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PLAYFUL ACTIVITIES WITH THE USE OF GPS

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KEY WORDS: game, geocaching, global positioning system, cache, elementary school

INTRODUCTION

Today's physical education presents growing importance of health and compensational meaning. Therefore an important task of a teacher is to explore ways to get school-age children interested in regular activities. One option appears is a game – or more precisely playful activities in its various forms.

In the works of several authors dealing with playful activities in school physical education (Zapletal, 1988; Vladovičová, 1998; Mazal, 2000) we learn that a game is characterized as a part of life; is its category, which affects human life from its beginning to the end.

From the psychological point of view is the game (Oravcová, 2002) conceived as one of the basic needs of a child, as irreplaceable activity, an important motivating factor and an important factor contributing to the development of its personality. In the school physical education becomes the game a teaching tool, as the games develop all aspects of child's personality.

Positive impact of regular physical activity on physical and mental health is widely known now. There is less and less physical activity in today's way of life of children and young people, which was documented in the work of several experts (Jančoková, 1996; Michal, 2006; Frömel-Bláha-Řepka-Šebrle et al., 2007), therefore it is still necessary to search for new opportunities in the educational process to achieve growth in physical activity of children (Görner, 1998).

One possibility is to combine modern technology - eg. Global Positioning System (GPS) with playful actions aimed at increasing physical activity of children is Geocaching Navigation Game; you can play not only in Slovakia, but also throughout the whole world for couple years.

Terms of formation for this kind of tourism have been created on May 1st 2000, when the U.S. President Bill Clinton ordered to remove the artificial deviation added to the GPS signal. This gave the opportunity to use the military navigation system also to normal civilian users. This fact used Dave Ulmer, the founder of Geochanig, on 3rd May 2000 as he placed the first cache, which was first found the very next day. Geocaching began to develop rapidly and these kind of boxes were placed also outside the USA. The first cache based in Europe dating 3rd June 2000 in Ireland. The first cache in the Slovak Republic was founded in 2001.

OBJECTIVE

The aim of our study was to find out the current status of Geocaching in Slovakia (the number of caches, the number of seekers, etc.), as well as to create a brief guide what is the basis, what are the basic rules of Geocaching for primary schools pupils and also to create a book of games which use the GPS.

WORK TASKS

Task 1: To study literary sources and acquire necessary knowledge about the given problem.

Task 2: Obtain basic information about the state of Geocaching in Slovakia.

Task 3: Develop a set of games using GPS.

Task 4: Develop a brief guide for primary school pupils.

Task 5: Formulate conclusions and recommendations for praxis.

RESULTS OF WORK

Current status of Geocaching

The origins of the Geocaching game (geocache = earth hiding-place) are in the U.S., where this fun for the owners of GPS receivers came into existence; last but not least it was also necessary to promote the very sale of GPS receivers. Merits of the game is a "treasure" (stash, cache), which someone hides in the landscape and afterwards publishes its coordinates on the website www.geocaching.com. Upon approval of the approver (Geolens Reviewer), other players are trying to find it with the help of their GPS receivers. There are 1,320,804 active caches in the world now and in the last 30 days there have been reported (logged in) 4,593,414 records (as of 21/03 2011).

Table 1 EU States ranking according the quantity of created caches during the period of 2006 till 2008.

	2006	2007	2008
1	Germany	Germany	Germany
2	Great Britain	Great Britain	Great Britain
3	Sweden	Sweden	Sweden
4	Netherlands	Czech Rep.	Czech Rep.
5	Finland	Denmark	Denmark
6	Denmark	Netherlands	France
7	Czech Rep.	Finland	Netherlands
8	Austria	Austria	Finland
9	Belgium	France	Austria
10	France	Belgium	Belgium
11	Spain	Spain	Portugal
12	Italy	Italy	Spain
13	Portugal	Portugal	Italy
14	Hungary	Slovakia	Slovakia
15	Ireland	Ireland	Ireland
16	Estonia	Hungary	Hungary
17	Slovakia	Estonia	Estonia
18	Greece	Grécko	Poland
19	Poland	Poland	Greece
20	Luxembourg	Luxembourg	Luxembourg

Source: <http://derilin.sweb.cz/14.png>

The number of caches increases in Slovakia every year. Accordingly, the number of Slovak seekers – Geocachers is also growing (Table 2 and 3).

Table 2 Number of caches in the SR according to the year of foundation as of 21/03/2011

Year\month	1	2	3	4	5	6	7	8	9	10	11	12	Overall
2001	0	0	0	0	0	0	1	0	1	0	0	0	2
2002	0	0	0	1	1	3	0	1	1	0	0	0	7
2003	0	0	0	1	1	3	1	3	7	7	4	1	28
2004	1	2	3	5	10	6	9	16	17	9	9	3	90
2005	8	2	3	11	12	12	22	17	12	30	11	6	146
2006	1	2	34	40	42	32	39	26	63	55	22	17	382
2007	4	37	78	90	78	43	66	77	42	47	33	30	662
2008	2	43	41	40	54	60	47	77	56	54	52	63	616
2009	7	96	96	10	16	10	11	14	13	11	91	11	1369
	8			8	5	5	9	1	7	7		6	
2010	7	52	13	17	10	11	12	13	25	16	18	17	1691
	1		4	5	9	8	2	8	4	1	6	1	
2011	1	15	15										457
	3	5	2										

Source: www.geocaching.sk

Table 3 Number of new seekers in Slovakia (date is determined by finding the first Slovak cache) as of 21/03/2011

(Date is determined by finding the first Slovak cache)

Year\month	1	2	3	4	5	6	7	8	9	10	11	12	Overall
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	4	2	0	1	3	1	1	12
2003	0	0	0	2	0	2	1	4	2	4	5	3	23
2004	3	3	1	2	14	3	8	14	16	8	2	5	79
2005	5	1	8	21	7	13	32	29	15	23	10	12	176
2006	12	15	19	45	47	48	101	102	68	47	43	44	591
2007	32	49	79	110	113	113	220	239	157	86	53	75	1326
2008	96	137	187	174	254	248	449	475	282	244	166	161	2873
2009	139	150	173	343	432	365	700	822	558	337	207	219	4445
2010	212	178	322	420	439	426	887	969	590	520	338	183	5484
2011	307	358	328										993

Source: www.geocaching.sk

From the Tables 3, 4 and 5 it is evident that in Slovakia, the number of recorded caches is increasing every year, and this not only from the perspective of Slovak seekers, but also from the growing number of foreign seekers. Currently, the term Geocaching starts to create a "new type" of tourism (www.etc-corporate.org/resources/uploads).

Table 4 Number of found caches in Slovakia as of 03/21/2011

Year/month	1	2	3	4	5	6	7	8	9	10	11	12	Overall
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	6	2	0	3	7	5	2	25
2003	0	0	0	2	0	6	5	18	22	21	25	7	106
2004	12	9	6	29	71	34	86	119	223	214	121	62	986
2005	68	16	63	214	202	138	216	283	249	328	210	118	2105
2006	171	213	327	986	946	743	145	116	109	902	773	753	9518
2007	766	113	202	297	260	233	331	376	310	213	274	182	2875
2008	211	319	333	346	464	408	574	796	516	532	560	496	555
2009	480	409	598	100	115	101	143	193	167	127	109	109	131
2010	108	775	147	205	166	140	244	268	229	264	205	109	216
2011	216	209	183										610
	88	78	45										11

Source: www.geocaching.sk

Table 5 Number of (all) seekers in Slovakia, who found a cache in the month as of 03/21/2011

Year\ month	1	2	3	4	5	6	7	8	9	10	11	12
2001	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	4	2	0	3	6	5	2
2003	0	0	0	2	0	6	4	8	10	10	12	5
2004	6	6	4	11	28	17	24	37	43	40	30	20
2005	24	13	33	54	56	57	75	83	60	76	51	43
2006	49	56	75	132	142	148	216	222	190	177	156	167
2007	145	195	256	354	338	359	520	599	469	352	311	298
2008	346	474	586	603	752	707	1002	1170	882	836	780	712
2009	699	662	805	1254	1481	1326	1893	2281	1918	1494	1267	1254
2010	1316	1111	1641	2072	1985	1971	2823	3090	2503	2556	2153	1449
2011	1945	2160	2053									

Source: www.geocaching.sk

Table 6 Number of seekers (no foreigners) in Slovakia, who found a cache in the month as of 21/03/2011

Yera\month	1	2	3	4	5	6	7	8	9	10	11	12
2001	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	3	2	0	2	5	5	1
2003	0	0	0	0	0	5	3	6	8	6	10	5
2004	5	4	3	11	21	16	18	25	31	31	28	19
2005	22	12	25	44	45	48	49	55	43	53	39	34
2006	44	43	64	104	106	102	134	125	134	123	121	126
2007	129	155	196	260	249	247	277	303	289	250	231	210
2008	247	303	367	390	429	406	467	535	500	507	487	445
2009	471	432	530	741	759	718	803	927	929	806	777	749
2010	807	698	944	1111	1006	984	1073	1177	1098	1138	1078	794
2011	993	1037	992									




Source: www.geocaching.sk

Table 7 Organization of active caches, due to the size, in Slovakia as of 03/21/2011

Veľkosť	Počet	
Small	1962	45%
Usual	1161	26%
Mikro	927	21%
Unknown	154	4%
Not identified	128	3%
Big	53	1%
Overall	4385	100%

Source: www.geocaching.sk

Table 8 Division of active caches by type in SR to 21/03/2011

Type		Amount		Logs - found		/ Nr.	Logs found	– not	/ Nr.
	traditional	2882	66%	307440	74%	107	9285	65%	3
	mysterious	769	18%	52409	13%	68	2597	18%	3
	multi	623	14%	47385	11%	76	2365	16%	4
	educational (Earthcache)	60	1%	5976	1%	100	26	0%	0
	Cache Wherigo	23	1%	927	0%	40	58	0%	3
	meeting	14	0%	58	0%	4	0	0%	0
	letterbox	10	0%	656	0%	66	34	0%	3
	Cache In Trash Out	3	0%	21	0%	7	0	0%	0
	webcam	1	0%	361	0%	361	4	0%	4
	Overall	4385	100%	415233	100%	95	14369	100%	3

Source: www.geocaching.sk

Table 9 The number of caches due to the year of foundation in Slovakia

Year	Amount	
2011	457	8%
2010	1691	31%
2009	1369	25%
2008	616	11%
2007	662	12%
2006	382	7%
2005	146	3%
2004	90	2%
2003	28	1%
2002	7	0%
2001	2	0%
Overall	5450	100%

Source: www.geocaching.sk

Taking into account the fact that Slovakia has an area of 49 035 km² than for every 8.99 km² on average a cache can be found. The actual location of the cache should be of a historical, educational, fitness, relaxation or entertaining nature.

CONCLUSION AND RECOMMENDATIONS FOR PRACTICE

Although Geocaching and the games using GPS receivers will certainly not become a matter of the whole society, we recommend trying it at least once to every owner of a GPS device. This kind of fun - playing with GPS devices would definitely enrich the physical education lessons in school, or more precisely the military-educational exercises – OŽAZ; since the price of current GPS receivers is not high, and many phones already have built-in GPS receivers. During the development of this work we discovered many interesting facts that could be beneficial to each teacher. Therefore, we propose following recommendations for practice:

- appropriately modified games would certainly enrich the primary school pupils' on new skills, knowledge and last but not least would enrich their leisure time physical activity performed outside the school.

- loading of individual routes into the receiver will make the planning of tourist activities easier in terms of time (we are often bound to bus lines) and orientation (in bad weather, for safety, it is sometimes better to use "zvážnice", field roads - unmarked paths for as safe return to the final destination).

- wider application of GPS can be used during the summer concentration trainings – tourist or waterman's courses, because it would be possible to load every route into GPS and subsequently evaluate them in a clearer and easier way.

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SUMMARY

Currently, there is an emphasis on the active use of leisure time and therefore a man is always looking for more varied and interesting activities. Games are everywhere around us and while we live in a modern world of science and technology, we should not forget that the game will accompany a man through his whole life. One possibility to combine modern technology - eg. Global Positioning System (GPS) with playful actions aimed at increasing physical activity of children is Geocaching Navigation Game, which we can play in Slovakia (and also around the world) for several years.

The aim of our study was to assess the current status of geocaching in Slovakia (numbers of caches, number of seekers, etc.). and to create a brief tutorial which is the essence of what are the basic rules of geocaching for primary school children and also creating a stack of games for GPS self-realization.

DYNAMIC STRENGTH DEVELOPMENT OF LOWER LIMBS IN BASKETBALL

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KEY WORDS: dynamic strength, basketball, kinetic programme, motoric tests.

INTRODUCTION

Dynamic strength belongs to the limited factors for individual's performance in some kinds of sports. For example, it is a smash at volleyball, shooting or landing at basketball. Dynamic strength or dynamic and explosive strength of lower limbs is often a factor which determines on a sportsman's success or a failure in a given sport. Not only the individual's performance has depended on its level but the team's as a whole. In addition, one of the important means for dynamic strength development of lower limbs is a systematic and a qualitative movement activity.

