors such as the player's psyche, health, audience, but mostly on teammates who enable him the shooting conditions. It is a mutual cooperation of a player and multiplayers.

Shooting successfulness of a team depends on the manner of realization of the shooting and of its location, whether shooting from a standard situation (direct free kick, penalty kick, corner kick), from the first touch to the game, after processing the ball, after leading the ball or after evading an opponent. When it comes to shooting successfulness it is important which area the shooting is executed from (shooting localization).

Therefore, this work deals with the manner of realization of the shooting and its localization regarding the successfulness. We analyse the manner of realization of the shooting and its localization in Dukla Banská Bystrica Football Club in Corgoň League matches in the autumn of the 2009/2010 season.

INTRODUCTION

I agree with Kačáni's (2000) statement that the shooting is a final game activity of an individual which determines the effectiveness of attacking and the game outcome. Shooting is structurally not different from passes but the player must exert maximum force when stricking the ball. If the player gets into a shooting position he must know how to assess the game situation as quickly as possible. Game situation by Peráček (1993) represents an immediate state in the game which is determined by an interplay of factors and to players it represents a tactical role of divers complexity. Finishing an attack by shooting has recently become a major topic of discussion not only among football supporters and officials but among coaches, methodologists and other experts as well. Discussions are made about number of shooting attempts in connection with the game quality. By shooting successfulness by Bokša and Mendlík (1989) we understand the percentage of shots directed towards the goal area in proportion to all shots. Unsuccessful shots are those that miss the goal or those that are blocked by the defense. Nemec (2002) found out that football is a game ending with the smallest percentage of actions. Up to 60-70 % of this is thanks to players themselves, who fail to end the action due to ball loss. Votík's (2003) studies spoted that from the total number of offensive actions only about 8-10 % are ended, the rest goes to account of unsuccessful passes, unsuccessful evading of an opponent, successful opponent intervention, rule violations and the vast majority of the unsuccessful ball handling. As Hucko et al. (1970) states, a Polish expert Klyzsejko showed that only 10-15 % of offensive actions end up with shooting, while only about 1,5 % are ended up by scoring a goal.

Shooting efficiency is in subject publications defined differently. The easiest and most suitable definition of shooting efficiency is the number of shots necessary for achieving one goal. Individual teams focus on higher shooting efficiency on opponent's field where from fewer shooting attempts they try to achieve more goals. One of the most decisive factors regarding the shooting efficiency is the overall team performance. Precák (2006) in his work also dealt with shooting efficiency in the match. He analyzed 15 matches by Football Club Poprad and in his observations found out that FC Poprad had 264 shooting attempts, which on average accounts for 18 shooting attempts per game. The total number of shots is 85 % and therefore the number of scored goals is 15 %. It means that for achieving one goal it is required 5,6 shots.

According to Bokša and Mendlík (1989) in matches the shooting does not occur as the only game action. It is often connected with game activities that go before it - place selection, processing the ball, leading the ball, evading of an opponent and passing. These activities are

called chains of game activities. According to these authors one of the basic manners of shooting is shooting from a standard situation (direct free kick, penalty kick, corner kick), shooting from the first touch to the game, after handling the ball, after controlling the ball, after evading an opponent, shooting from a header. Shooting from a standard situation in terms of technique and tactics is the least challenging. One of the advantages is that the ball is at rest and the players have enough time for its conversion.

Shooting area (localization) has a considerable impact on the shooting succesfulness. When shooting from the penalty area the succesfulness increases up to 50 %, from a distance greater than 25 meters from the goal the successfulness is approximately 25 %. From these facts we can claim that with the increasing distance from the goal the shooting successfulness decreases and the number of shots intercepted by the defense increases.

Shooting area (shooting localization) is one of the most discussed topics at present. By distances shooting can be divided into shooting from an immediate vicinity (penalty area), shooting from a middle distance (up to 20 m), shooting from a long distance (over 20 meters). In a Czech magazine “Fotbal a tréning” (2008) it is states that it is statistically proven that on European and World Championships up to 65 % of goals are achieved from the first touch to the game. This rule forces the player in game situaton to quickly decide on shooting. The magazine also analyses the shooting localization of strikers from Euro 2008 Championship. Spanish National Team with Torres and Villa, who most frequently moved from side to the middle, shot from an immediate vicinity from the first touch to the game. One of the best football teams in the world FC Barcelona (www.fcbarcelona.com) in the highest Spanish competition in the year 2009/2010 in 22 matches recorded 352 shots and made 57 goals. To achieve one goal you need about 6,2 shots, so the shooting efficiency is 16,2 %. From the first touch to the game they recorded 23 goals (most shots were from an immediate vicinity), up to 195 shooting attempts and scored 29 goals.

AIM

The aim of the research was to determine the successfulness and effectiveness of shooting of a team in terms of manner of realization and its localization in the game.

METHODOLOGY

Characteristics of the observed file

The observed file was Corgoň League team FK Dukla Banská Bystrica in the year 2009/2010. We have observed 23 players, including three goalkeepers, eight defenders, eight midfielders and four attackers.

The organization and conduct of research

The research was conducted from December 7th of 2009 to October 24th of 2009 in the main period of the autumn part of the competition of 2009/2010 season. Individual matches that we watched took place on home playing-field but also on the opponents' playing-fields. Diagnostic technique that we used in the work was indirect (mediated) observation of videos. At that time we watched ten championship matches.

Methods of obtaining the facts

For the shooting analysis of the team we worked up a scoreboard where we analyzed the shooting successfulness and unsuccessfulness, shooting efficiency and the manner of realization of the shooting. In the table we noted the number of recorded shooting and the percentage of each factor. The localization of the shooting was noted down in a pre-defined playing-field that was split into individual areas horizontally and vertically. The shooting distance from the goal was also marked. Horizontal areas were marked with capital letters A, B, C, D and vertical with small letters a, b, c. Shooting distance from the goal was marked from 0-10 m, from 10 to 20 m and from 20-30 m.

Methods of evaluating the facts

When evaluating the results of the research we used the method of critical analysis of literary sources. We used this method in the research and in processing the problems in terms of acquiring basic knowledge and experience. We gained knowledge from several experts and authors of books, textbooks, as well as magazines. Most informations about the shooting we used from Kačáni (2005), Peráček (1997) Bokša and Mendlik (1989), Nemec, Štefaňák and Sylvester (2005).

Then we used a method of analysis that Starší (1999) describes as a specification of the phenomenon on its attributes, coherences and components. The analysis proceeds from the whole to the parts, which allows you to discover the construction and structure of objects or phenomena. We analyzed the shooting successfulness in terms of the matter of realization of the shooting and its localization.

As the third method we used the method of observation. Starší (1999) understands the observation as conscious, purposeful perception of reality. Its primary role is to collect the

facts that allow to determine the nature of the investigated phenomena. The aim of the surveillance is a systematic collection, describing and registration of facts and other related factors. We used the method of indirect observation.

When processing the results of the research we used the descriptive characteristics of the average values of the performances, counting and the percentage of the monitored indicators.

RESULTS

With regards to the shooting successfulness, the team made 83 shots; 42 shots (51 %) were successful in a sense that they were directed to the goal; and 39 shots (47 %) were unsuccessful, of which 32 were not directed toward the gate and 7 were blocked. The team gave 10 goals in 10 matches, i.e. 1 goal per match of average.

There were 10 shots from a standard situation of the corner kick, of which 2 were directed to the goal. There were 4 shots from a direct kick, of which 3 were directed to the goal. There were no shots from indirect free kick, neither from penalty kick. The highest amount of shots, 36, were done in the first touch to the game, of which 12 were directed toward the goal. After processing the ball, the players made 27 shots, of which 10 were successful. The lowest number of shots was observed after leading the ball - 12 shots, of which 8 were directed toward the goal. The highest successfulness of shooting was after evading an opponent - 8 shots, of which 8 were directed toward the goal.

Most shooting attempts was realized by the team from the area Db - 23 shots. The second most frequent area in terms of shooting attempts was the area Bb - 19 shots. The next was the area Dc - 12 shots. The least frequent area in terms of shooting was the area Ca and the area Cc after one shot. There was no shooting from the area Aa. When the playing-field is divided into three vertical parts, left, middle, right side, as it is obvious from Table 1, the most successful shooting was from the area Cc (100 %), Ab (82 %), Bb (53 %), and Bc (50 %).

Table 1 Successful shooting of the whole team from the point of view of realization and of localization

Area		Aa		Ba		Ca		Da		Ab		Bb		Cb		Db		Ac		Bc		Cc		Dc		Overall
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	(%)
ŠS	CK	0	0	0	0	0	0	0	0	0	0	2	100	0	0	0	0	0	0	0	0	0	0	0	0	20
	DFK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	50	0	0	0	0	0	0	2	100	75
From the first touch to the game		0	0	0	0	0	0	0	0	4	67	2	25	4	100	0	0	0	0	0	0	1	100	1	100	33
After processing the ball		0	0	0	0	0	0	1	33	3	100	3	50	0	0	0	0	1	50	1	100	0	0	0	0	37
After leading the ball		0	0	1	100	0	0	0	0	1	100	1	100	0	0	5	56	0	0	0	0	0	0	0	0	67
After evading of an opponent		0	0	0	0	0	0	2	100	1	100	2	100	0	0	2	100	0	0	1	100	0	0	0	0	100
Overall (%)		0%		25%		0%		38%		82%		53%		40%		35%		33%		50%		100%		25%		