More authors deal with the movement abilities and dynamic strength such as: Zrubák a kol, (1995) Pelikán (2002), Michal (2001), Velenský (1987) and so on.

As Bartík, Adamčák and Rozim (2004) have stated, strength abilities are those ones which enable a person to outclass a resistance or to force against a resistance by the help of a muscle stretch.

The muscle stretch, which is developed during the muscle length change, affects dynamic form of muscle contraction. A static form of muscle contraction is developed without a change of muscle length.

- a) *A static strength* is a strength (Zrubák a kol, 1995) that can be developed with a muscle group against a solid resistance. It is the ability to develop a maximum tension against a fixed object, to develop maximum power by isothermal contraction of muscles.
- b) *A dynamic strength* is a strength which a muscle group can develop against a resistance throughout a movement. It is the ability to develop a strength by prevailing

isotonic muscle contraction by a maximum number repeat. Thus there is a change of a movement during the muscle activity and the muscle length has been shortening or extending (Bartík, Adamčák, Rozim, 2004).

- c) *A dynamic strength* is characterised by giving the biggest speed up (throwing, jumps) to specific mass. It is the ability to develop maximum power in minimal time interval by prevailing isotonic contraction. Sometimes the dynamic strength of lower limbs is tested with repeated jumps as well. (Kasa, 1983).

In Šimonek's opinion (2003), the level of dynamic strength depends on:

- the strength and the speed of muscle contraction which have participated on altering of a bounce (prevailing of white muscle fibres),
- intramuscular coordination – the ability to join into activity the highest number of motoric units (neuron and some of muscle fibres),
- intramuscular coordination – coordination of decisive muscle groups,
- energetic sources saved in muscles,
- altering bounce techniques with a respect to biomechanics laws and the sportsmen's individuality.

In sport games there is a characteristic strive to differ individual and collective performance level – a player's performance or performance of some individuals and the team performance. The fact is that collective team's game performance is in close relationship to the individual's game performance. However, it is not mechanic sum up of their performances as a whole. The main indicators of the level for game performance are the results of matches in competition (Moravec, 2004).

Basketball team can be considered from social-psychological aspect as a certain type of social group. It is the informal group created on the basis of voluntariness of individual members linked with the certain mutual emotional relationship (Velenský, 1987).

AIM OF RESEARCH

An author's aim is to contribute by enhancing some knowledge about the possibilities of dynamic strength development of lower limbs at a junior basketball team of ŠKP Banská Bystrica (Police sport club Banská Bystrica).

RESEARCH METHODOLOGY

On the basis of present knowledge and experience from the field of physical education and sport preparation, we have thrived to choose such methods that should provide us the most information for analysis of given issue and consequently they should be adequate for research conditions. Three research methods were used during the realisation of research. Firstly, the study method and bibliography analysis, secondly, observation as the oldest research method and thirdly, testing of dynamic strength.

The following tests were used for gaining entrance and exit data connected with the level of dynamic and explosive strength of lower limbs at the junior basketball team of ŠKP Banská Bystrica (Police sport club Banská Bystrica).

- a) vertical jump with the help of swing of arms,
- b) vertical jump after a hop down from a perch,
- c) long jump from a place with a bounce from both legs,
- d) athletic triple jump from a place with one leg.

Research file consisted from 14 junior boys of basketball team ŠKP Banská Bystrica who have been trained under the leadership of Ladislav Makovíny. These boys trained during summer preparation throughout which we applied our kinetic program; 5 days in week and during some weekends. The team also played some test- matches.

The movement program was realised in three-days cycle and involved 18 training units which mainly contained from the exercises targeted to the development of dynamic strength (vertical and horizontal strength).

RESULTS

A) Motoric test of vertical jump with the help of swing of arms

The figures measured with motoric test of vertical jump with the help of swing of arms targeted to the level of dynamic strength of lower limbs with the standards for choosing the talents and the tall players for basketball (Velenský a kol., 1979).

The average number of dynamic strength of lower limbs at junior basketball team of SKP Banská Bystrica in entrance measurements presented a fulfilment of the standard to 69,73%.

The level of dynamic strength of lower limbs at junior basketball team of SKP Banská Bystrica in entrance measurements was fulfilled to 70,91% in comparing with the standards.

The growth of average performance between entrance and exit measurements is 1.64 cm that means the growth by 4,39%. A difference of the best performances in both measurements is 1 cm which is growth by 2,28%.

Table 1 Dynamic strength of lower limbs at a junior basketball team of ŠKP Banská Bystrica (Police sport club Banská Bystrica) in the test of vertical jump with the help of swing of arms

	Vertical jump with the help of swing of arm [cm]	
Statistical characteristic	Entrance measurement	Exit measurement
n	14	14
min	28.4	31.2
max	43.9	44.9
\bar{x}	37.36	39.00
s	3.61	3.59
norm	55.0	55.0

Key: n – number of tested students, min - minimum, max - maximum, \bar{x} – arithmetic average, s – standard balance.

B) Motoric test of vertical jump after a hop down from a perch

The standards for choosing the talents and the tall players for basketball (Velenský a kol., 1979) were used for comparison of figures of both measurements for vertical jump after a hop down from a perch. On the basis of average figures for entrance measurements after a hop down from a perch, which has the figure 33,25 cm, we can claim the fulfilment of the standard to 77,33% that is very low result for top players. Furthermore, it is obvious from measured figures that nobody from junior research team of SKP Banská Bystrica fulfilled the standard. The best performance was 42,5 cm.

After entrance measurements of a vertical jump after a hop down from a perch we can claim that one player from the team fulfilled the standard by his performance 44,5 cm that had been given by Velenský a kol., (1979), which represents 103,49%. The average performance of research file is 34,88 cm that represents the fulfilment of the standard 43 cm only to 81,12%. The growth of average performance of research file between entrance and exit measurements is 1,63 cm that means the growth by 4,90%.

Table 2 Dynamic strength of lower limbs at a junior basketball team of SKP Banska Bystrica (Police sport club Banska Bystrica) in the test after a hop down from a perch

	Vertical jump after a hop down from a perch [cm]	
Statistical characteristic	Entrance measurement	Exit measurement
n	14	14
min	24.3	24.2
max	42.5	44.5
\bar{x}	33.25	34.88
s	5.33	5.47
norm	43	43

Key: n - number of tested students, min - minimum, max - maximum, \bar{x} - arithmetic average, s - standard balance.

C) Motoric test of a long jump from a place with a bounce from both legs

The measured standards of a long jump from a place with a bounce from both legs are markedly lower as the standards for choosing the talents and the tall players for basketball are (Velenský a kol., 1979).

The level of dynamic strength of lower limbs of research file for junior basketball team SKP Banska Bystrica represents the average figure of performance 215,86cm which is the fulfilment of standard to 84,65%. The performance which is the closest to the standard 255 cm represents figure 232 cm that is 90,98%.

From the measured exit figures of a long jump from a place with a bounce from both legs is evident the growth of average performance of research file against the figure of average performance of research file in entrance test by 5,28 cm that represents the growth by 2,45% where the standard in entrance measurement was fulfilled to 86,72%.

Table 3 Dynamic strength of lower limbs at a junior basketball team of SKP Banska Bystrica in the test of a long jump from a place with a bounce from both legs

	A long jump from a place with a bounce from both legs [cm]	
Statistical characteristic	Entrance measurement	Exit measurement
n	14	14
min	200.0	198.0
max	232.0	240.0
\bar{x}	215.86	221.14
s	8.99	11.00
norm	255,0	255,0

Key: n - number of tested students, min - minimum, max - maximum, \bar{x} - arithmetic average, s - standard balance.

D) Motoric test of Athletic triple jump from a place with one leg

For comparison measured entrance and exit data of athletic triple jump from a place with one leg we used recommended performance figures in triple jump according to Moravec and Šelingerová (1987).

On the basis of average measured entrance and enter figures of athletic triple jump from a place with one leg, that is 652.86 cm, there is obvious a fulfilment of the standard to 89,43%. We can claim from measured entrance figures that nobody from research group of juniors SKP Banska Bystrica fulfilled the standard whereas the best performance was 715 cm what means that 2,05% was missing to the fulfilment of the standard.

As a result, on the basis of exit measurements there was found out a level shift for dynamic strength of research file by 12,78 cm against entrance measurements what means the growth by 1,96% and the standard fulfilment to 91,18%. One member from research file overdraw the standard by 10 cm by which he shifted the figure of maximal performance to 740 cm and thus he reached the growth of maximal performance in exit measurements by 3,50% in comparison with entrance measurements.

Table 4 Dynamic strength of lower limbs at a junior basketball team of SKP Banská Bystrica in the test of Athletic triple jump from a place with one leg

	Athletic triple jump from a place with one leg [cm]	
Statistical characteristic	Entrance measurement	Exit measurement
n	14	14
min	570.0	590.0
max	715.0	740.0
\bar{x}	652.86	665.64
s	37.91	38.00
norma	730.0	730.0

Key: n - number of tested students, min - minimum, max - maximum, \bar{x} - arithmetic average, s - standard deviation.

CONCLUSION

For that reason, it is obvious from stated results that the improvement of the level for dynamic strength is also possible by relatively short period of specialised preparation.

The measured results can be affected by the number of tested students of research file as well as by the fact that the tested people were at the beginning of summer preparation where the growth of their performance can be higher than during the season of their long-lasting training burden.

Furthermore, it is very important to deal with the issue of the sportsmen's dynamic strength of lower limbs owing to finding out their level and the following application of special movement means for the enhancement of their level.

I have recommended the application of some exercises of the given movement program into training process, the regular monitoring of dynamic strength of the lower limbs and the use of modern technologies and specialised methodics.

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SUMMARY

An author's aim is to contribute by enhancing some knowledge about the possibilities of dynamic strength development of lower limbs at a junior basketball team of ŠKP Banská Bystrica (Police sport club Banská Bystrica). Another point is that the main aim of this research was to analyze available data of bibliographical roots. Realization of measurements entrance of dynamic strength belonged to the major tasks by the help of some motoric tests. Furthermore, to set up a kinetic programme of the development of dynamic strength and to realize its exit measurements belonged to the major task as well. Among the main motoric tests belonged a vertical jump, standing broad jump and triple jump. A research body was created by fourteen juniors of basketball team ŠKP Banská Bystrica who participated on a six-week kinetic programme. In each of the kinetic tests there was compared data pairs (entrance and exit ones). Thus, the compared results have shown the increase or decrease of the dynamic strength level of the lower limbs at junior basketball team ŠKP Banská Bystrica. In conclusion, we can claim from measured results that a kinetic program has helped to the development of dynamic strength.

ACTIVE AND PASSIVE PARTICIPATION IN SPORT OF SPECTATORS OF INTERNATIONAL FOOTBALL EVENT

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KEY WORDS: international sport events, fans, active and passive involvement in sport

INTRODUCTION

Simultaneous participation in sport and tourism can be noticed in travelling for international sport events, which actually already began in the ancient times when not only athletes, but also fans were travelling to the Olympics in Olympia (Finley-Pleket, 1976).

Popularization and internationalization of modern sport, which started with resuming the Olympic Games by baron Pierre de Coubertin in 1896, noticeable in travelling of fans to sport events, are not limited only to popularization, but also disseminate many sport disciplines (Sznajder, 2008). It allows to widen the number of active participants in physical culture by spectators of sport events.

Cz. Matusiewicz (1990) defines a sport event as a social event accessible for visual perception with entertaining and recreational character, organised for sport rivalry of involved competitors.

Especially international sport events watched directly at stadiums, sport halls or in broadcasting media often allow to popularize a particular sport discipline, which can result in bigger interest in active involvement in sport activity. It is often connected with the fact that in case of international and especially global sport events, spectators can follow high level competitions involving known teams and players.

Travelling for international sport events is defined in the literature as sport tourism (Hadzik-Tomik-Szromek, 2011). Sport tourism in such understanding means travelling to places of international sport events, where one group of involved people constitutes of fans

(passive participants of events) and the second group are athletes competing with each other (active participants of events).

Researching sport tourism most often concerns examining the influence of sport tourism on economy and promotion of tourist destination areas, as well as organization and managing of major sport events (Hall, 1992; Hudson, 2000; Hudson, 2003; Kasimati, 2003; Preuss 2004; Preuss, 2005; Ritchie- Crouch, 2000). However, there is a visible lack of researches, not only in Poland, dealing with analysis of the involvement in sport and tourism of international sport events' spectators, especially in regard to the relations between supporting and recreational physical activities of fans.

PURPOSE AND QUESTIONS OF THE RESEARCH

The main research objective is to determine the level and the structure of involvement in sport activity of fans arriving to the Poland–Belgium football game.

Research questions:

In what sport events do football supporters participate apart from international football games?

What active forms of sport are practised by the spectators of the Poland–Belgium game?

What is the level of physical activity of spectators of the analysed Poland – Belgium game?

Is there a relation between attending an international sport events and active involvement in a sport activity?

MATERIALS AND METHODS

The research was conducted on 17 November 2007 on a randomly chosen and representative group of fans from all spectators present at Slaski Stadium in Chorzow during the Poland–Belgium European Championships qualifying football game (Austria and Switzerland 2008). 450 seats were drawn from the total number of 45 thousand seats taken at the stadium.

409 correctly filled in questionnaires were analysed – some respondents refused to take part in the research, some filled them in incorrectly and some fields were left empty. A statistical error of the research was $\pm 4\%$ ($p = 0.95$).

A method of the diagnostic survey was applied, using a specially prepared questionnaire form. The questionnaire form consisted of short informative description, 9 closed questions and 7 particulars questions.

A statistical method based on cross tables was used showing relations between different variables.

RESULTS

40.59% of examined fans declare practising football, in particular almost 25% from them attend only football matches, and 15.6% from them attend also other sport events. In contrast, over 59% of supporters do not practise football at all. From this number, 27.1% attend only football games, and over 32% go also to other "live" sport events.

Among spectators who practise football as many as 61.45% attend only football games. The remaining 38.55% attend, apart from football games, also other "live" sport events. It is worth noticing that fans attending only football games practise football more often than those who attend also other sport events. This share amounted adequately to 47.9% and 32.6%. The relation between variables "supporting live" and "practising football" was confirmed with high statistical significance ($p = 0.00172$).

Table 1 Supporting and practising football

%	Variables			
	Supporting "live"	Practising football		%
		I do not	I do	
% from the column	I only go to football games	45.68%	61.45%	
% from the row		52.11%	47.89%	
% from the whole		27.14%	24.94%	52.08%
% from the column	I also go to other sport disciplines events	54.32%	38.55%	
% from the row		67.35%	32.65%	
% from the whole		32.27%	15.65%	47.92%
% from the whole		59.41%	40.59%	100%
p = 0.00172				

15.9% (from the whole) of supporters travelling only to football matches declare that they do not do any physical activity. On the other hand, 19.3% of supporters of this type

declare that they practise sport from 1 to 3 hours per week. Only just over 1/5 of all respondents declare doing sport for over 3 hours per week. As much as 29% declare that they do not practise sport at all.

Table 2 Supporting versus the level of sport practising

%	Variables					
	Supporting "live"	Practising sport actively during the week				%
		I do not	I do up to 1 hour	I do from 1-3 hours	I do over 3 hours	
% from the column	I only go to football games	54.17%	50.00%	55.24%	45.35%	
% from the row		30.52%	14.08%	37.09%	18.31%	
% from the whole		15.89%	7.33%	19.32%	9.54%	52.08%
% from the column	I also go to other sport disciplines events	45.83%	50.00%	44.76%	54.65%	
% from the row		28.06%	15.31%	32.65%	23.98%	
% from the whole		13.45%	7.33%	15.65%	11.49%	47.92%
% from the whole		29.34%	14.67%	34.96%	21.03%	100%
p = 0.48457						

The analysis of correlation between supporting "live" and practising sport during the week revealed interesting facts. Over 60% of respondents who do not do any sport, declare that they go to football games occasionally. The respondents who attend matches occasionally and do not practise this sport discipline constituted quite a big group of almost 18% of all examined respondents. Much smaller group of spectators who do not practise sport at all were supporters who attend football games regularly (11.5% of all examined).

Table 3 The regularity of supporting versus the level of sport practising

%	Variables					
	Supporting "live"	Practising sport actively during the week				%
		I do not	I do up to 1 hour	I do from 1-3 hours	I do over 3 hours	
% from the column	I occasionally go to games	60.83%	68.33%	65.73%	59.30%	
% from the row		28.19%	15.83%	36.29%	19.69%	
% from the whole		17.85%	10.02%	22.98%	12.47%	63.33%
% from the column	I regularly go to games	39.17%	31.67%	34.27%	40.70%	
% from the row		31.33%	12.67%	32.67%	23.33%	
% from the whole		11.49%	4.65%	11.98%	8.56%	36.67%
% from the whole		29.34%	14.67%	34.96%	21.03%	100%
p = 0.58670						

It is interesting to compare the numbers of those who practise sport activities in groups: going regularly or occasionally to watch football games. Those who occasionally attend sport events of this type pledged a bigger participation in sport activity (45.5% of the whole) during the week than supporters who attend stadiums regularly (25% of the whole).

The next table 4 demonstrates that the majority of respondents (63.3%) declared the occasional participation in games played by the Polish national team. Groups of fans attending matches occasionally and regularly declare active involvements in the number of over 40% in regard to football, but there were more respondents who practise football and attend football games occasionally (22.5% of all respondents).

In the group attending matches occasionally, the majority do not practise football at all. Among them—despite not practising this sport discipline—almost 69% were people who occasionally attend football matches. Almost 41% of all respondents do not practise football and rarely attend football games.

On the contrary, supporters who regularly attend matches and do not practise football constituted less than half of all respondents. It should be added that the relations in the following table are reflected by high level of statistical importance ($p = 0.00612$).

Obviously, not-practising football does not mean not-practising sport at all, since supporters who attend football matches may actively exercise other sport disciplines.

Table 4 The regularity of supporting versus the level of football skills of respondents

%	Variables			
	Supporting "live"	Practising football		%
		I do not	I do	
% from the column	I occasionally go to games	68.72%	55.42%	
% from the row		64.48%	35.52%	
% from the whole		40.83%	22.49%	63.33%
% from the column	I regularly go to games	31.28%	44.58%	
% from the row		50.67%	49.33%	
% from the whole		18.58%	18.09%	36.67%
% from the whole		59.41%	40.59%	100%
p = 0.00612				

As the research covered football fans, it is not difficult to conclude that among the respondents it was football that dominated both in participation in the sport event structure and recreational practising. Thus, the fundamental question is: what the others sports or recreational disciplines which are also watched "live" and practised by this group of supporters are (table 5).

Apart from participating in football, fans also go to volleyball (21% of respondents) and basketball games (9.04%). The supporters present at the Poland–Belgium game who actively practise sport often confirmed that they also practise–beside football of course–volleyball (10.5% of fans who declared practising sport) and swimming (8.31%).

DISCUSSION

Polish supporters present at the international football game Poland–Belgium more often declared, in comparison with foreign fans, that they do not practise any regular physical activity. The analysis of fans participating in the European Championships in football in

Portugal in 2004 showed that only about 9% of the examined population is not interested in any physical activity at all (Ribeiro-Viseu-Delalande-Rodrigues, 2004).

Table 5 The structure of involvement of football supporters in sport (without football)

Type of recreational and sport activity	The structure of supporters' participation (%)	
	in sport events	in sport and recreational activities
table tennis	0.2	0.2
yoga	0	0.2
squash	0	0.5
fencing	0.2	0.2
volleyball	21.3	10.5
basketball	9.04	5.87
aerobic	0	0.73
boxing	0.73	1.47
gymnastics	0.5	0.73
skating	0.5	0.2
skiing	0	3.42
ski-jumping	1.7	0
speedway	3.2	0
dance	0	0.2
running	1.9	2.9
billiards	0.2	0
swimming	2.2	8.31
combat sports	0.5	0.2
cycling	0.2	1.95
hockey	2.93	1.5
weight sports, bodybuilding	0.2	1.95
climbing	0	0.5
handball	3.9	1.22
tennis	0.5	3.2
rugby	0.2	0.98
bowling	0	0.2
futsal	0.2	0

Findings of authors showed that in Poland there are far more respondents of this type (almost 29% of examined)—it does not support the thesis that being a sport supporter influences positively regular physical activities of people.

On the other hand, the research showed that the group of fans regularly participating in sport events declared that they do not practise sport, including football, less often than fans attending sport events occasionally. It can prove that not supporting but rather its regularity affects the level of sport practising by fans.

The analysis of the number of football supporters who do not practise sport should be related to the overall amount of Europeans who do not participate in sport activities. European researches showed that on average 39% of EU citizens state that they do not practise any physical exercise at all (*Sport and the physical activity*). Compared to that, it is clear that football supporters in Poland in much smaller percent do not practise sport (almost 29%). It should be added that among EU countries the Poles do not practise any physical activities in the greatest percent (*Eurobarometr*). In 2009 an international research of physical activity showed that as much as 49% of the Poles declare the lack of any sport activity (*Sport and the physical activity*). However, it would prove that participation in sport events limits the number of people who practise sport.

It should be remembered that the analysis based on cross tables allows to show relations between variables through the high statistical significance. However, it is hard to achieve explicit direction of these relations. Sometimes previous regular sport activity in a particular discipline influences supporting it "live" in the future.

Moreover, it should be remembered that supporting can constitute only one of variables influencing involvement in recreation (sport). These variables can be (among others): the influence of upbringing and socializing as well as personal predispositions. Passive and active involvement in sport is based on seeking theories describing moderators of human choices concerning behaviour (Sas-Nowosielski, 2009; Winiarski, 1995).

Level of income, sex and education are often among the socio-demographic variables influencing participation in sport (Berebka-Makówka-Niemczyk, 2008). It should also be remembered that one of the barriers of involvement in sport are its costs. They are correlated with age, level of income, sex and education. Another important barrier for active and passive involvement in sport is lack of free time (Winiarski 1995).

R. Winiarski (1995), who examined conditions of the development of sport among young people, distinguished individual factors (physical talent, physical fitness, need of physical activity), environmental factors (influence of social and cultural environment). K. Sas-Nowosielski (2009) emphasises the role of individual conditions of the sport activity level including: conviction about the possibility to undertake a physical activity, perception of

barriers in sport and the sense of undertaking a physical activity. In this concept, however, the meaning of upbringing and the peer group is also emphasized.

Generally, the determinants of sport activity are contained in the following correlates: demographic, biological, predisposing variables and environmental factors enhancing or hampering this activity (Sas-Nowosielski 2009).

In literature the meaning of genetic factors is often emphasized (Mynarski-Garbaciak-Stokłosa-Grządziel, 2007). Genetic factors influence for example the so-called habitual physical activity, including everyday activities (Perusse and co-op., 1989). However, the meaning of genetics is not noticed in motivation to the so-called impetuous physical activity (recreational), where the main environmental factors play a crucial role (Mynarski-Garbaciak-Stokłosa-Grządziel, 2007).

The upbringing in the spirit of physical culture should not to be overrated in behaviours connected with sport activity (recreational) (Bartík, 2005). It is one of the main factors, beside family and the peer group, enhancing to recreational activity (Mynarski-Garbaciak-Stokłosa-Grządziel, 2007; Winiarski 1995). Such actions are aimed at popularization of sport activities by increasing the awareness of their positive role for health and mood. However, some people believe that not the knowledge why it is important to exercise, but rather the knowledge about own possibilities and needs concerning using a particular form of so-called recreational sports is more crucial (Sallis, 1994).

Supporting as a sport and tourist activity (passive recreation) depends on many internal (pushing) and external (pulling) factors (Hadzik-Kantyka-Szromek, 2009). Amongst "pushing" factors enhancing to passive involvement in international sport events various reasons and needs constituting their contents should be distinguished (Winiarski, 1991). The reasons for travelling to international football games are connected with the importance of a game as well as (in order of importance): type of a game, fame of teams, the level of sport, the probability of bitter rivalry and the place of competition (Wojdakowski-Krawczyński, 2008). "Pushing" factors can also include practising football by supporters.

In motives of participation in active forms of sport, mainly health, aesthetic and social ones are distinguished concerning improving the physical fitness (utilitarian) and experiencing the risk (hedonistic, agonistic) (Mynarski-Garbaciak-Stokłosa-Grządziel, 2007; Winiarski 1995).

The notion of "pulling" is in the theory of needs related with so-called external factors which often determine attending football games (Hadzik-Kantyka-Szromek, 2009). Basing on

conducted researches, the factors which attract football supporters to supporting football live is previous watching it in media (Hadzik-Tomik-Szromek 2011). However, it should be remembered that also other outside “pulling” factors are important, they are mainly: the advertisement and the promotion of an area and a stadium, the standard of tourist accommodation and catering and possibility to spend some leisure time (Hadzik-Kantyka-Szromek, 2009). Among "pulling" factors there are: the availability of high quality sport facilities or professional staff, especially including the instructors of recreation.

It is obvious that promotion can be a "pulling" factor, especially in contemporary demographic changes, including healthy ageing (Kozdroń, 2006).

The results of research concerning the participation in sport activities of football fans were confirmed by previous researches of physical activity of Polish society (GUS 2009). In the research, the supporters present at the Poland – Belgium game who practise sport, beside football also go for recreational swimming which in all-Polish examinations proved to be, beside cycling, one of the most popular forms of spending leisure time actively.

In the research presented above also volleyball, beside football and swimming, was popular among examined fans. It results from the fact that a great number of supporters attend international volleyball games encouraging them to this discipline. As a matter of fact, the popularity of volleyball can be seen in the national researches (*Uczestnictwo Polaków w sporcie i rekreacji ruchowej*), in which this discipline was the most popular overtaking even football. However, this is not a surprise when we compare the successes of Polish athletes in volleyball and football as well as the organization level, safety on sport arenas in Poland and the way of supporting. Volleyball is the fifth most popular sport activity in Poland (*Uczestnictwo Polaków w sporcie i rekreacji ruchowej*). Practising volleyball constituted 14.5% of all who take an active part in sport and recreation. Our research showed that 10.5% of football supporters declared practising volleyball.