Legend:

n – number

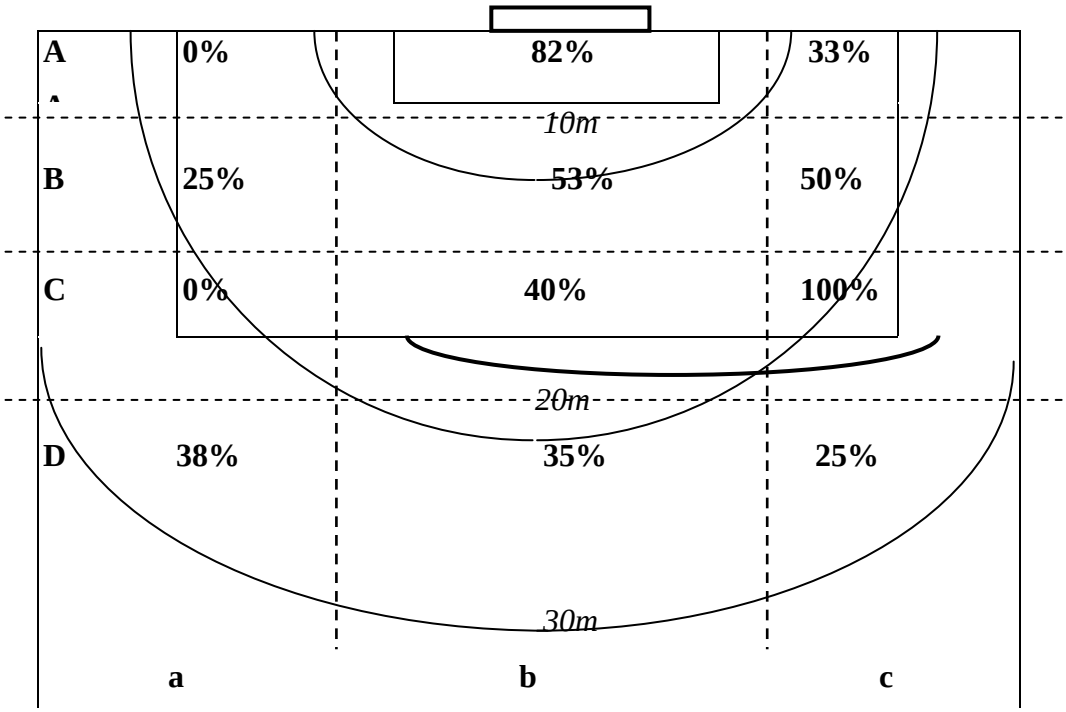
SS - standard situation

CK- corner kick

DFK – direct free kick

Taking into account the manner of shooting from the point of view of localization and of successfulness, shooting from the first touch to the game was the most successful from the area Cb - 4 shots, of which 4 were successful, and from the area Ab - 6 shots, of which 4 were directed toward the goal, i.e. success rate of shooting was 66.7 %. Shooting from the standard situation of a corner kick was the most successful from the territory Bb - 2 shots, of which 2 were directed toward the goal, i.e. 100 % success rate. Successful shooting from a direct free kick was observed from the area DC (2 shots) and Db (1 shot). Shooting after processing the ball was the most successful from the area Cb, 4 shots were directed toward the goal.

Shooting after leading the ball was the most successful from the area Db, 5 shots were directed toward the goal. After evading an opponent, shots came from areas Bb and Db, 2 shots from each area.



Picture 1 Evaluation of successful shooting and of localization of shooting of the whole team

CONCLUSIONS

With regards to the shooting successfulness, the team made 83 shots; 42 shots (51 %) were successful in a sense that they were directed to the goal; and 39 shots (47 %) were unsuccessful, of which 32 were not directed toward the goal and 7 were blocked. In accordance with other authors, this research confirmed that the highest number of shooting (36 shots) was realized in the first touch to the game, 12 shots were directed toward the goal. The territory Ab (i.e. immediate vicinity) can be considered to lead to the highest ratio between the frequency and successfulness of shooting from the point of view of localization, in spite of the fact that there was 100 % success rate when shooting from the area Cc because it was based only on one observation. Our results show that the most successful way of shooting from the point of view of manner of realization and of its location is from the immediate vicinity from the first touch to the game, the next is shooting from the middle distance after leading the ball, shooting after processing the ball from immediate vicinity.

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SUMMARY

The aim of the research was to determine the successfulness and effectiveness of shooting of a team in terms of realization and its localization in the game. Data were collected from the football team Dukla Banská Bystrica in the autumn part of the competition in 2009/2010. Shooting from the first touch to the game was the most successful from areas Cb, Cc, and Dc, it resulted in the 100 % success rate. Shooting from the standard situation of a corner kick was the most successful from the area Bb, it resulted in the 100% success rate. Shooting from a direct free kick was the most successful from the area Dc, it resulted in the 100 % success rate. In terms of shooting after processing the ball, the 100 % success rate was achieved from areas Ab and Bc. A 100 % success rate after leading the ball was achieved from areas Ba, Ab, and Bb. After the game action evading an opponent, players were 100 % successful in the areas of Da, Ab, Bb, Db and Bc.

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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.

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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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We look forward to our further cooperation.

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