The dominant role of football as a sport which is most often practised by football supporters results mainly from a large number of men among fans. As a matter of fact, the representative research presented above confirm that among men, football is the most popular – after cycling – recreational discipline of sport.

CONCLUSION

The research of participation of supporters in sport allowed to form the following conclusions:

- I. Supporters of the Poland – Belgium game participated, apart from football events, also in international volleyball games.
- II. Examined football fans practise recreationally, apart from football, mainly swimming and volleyball.
- III. Football supporters in Poland, when compared to the whole population of Poland and the EU, practise sport more often.
- IV. Fans supporting football “live” practise mainly football (group of fans attending only football matches and practising football) and relatively in lower extent do not practise it (group of fans attending only football games and not practising it) in comparison with fans who attend also events of other sport disciplines.
- V. 56% of examined supporters declare exercising more than one hour per week, however, only 21% declare that they exercise sport three or more hours per week.
- VI. Supporters who attend matches regularly do not practise football in much lower extent than those who attend them occasionally.
- VII. The fans of Polish football national team present at the Poland – Belgium game, apart from participating in football events, attend also volleyball and basketball games.
- VIII. Football supporters who practise sport, apart from football, go also mainly for volleyball and swimming.

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SUMMARY

The main research objective is to determine the level and the structure of involvement in sport activity of fans arriving to the Poland–Belgium football game.

The research was conducted on 17 November 2007 on a randomly chosen and representative group of fans from all spectators present at Śląski Stadium in Chorzow during the Poland–Belgium European Championships qualifying football game. 450 seats were drawn from the total number of 45 thousand seats taken at the stadium.

A method of the diagnostic survey was applied, using a specially prepared questionnaire form.

The research of participation of supporters in sport allowed to form the following the most important conclusions:

- supporters of the Poland – Belgium game participated, apart from football events, also in international volleyball games,
- examined football fans practise recreationally, apart from football, mainly swimming and volleyball.
- the fans of Polish football national team present at the Poland – Belgium game, apart from participating in football events, attend also volleyball and basketball games.
- football supporters who practise sport, apart from football, go also mainly for volleyball and swimming.

PHYSICAL ACTIVITIES IN OUT-OF-SCHOOL PHYSICAL EDUCATION IN 10-12-YEAR-OLD CHILDREN LIVING IN THE EASTERN SLOVAKIA REGION

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KEY WORDS: physical activities, out-of-school physical education, healthy lifestyle, primary school

INTRODUCTION

Physical activity, health promotion, improvement of physical, motor and athletic fitness is beneficial in terms of harmonious development of youth. The promotion of healthy lifestyle of general population bears considerable significance with regard to facilitation of harmonious physical development of young children. This should result in lifelong implementation of physical activity into their lives.

PROBLEM

Sport and physical education related activities help to solve the issue of declining physical fitness of young people. For the activities to be effective, they should be performed on a regular basis. The possibility of getting acquainted with various types of sports helps the children to perform these activities actively and to make movement an irreplaceable part of their lives in their adulthood. Significance is attributed to activities which may be performed in the nature, such as hiking. (Majherová - Chovanová, 2010).

Out-of-school activity makes part of most of children's leisure time. What is most important is to form positive attitude towards regular physical activity representing an irreplaceable part of healthy lifestyle. Current approaches in the educational process place emphasis on respecting the child's personality and appropriate form of instruction of not only physical education, but also out-of-school and recreational physical education. Their popularity results from the influence of several factors and causes. (Majherová - Chovanová, 2010).

AIM

The purpose of the study was to extend knowledge about out-of-school physical education in 10-12-year-old children living in the eastern Slovakia region.

METHODS

The cross-sectional survey was conducted as a part of the grant project KEGA, no. 352-006PU-4/2010 "The Design of Educational Models of Out-of-school and Recreational Physical Education and Healthy Lifestyle at Primary Schools". The survey was targeted at the sample of 10-12-year-old boys and girls at 10 fully-organized primary schools located in the region of eastern Slovakia during the school year 2009/2010. The selection of teachers was based on cooperation and on their interest in the engagement of children in out-of-school physical education. The interest of 10-12-year-old children in out-of-school physical education was determined using a questionnaire. The sample (n = 187) was divided according to gender and age. Overall, the sample consisted of 86 boys and 101 girls. The ages of participants are listed in one-year intervals, that is 10, 11 and 12 year olds, which corresponds with decimal determination of age (Měkota, Blahuš, 1983). The sample included only participants without health problems, i.e. young people who were able to participate in 2 school physical education classes per week and out-of-school physical education classes as well. The children that did not attend sports preparation classes were excluded from the study.

The questionnaires were used to collect data about the popularity of individual examined items preferred within out-of-school physical education from 187 pupils. All distributed questionnaires were completed and returned.

The data were processed using phenomenon analysis. The significance of differences between boys and girls was determined using the test of significance of relative numbers.

All primary schools have appropriate conditions for the implementation of physical education process – large and small gymnasiums, sports area on the school yard, which includes:

- athletic track,
- basketball court,
- football field (grass area),
- children's playing area (climbing constructions, glides and swings).

RESULTS

The range of seasonal sports and hiking activities:

- seasonal sports and fun activities (swimming, skating, skiing, sledging, snow and water games,
- hiking and cycling in the nature.

The collected data are interpreted separately for boys and girls, which also holds true for seasonal sports and fun activities (swimming, skating, skiing, sledging, water games and snow games) and hiking and cycling in the nature.

Preferences of seasonal sports in pupils:

Boys: cycling (82 %), skating (75 %) and swimming (70 %).

Girls: sledging (75 %), swimming (55 %) and games in the water and on the snow (49 %).

The 10-12-year-old boys and girls of the studied sample preferred seasonal sports as follows: there were significant differences considering interests of boys and girls in terms of cycling (4.54**), skating (3.35**), *games in the water and on the snow* (10.72**). This means that boys preferred different sports compared to girls (see Figure 1).

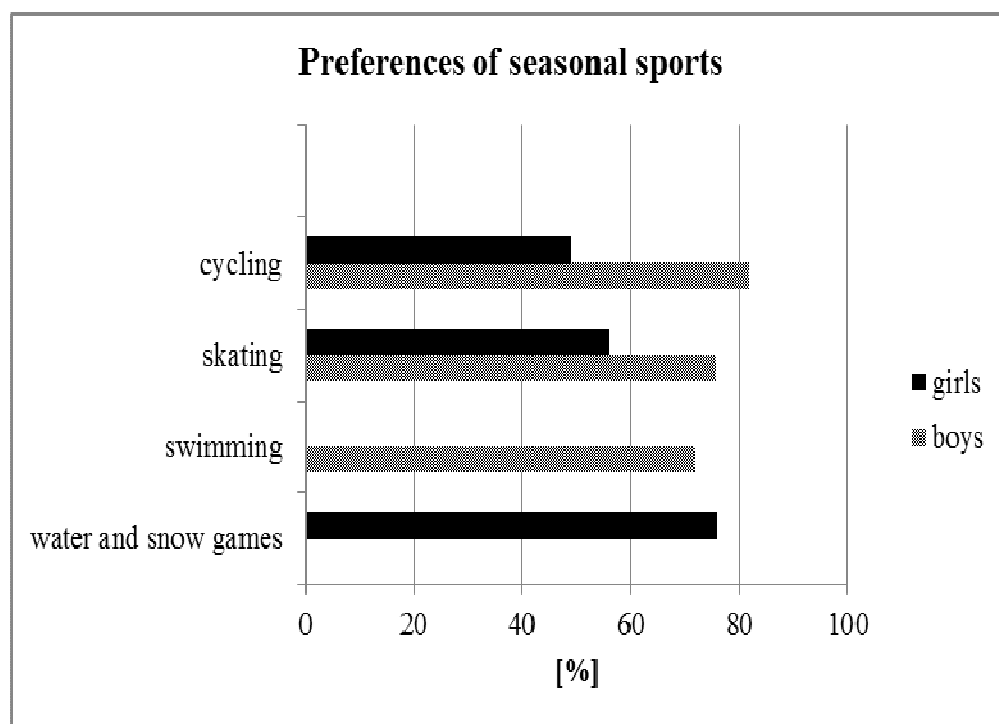


Figure 1 Popularity of sports

The findings related to the preferences of seasonal sports and hiking activities in both boys and girls may be considered a direct consequence of activities performed within out-of-school physical education and activities. The schools have appropriate conditions for their

execution. The knowledge about the seasonal sports and hiking activities from the viewpoint of pupils' interests point to high level of heterogeneity (see Figure 2).

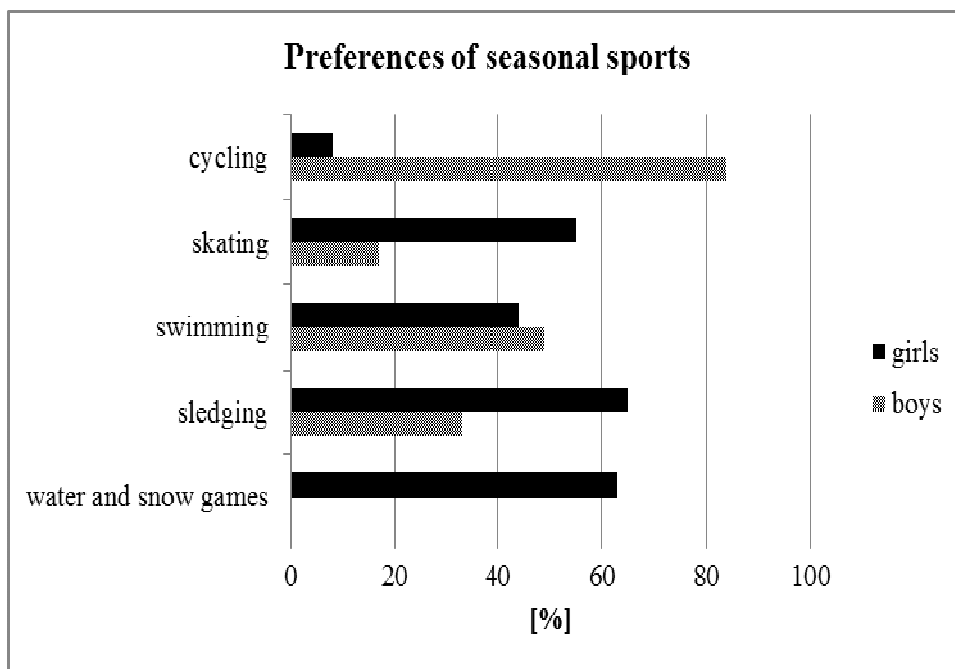


Figure 2 Popularity in sports games

Brod'áni, Kamas (2011) pointed to differences in preferences of motor activities in 9-10-year-old children in the Spiš region and concluded that boys, similarly to the boys included in our sample, were mostly interested in swimming, cycling and skating. The girls preferred sledging. Leisure time activities and their effect on healthy lifestyle have received a lot of attention. Michal (2006, 2009, 2011) concluded that this issue needs to be addressed.

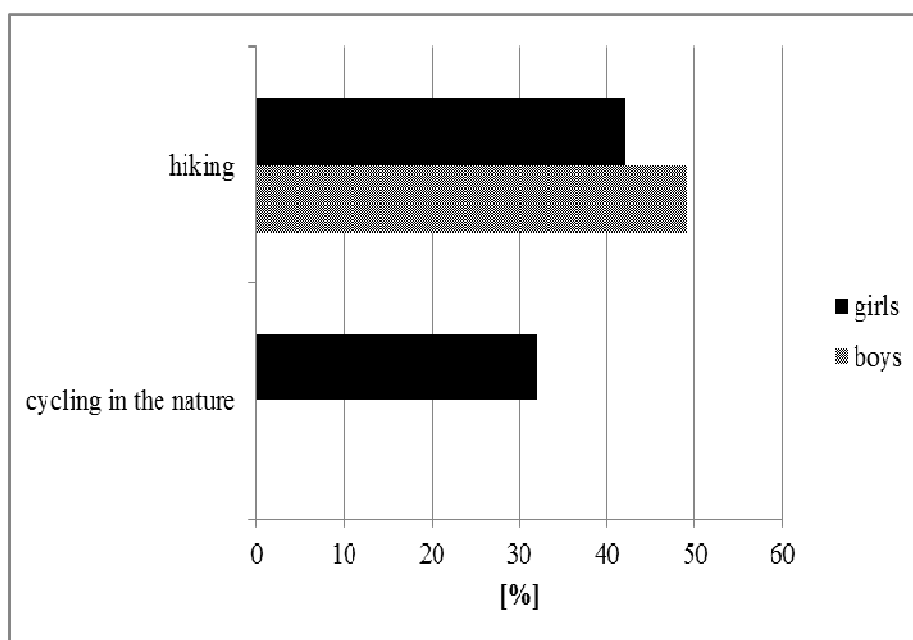


Figure 3 Popularity of hiking and cycling in the nature

CONCLUSION

- The knowledge about the preferences of seasonal sports and hiking free-time activity in 10-12-year-old pupils provide information on the possibilities of facilitation of active attitude towards physical activities within out-of-school physical education.
- Monitoring of pupils' interests should make part of teachers' diagnostic activity
- The purpose should be to implement such type of physical activities, which would strengthen permanent attitude towards permanent declared interest in sporting activities.
- We all may lead fully active lives by adhering to the principles of healthy lifestyle and performing sufficient volume of physical activity and resting.

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SUMMARY

At present, the issue of physical activity is becoming highly topical. The purpose of the study was to point to the execution of physical activities at out-of-school physical education lessons in youth living in the eastern Slovakia region. The results showed that among the most popular activities were seasonal activities such as hiking and so forth.

NON-TRADITIONAL DYNAMIC ACTIVITY BADMINTON DURING PHYSICAL EDUCATION LESSONS AT THE PRIMARY EDUCATIONAL LEVEL

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KEY WORDS: dynamic activities, badminton, scholars of primary educational level, effectivity of educational lessons

INTRODUCTION

Badminton is becoming increasingly popular sport in Slovakia. As one of the few sports it allows even beginners “to play”, to have a feel of success after short time. This sport is not demanding in space and basic equipment for player. Young people and also older play it and everyone can find the joy and satisfaction. Badminton has a positive impact on the human body, it strengthens the movement system, mobilise activity of all organs and systems, improves metabolism, blood circulation and lung capacity.

In addition, it improves coordination skills, strength in the legs, arm work and the overall responsiveness of the organism. The technical side of strike realisation, accuracy and resolution depend on the arm work of upper extremity and the feeling in the wrist. Involvement of the muscle parts of the legs is a decisive factor if the motion measures such as attacks, jumping, running to the basket, return to the play alert and the following start will be done quickly, smoothly and on time (Mendrek, 2003).

The inclusion of badminton in Physical Education classes is important because students move within relatively small area with high intensity. Its inclusion in the program of activities for children in younger school age is justified also from the perspective of developing the motoric system because it is a very important period, which has a decisive influence on the correct curvature of the spine, level of posture in the future development and is crucial for the future physical fitness and kinetic performance of the child (Kružliak, 2007).

The main objective is to teach students to play badminton under revised rules that we can adapt to the conditions in which physical education is implemented. According to content

standard it is important that students cope with: holding the racket in forehand and backhand, basic alert position of player, movement on the court focusing on dominant leg, to match the dominant leg movement and strike arm (right arm, right leg and vice-versa), service, service response, defense strikes, attacking strikes (lob, smash, drive), according to Fourny (2000).

THE AIM OF RESEARCH

The aim of research was to find out effectiveness of selected educational lessons specialised in badminton as a one of the forms of non-traditional dynamic activities educated within Physical Education at the primary educational level.

METHODICS

We realised our research at elementary school in the region Prievidza during school year 2007/ 2008. We gained base materials from 132 students of 4th classes at the elementary educational level. It was the last year in which students had 3 lessons of Physical Education per week while teachers had possibility to include into the education such dynamic activities which students were interested in and the school had conditions to provide it. The number of students consisted of 71 boys (53.78 %) and 61 girls (46.22 %). We realised our research at Physical Education classes (October – first lesson, January – second lesson, June – third lesson) concerned on non-traditional dynamic activity – badminton.

From the methodical view within Physical Education lessons students should learn specific information about badminton, player equipment, basic terminology, play rules, safety during exercises, hygiene and injury prevention. From motional activity they should learn basic strikes and movement in the court space. Movement games which children gather during Physical Education lessons focused on dynamic activity – badminton should be concerned on agility, coordination, movement speed and perception.

In our research we measured effectiveness of educational lessons by chronometry with the focus on badminton. With this method we measured active exercise time which is one of the indicators of the sport process effectiveness.

In assessing the effect of Physical Education lessons an important criteria is the motion content – physiological value of the exercises, which is reflected in the pulse frequency of pupil. For this reason we used also a method of pulse frequency measuring. Heart rate was measured by three instruments Polar Sport Tester. During each lesson there were randomly

selected three students who were tracked changes of pulse frequency. The values were recorded by the machines before and after each activity.

Reporting educational lessons were realised at the gym. During the lessons we have been focused on strengthening the legs, the dynamics of movement, skill development and coordination with the badminton racket.

During the first lesson students performed the following movement activities: transfer, turtle chase – save by lying on the back, warm-up in pairs with the rope; 1. activity: the cock-fighting – the strengthening and dexterity game; 2. activity: the postman – the game to pass the badminton basket put on badminton racket from meta to meta; 3. activity: three-legged run – a game for speed and movement coordination, the tree held by the hands and everyone jumps on one leg from meta to meta; 4. activity: return message – striking back the basket to co-player who shovel basket by hand; 5. activity: dropping the hornet's nests – returning the flying basket in pairs over their heads; 6. activity: keeper – orientation in toll baskets set by hand to the area of meta guard from co-player in the front position and back position, the player with the racket rotates about 180 degrees; 7. activity: Robin Hood – the competition in meta striking with basket after the racket return to the target and transfer for basket.

During the lessons students M.K., J.B, and L.V were connected to the Sport tester and they reached values of pulse frequency which are reported in table 1 and figure 1.

The results of analysis show that the highest values of pulse frequency reached M.K. (190 pulses/min.) and J.B. (200 pulses/min.) during exercise 4. return message. L.V. reached maximum (196 pulses/min.) in 4. activity. The lowest values of pulse frequency immediately after each activity (1. to 7.) were identical among all three respondents after 7. activity. – Robin Hood. During this activity was pulse frequency of J.B. 149 pulses/min, M.K. 131 pulses/min and L.V. 140 pulses/min.

For these students active exercise time during the first educational lesson was 28 minutes and 36 seconds which represents 63 % of the total time.

n.m.	Measurement	M.K.	J.B.	L.V.
1.	In the class	74	85	79
2.	After muster	85	97	100
3.	After warm-up	165	174	172
4.	After limbering-up	156	142	128
5.	Before activity 1	137	138	126
6.	After activity 1	176	189	169
7.	Before activity 2	137	142	130
8.	After activity 2	168	183	179
9.	Before activity 3	121	135	120
10.	After activity 3	179	192	188
11.	Before activity 4	140	153	150
12.	After activity 4	190	200	196
13.	Before activity 5	151	155	141
14.	After activity 5	183	192	185
15.	Before activity 6	139	158	159
16.	After activity 6	142	152	150
17.	Before activity 7	137	150	148
18.	After activity 7	131	149	140
19.	After muster	110	132	111

TABLE 1 Change of pulse frequency □

during lesson: movement activity

badminton 1

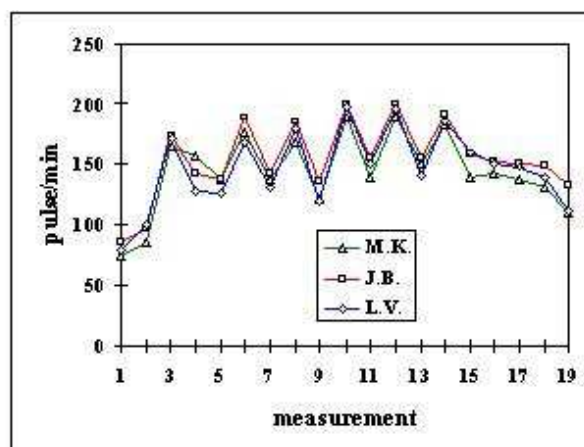


FIGURE 1 Change of pulse frequency during lesson: movement activity badminton 1

During the second lesson students performed the following dynamic activities: warm up – snake, run behind the head of snake, warm-up in pairs with the tool – badminton rackets; 1. activity: mailing, relay run with transfer of basket from racket to racket; 2. activity: hunter – game oriented in multiple hand discard to a moving badminton racket of co-player over the head (the success of interventions), 3. activity: carousel – a competition of teams of four players which have the badminton rackets in the middle and move slowly around with the basket transferring from racket to racket without fall; 4. activity: right-hander is a left-hander, toll basket in succession in as many uninterrupted; 5. activity: sending message – training couples focused on developing the game activities in return the badminton basket from the bottom, 6. activity: the wolf and sheep – a game for the movement coordination in return the badminton baskets that flies to the player in quick succession from several players; 7. activity: ruler – return the baskets in pairs within exactly defined area, development of movement coordination and return precision.

The pupils P.K, V. L. and D.J. were connected to Sport tester connected. We recorded their pulse frequency values in table 2 and figure 2.

During the lesson maximal values of pulse frequency reached pupils V.L. (180 pulse/min.) and D.J. (179 pulses/min.) after the third activity – carousel. P.K. reached the maximum pulse frequency (191 pulses/min.) after 6. activity – the wolf and sheep. After 7.

activity – ruler, pupils reached minimum values of pulse frequency P.K. (138 pulses/min.), D.J. (125 pulses/min.) and V.L. (130 pulses/min.).

Total net exercise time during the second lesson was 27 minutes and 10 seconds what is 62 % of total time.

n.m.	Measurement	P.K.	V.L.	D.J.
1.	In the class	83	76	79
2.	After muster	105	92	95
3.	After warm-up	161	133	138
4.	After limbering-up	130	140	145
5.	Before activity 1	128	121	126
6.	After activity 1	183	163	142
7.	Before activity 2	132	127	131
8.	After activity 2	185	162	169
9.	Before activity 3	132	119	126
10.	After activity 3	183	180	179
11.	Before activity 4	132	122	119
12.	After activity 4	162	160	158
13.	Before activity 5	126	124	131
14.	After activity 5	178	168	172
15.	Before activity 6	128	127	125
16.	After activity 6	191	173	178
17.	Before activity 7	152	141	138
18.	After activity 7	138	130	125
19.	After muster	132	111	119

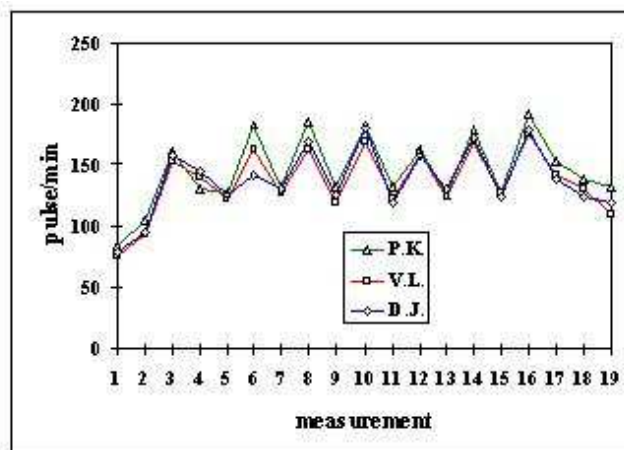


FIGURE 2 Change of pulse frequency during lesson: movement activity badminton 2

TABLE 2 Change of pulse frequency during lesson: movement activity badminton 2

During the third lesson students performed dynamic activities: warm up – game to pretend the sculptures, warm-up with sticks; 1. activity: trucks – tractors, playing in three focused on strengthening the legs, where one holds the hands of two schoolmates and pulls them in space; 2. activity: train – competition of three member teams which hold the hockey stick in the run they overcome slalom track in evading meta; 3. activity: star – game for six-member teams, while one player is in the middle and the others pass through the middle player with the place after pass; 4. activity: speed shooters – the game focused on agility in the multiple shoot with the hockey stick, player who shoots try to hit the stick of co-player in short and then long distance; 5. activity: trot racing – the competition in speed between couples when players run from meta to meta with keeping the ball; 6. activity: moving rails – training aimed at passing in motion for a short distance with the progressive movement forward; 7. activity: charge of the castle – competition in shooting by hockey stick and ball into the indicated area.

The pulse frequency values of pupils connected to Sport tester (M.K., R.P. and S.L.) are recorded in table 3 and figure 3.

During the lesson all pupils reached the maximum values of pulse frequency M.K. (186 pulses/min.), R.P. (189 pulses/min.) and S.L. (193 pulses/min.) after the fifth activity – trot racing. The lowest values of heart rate (activity 1. – 7.) were measured after the seventh activity – charge of the castle, R.P. (155 pulses/min.) and M.K. (150 pulses/min.). S.L. reached the lowest pulse frequency (151 pulses/min.) after the first activity trucks – tractors.

During the third lesson total net exercise time was 24 minutes and 01 seconds what is 52 % of the total time.

n.m.	Measurement	M.K.	R.P.	S.L.
1	In the class	90	82	103
2	After muster	110	102	114
3	After warm-up	172	189	176
4	After limbering-up	136	144	131
5	Before activity 1	132	144	125
6	After activity 1	152	156	151
7	Before activity 2	132	122	119
8	After activity 2	172	133	169
9	Before activity 3	126	132	118
10	After activity 3	180	137	169
11	Before activity 4	128	128	130
12	After activity 4	178	168	159
13	Before activity 5	130	131	126
14	After activity 5	186	189	193
15	Before activity 6	128	142	124
16	After activity 6	152	167	153
17	Before activity 7	121	128	118
18	After activity 7	150	155	158
19	After muster	131	129	135

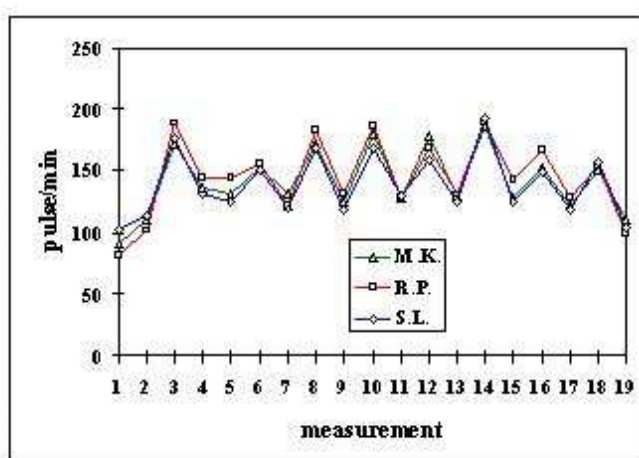


FIGURE 3 Change of pulse frequency during lesson: movement activity badminton 3

TABLE 3 Change of pulse frequency during lesson: movement activity badminton 3

DISCUSSION

The effectiveness of Physical Education lessons focused on badminton was determined by measuring the average exercise time. We involved all movements of studied pupils during lesson to the net exercise time, if they had active nature of physical activity even though some of them were not in accordance with the given task, game or exercise. In our research group was average active exercise time 59.0 %, which corresponds to the results of research of Trunečková (1993) which in her research ranged between 45.44 % and 77.04 %. Michal (1999, 2000) reached similar values in his research when in its studied group the value of active exercise time ranged below 60 %.

During analysis of burden on students in different parts of the educational lessons focused on physical activity offered by us we can state that in the preparation part of lessons was load mostly medium. The values of pulse frequency moved between 136 and 162 pulses per minute. In the main part the load was submaximal or maximal. The values of heart rate moved in the range from 179 to 200 pulses per minute. In the final part the load was mainly mild to moderately weak. The values of heart rate moved mostly in the range of 115 to 149 pulses per minute. The results of individual measurements clearly showed that the maximum pulse frequency values were reached in such activities and games in which the motion content was activities like running with the change of direction. It should be noted that this burden can be only short term. It is necessary to include physical activities after it which return heart rate to the body aerobic work.

In conclusion we can state that we confirmed the assumption that the deliberate inclusion of physical activity badminton in the teaching of Physical Education at the primary educational level helps to increase the effectiveness of sport process from the perspective of the physiological body response on the movement load during Physical Education lessons.

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SUMMARY

Classification of new non-traditional forms of dynamic activities to the physical education lessons at the primary educational level can be helpful in motivation of scholars to dynamic activities. The aim of research was finding out the effectiveness of educational lessons with specialisation at badminton as one of the non traditional dynamic activities forms. The research was realised on the scholars of fourth class of primary level at elementary school. By measuring of pulse frequency and chronometry of three educational lessons of physical education we found out that meaningful classification of badminton dynamic activity to the physical education lessons at the primary educational level helps to increase the effectiveness of physical educational process from the view of organism physiologic reactions on the dynamic load and that active training time fits the results of another research.

THE ATTITUDES OF SECONDARY SCHOOLS' STUDENTS TOWARDS PHYSICAL EDUCATION AND PHYSICAL ACTIVITIES IN VIRGINIA

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KEY WORDS: attitudes, physical activities, physical education, secondary schools' students

INTRODUCTION

The education system in USA considerably differs from our system in Slovakia. There is difference between grades' levels, schooling technique, the attitude of a state towards schools, as well. Children obesity is becoming a serious problem in USA as it is on the rise. In many cases, the only possibility of physical activity is a physical education. This subjects focuses not only on physiological, functional, and locomotive but on psychological and intellectual improvement. One of the main aims of physical education is to create a positive attitude towards physical activities and sport. It could be an important lead when solving the children obesity problem. Based on this information, we have decided to probe into secondary schools' students attitudes towards physical activities in USA.

PROBLEM

Documents about standards of physical education in USA defy from our traditional understanding and notion of similar school documents. Since 1993 till nowadays, American schools have had an ongoing reformation movement concerning the whole school system and all subjects. At first, the role of the teachers' representatives of physical education was not relevant due to a belief that American nation has been dealing with health crisis caused by deficiency or absence of physical activity. The programme of physical education was expected to help find a solution.

Period of a child and youth is believed to be the most optimal time in terms of forming stable attitude towards sport. Therefore, there is an important position of physical education in

the system of education. In the scope of physical education can systematically influence development of motoric skills of children and youth, mainly in developmental period, which is prone to have a sensitive impact on physical stimuli (Macková, 2003).

We have been focusing on the period of maturing, when secondary school students „find“ themselves and primarily on the second part of this period – adolescence. Adolescence is a period of integration of a personality and more conscious relationship towards one's own person, it is also a period of self-formation. Young people form moral principles and norms, seek for appropriate position in both life and society. They meditate about the future, project their life plan, look for meaning of life. Individual does not only perceive himself/herself but creates certain ideas of how it should be (Rybářová, 1977; Michal 2002, 2009, 2010, Görner - Starší, 2001).

Physical activity should be part of our daily routine. It can be said that it is every activity which increases demand on bodily functions in sufficient rate. This activity requires energy expenditure which exceeds level of expenditure in rest, such as work, leisure time activities, and controlled physical education and sport activities as well.

Physical activity can have a global impact on human being, a great biological and humanistic influence on the attitudes towards life, working output, efficient performance, nutrition, behaviour, self-regulation, and personal image (Labudová, 2002).

One of the general aims of physical education and sport education as school subjects is to enable students to familiarize, master and improve correct exercise habits and skills, to improve exercise knowledge, to develop condition and coordination skills, support the development of general performance and fitness level, to increase awareness in the area of healthcare, to acquire knowledge about kinetics of one's body, physical education and sport as well (sport in the concept of any kind of physical activity under European Sport Charter, 1992), to create stable relationship towards physical activity, physical education and sport in connection with their interests and individual needs as a part of healthy lifestyle and an assumption of lifelong care of their health (www.statpedu.sk).

School subject of physical education has a great impact on biological development of an individual as well as creation of a healthy lifestyle. One of the most important tasks of physical education as a school subject is to learn students the most appropriate technique of development of physical skills, ability and physical routine in freetime and outside classes of physical education.

OBJECTIVE

As far as the topic of our research dealing with problems of attitudes of students towards physical activities and physical education in USA, we have been primarily focused on the situation in the forementioned country. Main objective is to determine attitudes of secondary schools' students towards physical education as a school subject in Virginia, USA. Research has been realized within the project UGA Ludvikova.

METHODOLOGY

Research has been carried out at 2 secondary schools in Washington, USA – namely Westfield High School (Fairfax County, Virginia) and Freedom High School (Loudoun County, Virginia).

Number of participants – 40, out of which was 24 boys and 16 girls. Research has been undertaken by means of questionnaire. All questionnaires have been filled and submitted.

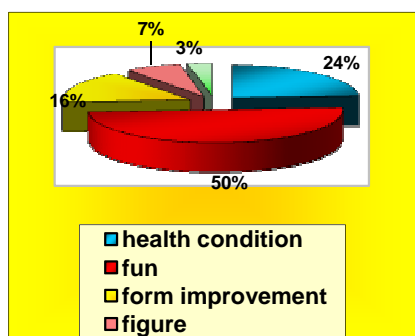
Results have been interpreted in percentages. Sport equipment at every school has been on very high level. At the secondary school Westfield High School (Fairfax County, Virginia) is situated large Westfield sport area, including football stadium, baseball court, softball field, four tennis courts, running track surrounding the area, lacrosse field and multifunctional field. Next to the school is situated swimming pool, although it is not part of the school, it is widely used for swimming lessons - mostly for its swimming teams.

Material and technological equipment of latter school Freedom High School (Loudoun County, Virginia) has been on high level as well. In the school area, there is situated a football stadium, three playgrounds, two gymnasiums, and fitness and a swimming pool which is a part of public recreational area, nevertheless, the school uses it widely.

RESULTS

Our research was aimed at probing the attitudes of students towards physical education and physical activities, therefore we have been primarily focused on attitude of students towards physical activities, reasons for implementation of physical activities and their most favourite physical activities. One of the most important information was to determine students' attitudes towards physical activities. Research proved that students have very positive attitude towards physical activities as the research showed 100% of positive answers.

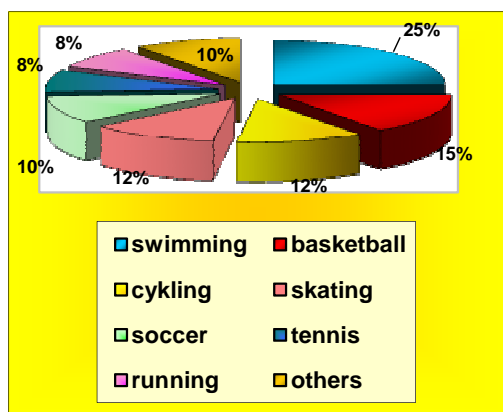
Comforts of these days attract with perks such as internet, television and computer games suppress the students' interest in sport activities, therefore, our findings can be considered very positive.



Picture 1 Reason of doing physical activities for students

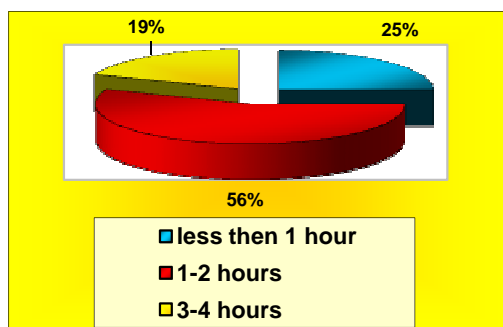
Next, we focused on the motive of students for doing physical activity (Picture 1). Greatly positive and staggering was the answer that 50% of respondents is doing physical activity because of fun. 24% considers it positive for maintaining of a good health condition. 16% of respondents stated that physical activity is the best means of improving physical condition. For 7% of respondents it is means of forming and shaping of a body and remaining 3% stated different reasons.

Based on the acquired information it is visible that secondary school students realize the importance and significance of physical activities for improvement of health and physical condition. They also realize not less important aesthetic feature, shaping of a body which is more important for girls based on the answers in the questionnaire. Fun is inseparable part of physical activity, stress relief, or good mood after any type of physical activity is a good reason for students to participate on sport.



Picture 2 The most favourite physical activities

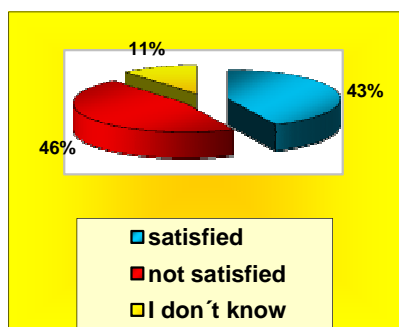
Apart from reasons for physical activities, we have been interested in those activities that are the most popular among students. The most popular (Picture 2) proved to be swimming with 25%. We suppose that the reason for this are the opportunities to integrate into swimming teams. Basketball is the second most popular physical activity with 15%. Cycling and skating prefers 12% of respondents. 10% stated soccer and 8% tennis. 6% of students answered running and 10% stated different types of activities.



Picture 3 Number of hours which students dedicated to physical activities.

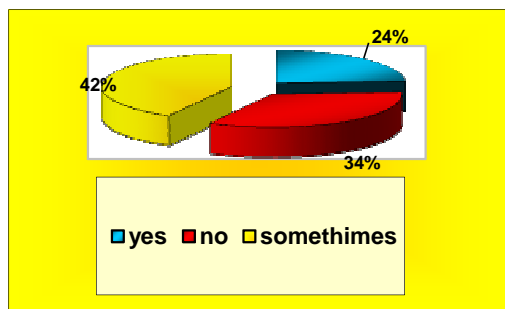
Forementioned questions provided results which proved positive attitudes towards physical activities . Additionally, we have been interested in the number of hours which students spend by doing any type of physical activity lasting for 1-2 hours a day and less than 1 hour a day stated 19% of students. The highest number of hours has been stated by students

who do sport competitively on regular basis on trainings and sport sessions. However, these information have been stated by subjective opinions of students.



Picture 4 The amount of exercise at the physical education classes

Results show (Picture 4) that for 43% of students is the amount of exercise on the physical education classes sufficient. 46% is not satisfied what can be considered as rather negative. This can be caused by the needs of students who want to engage in new and more attractive sport activities, possibly they are members of different sport teams and in comparison with trainings, the school classes' exercise is not sufficient.

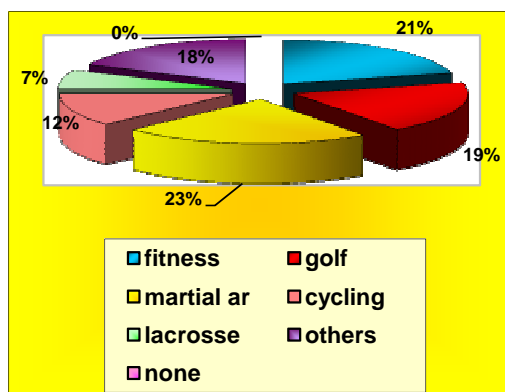


Picture 5 Variety and diversity at the P.E. classes

We believe that each student should find something he/she likes on the classes of P.E. Therefore, we have been surveying whether P.E. classes are sufficiently diverse and the result is visible on the picture 5. For 24% of students P.E. classes are always sufficiently diverse, for 42 % only sometimes and for 34% students are not sufficiently diverse. The scale of physical

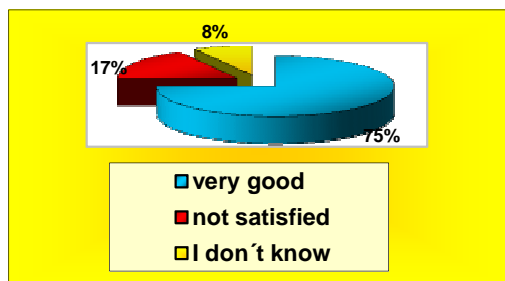
activities which can be used is great and diverse. This can be caused by the membership of some students in various sport teams.

Students could have expressed their suggestions for this problem, and we surveyed what activities would be welcomed as a part of P.E. classes.



Picture 6 New physical activities at the P.E. classes.

In USA students can choose from basketball, volleyball, hand ball, rugby, tennis, athletics, gymnastics, soccer, martial arts, cross country, golf, lacrosse, cheerleading and many more. On that account we have been interested in what types of activities would be welcomed at the selected schools. Results of the research showed (Picture 6) that 21% of students would welcome working out, 19% golf, 23% showed interest in martial arts, 12% cycling, 7 % preferred lacrosse, and 18% other activities. The interest of students in new physical activities was immense, as none of the students have chosen not to add any new activities.



Picture 7 Economic and material equipment of secondary school

The economic measures of P.E. are on a very good level (Picture 7), 65% of students think that economic and material equipment of school is very good, 27% is not satisfied with current situation and 8% cannot express.

CONCLUSION

Research undertaken at the secondary schools in Virginia, USA proved the attitudes of secondary schools' students towards physical activities and a school subject - physical education. Results proved very positive attitudes towards physical education. Furthermore, secondary school' students realize the importance and significance of physical activities for their health. Another positive and staggering answers from questionnaire was a reason of doing sport solely for the purpose of entertainment. 43% of respondents was not satisfied with the amount of exercise at P.E. classes which proves the interest in physical activities. Also 43% of students considers P.E. classes as not very diverse. This can be caused by students' preferences for more attractive and more interesting sports and physical activities, possibly they are members of different sport teams, and in comparison to the trainings, exercise on P.E. classes is not sufficient.

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SUMMARY

In our work we present the results of research carried out by monitoring the 2 secondary schools in Virginia in USA. On our research participate 40 students of which was 24 boys and 16 girls. Students completed questionnaires, which were our predominant method of gathering data. The research was aimed to determine the attitudes of pupils towards physical activity if hours of physical education. From the results we have found very positive relationship students to the physical activity. Pleasing for us was the finding that pupils of secondary schools are aware of the importance and relevance of the implementation of physical activity.

SPARE TIME AND RECREATION PHYSICAL EDUCATION FOR STUDENTS OF PRIMARY SCHOOLS ORIENTED TO WINTER SPORTS

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KEY WORDS: primary school, downhill skiing, cross-country skiing, snowboarding, ski training

INTRODUCTION

The youth and children's fitness and kinetic capacity has been watched since the foundation of institution. Nowadays more than before, there is some aspiration for healthy lifestyle in which the space for kinetic activity creates unsubstitutable part.

The movement for a child represents biological necessity which is in addition, the developing and relaxing activity as well. The child's organism is very sensitive to absence of kinetic stimulus. The movement is connected with child's healthy development and its whole well-being.

What is ignored in the child age, it is big problem to retrieve it in the adult age. A habit for doing exercises regularly, to do some sport; to live healthy is created in the childhood.

Development of child's kinetic and somatic qualities is given by two factors. The first one is predisposition, the second one is the influence of the environment in which the child grows up and lives. The six-year old child becomes a pupil and thus the school attendance begins. More time is devoted to brain and thinking development but their natural aspiration is to run, to jump, to move. Moreover, to relax properly is more important after such a psychic burden as the school duties are.

Both the children and the parents have to divide their time into learning, relaxing and sleeping activities because only the adequate proportion of these above mentioned things can affect the child's kinetic and psychic development.

The education outside the classroom can be understood as the system of spare time activities. Thus its main role is to provide the possibilities for satisfying the needs for the rest and entertainment and for spontaneous activity, for creation of habits and their meaningful fulfilment of free time, and to provide the possibilities to self-development. It is an education process realised in students' free time which is mediated and coordinated to this purpose by certain institutions (Fromel 1999).

The activity planning outside the classroom starts from the pupils' interests and needs by keeping educational principles. The basic presumption for successful influence on the students during the education process outside the classroom is to create different conditions from educational process. The students' presence on education outside the classroom is voluntary, there is no standard specification and it is the student's matter of their free time. It does not lie on the authority of compulsory and punitive means but on the authority of serious attractive and interesting content, forms and methods which must match the student's mental needs, interests, and their self-realization in a spare time.

The general aim for physical education is, as a subject, to enable pupils to develop conditioning and coordinating abilities on adequate level, to adopt and to fix the movement habits and skills, to increase a general kinetic activity and efficiency. Furthermore, to affect and to look after the health and sustained relationship via performing movement activity. Skiing as the movement competence, that is the combination of human being's motoric skills and practical attitudes, has its own position in the framework of educational sphere. These are inevitable for kinetic growth, physical, psychic and motoric development. The actual stage development of sciences such as biomechanics, psychology, pedagogics has contributed significantly to better cognition of skiing motoric aspects and to make the process of education more effective. By the specificity of condition movements and the environment, skiing helps to implant the sense of duty in human-being, their perpetual interest in kinetic movement in the nature (Adamčák 2005; Majherová-Chovanová 2010; Michal 2003).

THE AIM OF WORK

Regular movement activity is irreplaceable "medicament" for good kinetic level, sturdiness of cardiovascular and respiratory system, kinetic and supporting system or metabolism as well. In fact, the minimum of movement activity is better than any kinetic activity. Low and medium movement intensity is more beneficial than long-lasting movement shortage.

The aim of our research is to give analysis of spare time and recreation physical education for primary school students oriented to winter sports.

This research was processed in the framework of Grant Kega 352-006PU-4/2010 “Creation of educational models of spare time and recreational physical education and healthy lifestyle at primary school.” (KEGA 352-006PU-4/2010 “Tvorba edukačných modelov záujmovo-rekreačnej telesnej výchovy a zdravého životného štýlu na základnej škole”.)

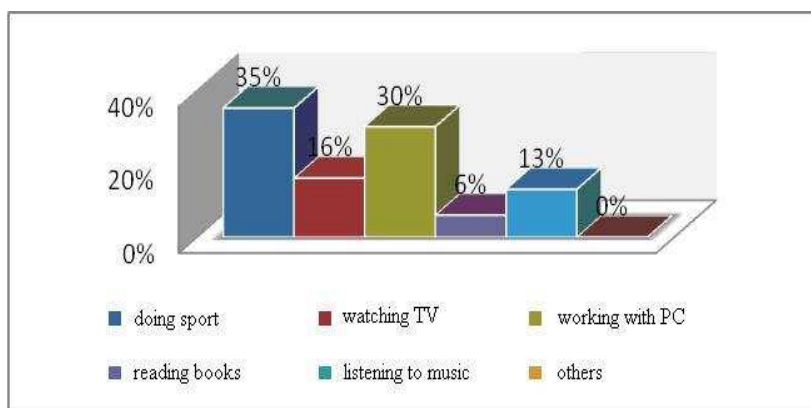
METHODICS OF RESEARCH

The research was carried out at primary schools in Zilina and Martin region. In addition, it was carried out at three primary schools which are situated in the town centre Martin, at two primary schools in Vrutky and at four ones in Zilina. As a result, 234 pupils were placed on this research from chosen primary schools.

We used a questionnaire with half-opened question forms for the second stage primary school students.

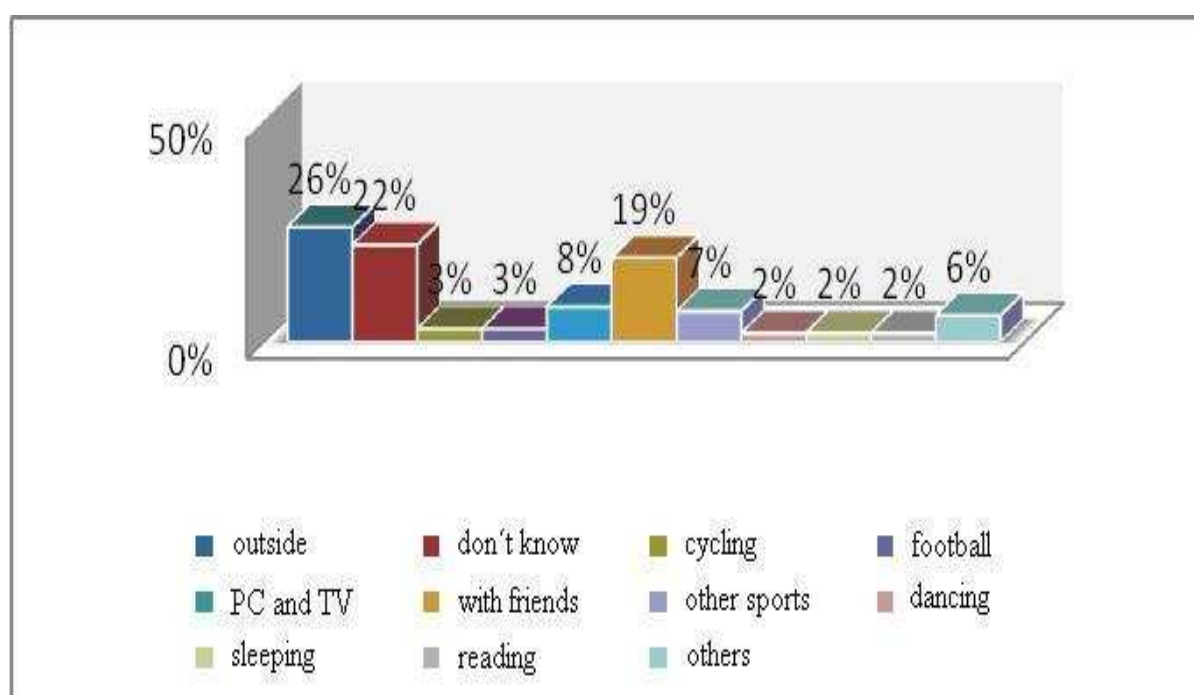
RESULTS

The results of this research can show us what the students mainly like doing in their spare time. In the picture 1, we can see that 83 (35%) respondents devoted to a sport activity in their spare time. The next 108 (46%) ones devoted to watching TV and working with PC, 43 (19%) dedicated to reading the books and listening to the music. So as we can see from the research, the pupils devoted to watching TV and working with PC inadequately what has not had a positive effect on their health development. This finding should help to physical education teachers to appeal more and to emphasise on doing movement activities mainly because of their health significance.



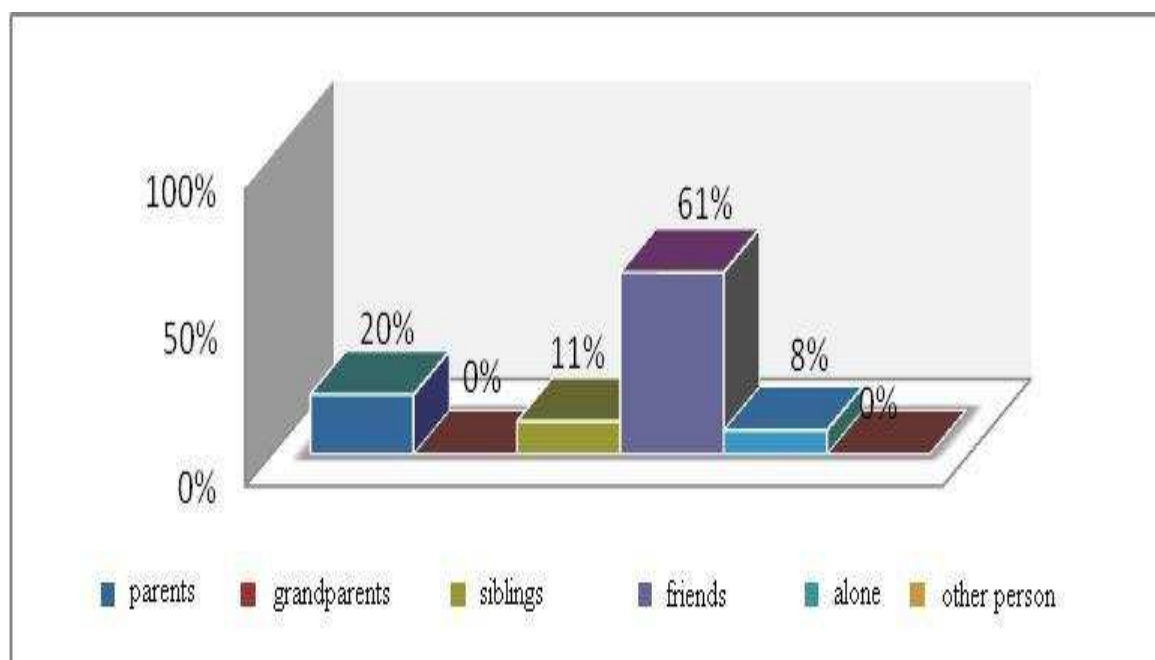
Picture 1 Students' free time activities

In the next question, we tried to find out, by what means the pupils should use more spare time. In the picture 2, we can see eleven - the more often giving activities from the whole number seventeen. Firstly, the most respondents 62 (26%) wrote that they would go out with their friends. Secondly, 51 (22%) students wrote that they did not know how they should have used more spare time. Thirdly, 45 (19%) pupils should have devoted more to their friends unless 19 (8%) students would have watched TV or work with PC. Finally, some from the next activities should be taken into account as well. The number 15 (6%) is not itemized but its name is "others". This include the activities such as modelling, drawing, brigade, go-carting, etc.



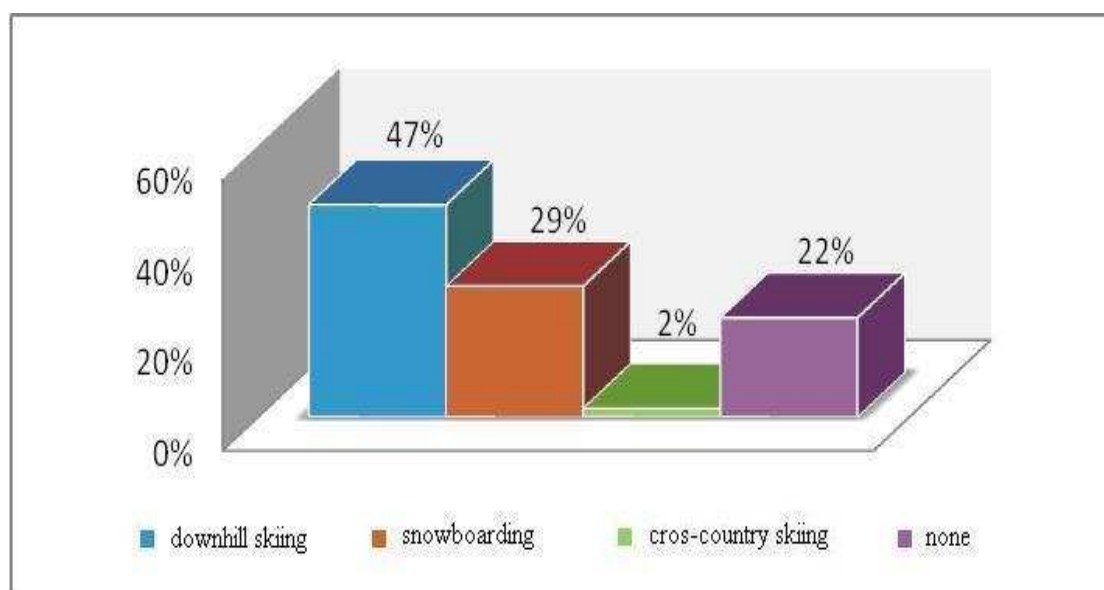
Picture 2 Students' free time usage

In the picture 3, we can see the people with whom our students like spending their free time. Firstly, the most students 143 (61%) like spending their free time with friends. Secondly, 48 (20%) ones with their parents. Finally, 18 (8%) ones spend their free time alone. As a result, we can see that lots of students are affected by their friends with whom they have spent most of their free time.



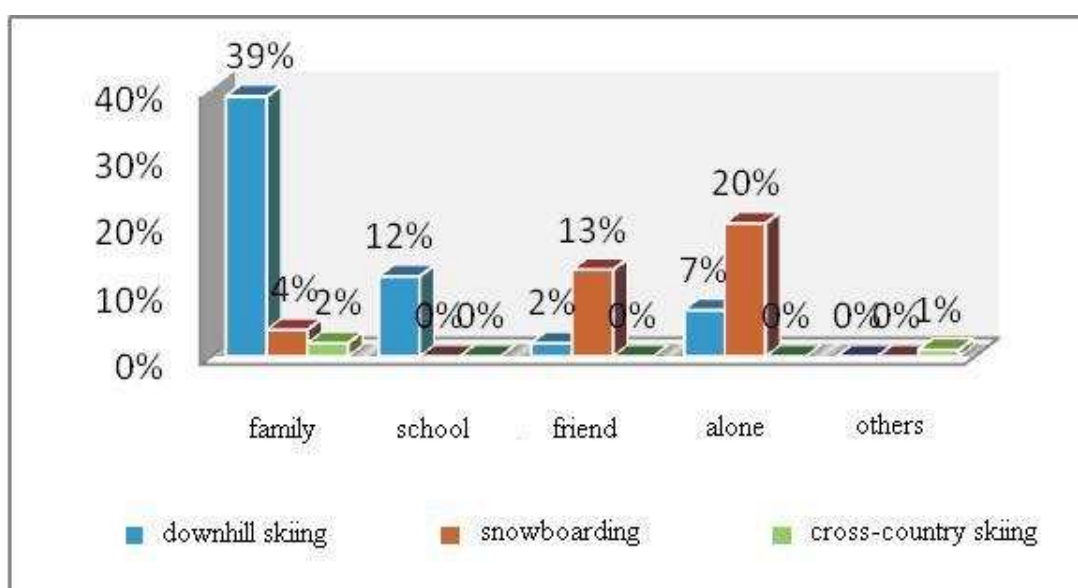
Picture 3 The people with whom the students spend the time most often

We also found out on the sample of 234 pupils, which from chosen movement activity is performed in their free time. See picture 4. Firstly, 124 (47%) of the most respondents devoted to downhill skiing. Secondly, 75 (29%) students devoted to snowboarding. Thirdly, only 6 (2%) students devoted to cross-country skiing. Finally, 58 (22%) students did not devote to any chosen sport activity. However, it is still the positive finding for physical education teachers.



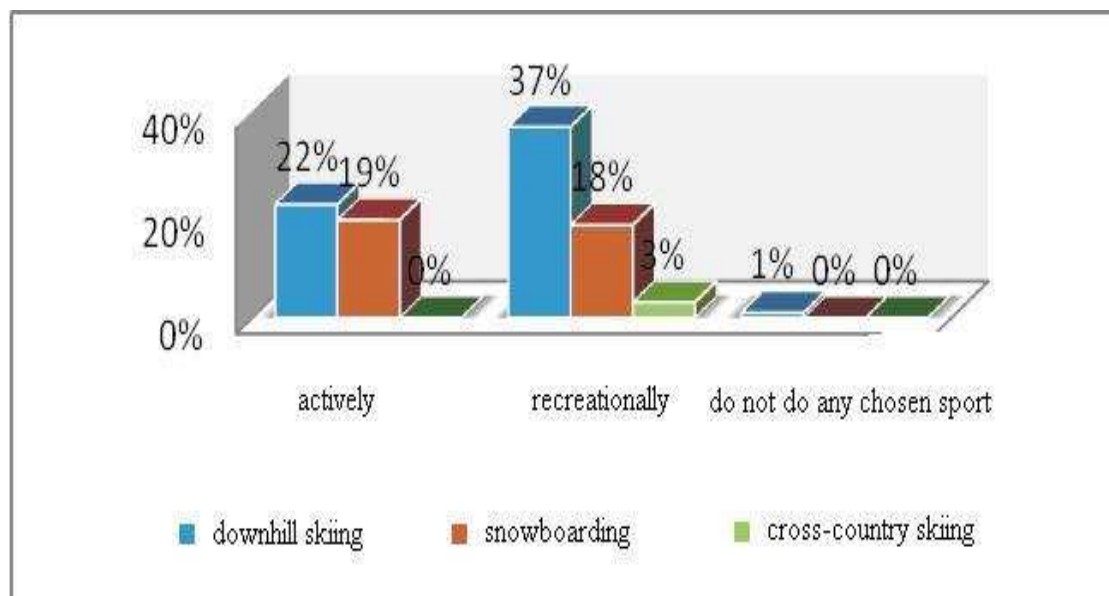
Picture 4 The kinds of winter movement activities in their free-time

In the next question, we wanted to find out who contributed to the primal interest for given movement activity. As we can see in the picture 5, mainly the parents have led their children 91 (45%) to the given sport. However, only 25 (12%) students wrote that it had been the school. Furthermore, we can see from this picture that family 79 (39%) and school 25 (12%) have mainly contributed to the beginnings at downhill skiing. On the other hand, the friend 27 (13%) and the students on their own 40 (20%) have contributed to the beginnings at snowboarding. To sum up, we can claim that downhill skiing is more family sport and snowboarding is preferred among the friends.



Picture 5 Who contributed to the chosen winter movement activity

In the picture 6, we can see the activity of performing students' movement activities. Firstly, 84 (41%) respondents have performed this sport activity and 118 (58%) have done it recreationally. Only 3 (1%) have not devoted to any chosen sport. Finally, we can say that the results should be very positive for physical education teachers.



Picture 6 Students' winter movement sport activity

CONCLUSION

The results of our research have shown that there is still something what is important to develop from the side of the schools, or the teachers, parents and students as well. The major students' interest (46% students) in performing skiing and snowboarding in their free time is a positive finding. It is still necessary to increase the students' interest in these sports. Finally, it should motivate them for searching these movement activities in their free time. As a result, we should try to help and increase the interest in kinetic activities and thus to improve the youths mental and physical development.

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SUMMARY

The aim of our research is to give analysis of spare time and recreation physical education for primary school students oriented to winter sports.

This research was conducted at four primary schools in Zilina region and at five primary schools in Martin region. In our research, we have searched in particular, the number of students and teachers who have been motivated by the relationship of their ski training and safety. We have found out that from 234 students 124 ones (47%) have carried out downhill skiing as the leisure activity.

ANALYSIS OF SWIMMING TRAINING EFFECTIVENESS IN THE IMPROVING SWIMMING COURSE

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KEY WORDS: improving swimming course, effectiveness of swimming training, swimming courses, 3rd grade pupils of Považská Bystrica elementary school and surrounding areas, swimming competence

INTRODUCTION

Swimming is without any doubt one of the healthiest and most frequent sports. Apart from active swimmers other sportsmen are devoted to swimming mainly as a part of their training regenerative process. It is used as an additional sport activity. Swimming is also vastly used as a part of after-surgical recovery therapy, and for physically as well as psychologically ill people. Swimming competence is an important physical education activity that prevents fatal injuries caused by drowning. It is important to realize that swimming incompetence mostly jeopardizes the children's and youth's safety (Tokošová, 2009; Michal, 2002).

ISSUE

In the structural system of swimming training the improving swimming course was an independent part till the 90's. Before 90's swimming was divided into basic swimming, improving course and sport swimming (Hoch, 1983, Filčák – Laurencová 1989). Changes in the society brought changes in the structure of swimming trainings.

Improving swimming course is the last organizational unit of the first phase of a long-term sport preparation – basic swimming.

In real life we can see two different directions in improving swimming course:

1. Improving swimming course focused on public
2. Improving swimming course focused on sport swimming.

Improving swimming course focused on sport swimming has a greater extent; it should last 1.5 – 2 years. Its aim is not only improving the technique of all swimming styles but also preparing the body for greater training load in the following phases of sport training. Its further aim is to enable a prospective sport swimmer to swim 400 m, to achieve the basic skills in all swimming techniques, flip turns and starts (Macejková, 1987). Within the framework of a long-term preparation of a swimmer it is recommended to finish this phase by the age of 11. Various methods are used to improve and form a technique in swimming (demonstration, explanation, analysis of the technique of under-water strokes, imitation exercises aground, etc.).

In our research we concentrate on the improving swimming course for public. It is a continuation of the basic swimming training organized mainly by schools, leisure time centres, urban sport clubs, etc. It is being realized as a part of the basic swimming training because many pupils who underwent preparation swimming training (they have achieved basic swimming skills and their swimming competence meets the requirements for the improving swimming course) are able to continue to improve and deepen their swimming skills. In this case the pupils in the basic swimming training are divided into basic swimming training and improving swimming course.

In the literature there is a certain inconsistency in opinions as for the requirements for the improving course (swimming distance from 100-400m) (Macejkková, 1997). The aim of the improving swimming course is to deepen and enlarge the swimming skills and techniques of swimming styles (Ružbarský, Turek, 2003).

From the point of view of effectiveness of the motor learning the optimal age is 10 years. For this reason we made research in the 3rd grades of elementary schools where the age of pupils is 9-10.

AIM

Every kind of improvement for a person, not only physical but also spiritual, is to their benefit and is important not only to them but also to the whole society whose part they are. The starting point for stating the aim for our research was a contemporary level of knowledge in the fields that are elaborated in details in literature dealing with swimming methodology as well as personal experience in swimming training. The aim of the research was to analyse the effectiveness of swimming training in improving swimming courses at elementary schools.

METHODOLOGY

The data analyzed were taken during the academic year 2008/2009 in the swimming pool in Považská Bystrica during the swimming courses organized in the morning hours by the city organization Mestské športové kluby Považská Bystrica (MŠK PB) (City sports clubs).

All elementary schools in Považská Bystrica, some schools from surrounding areas and 4 schools from cities Rajec and Bytča participated in the research.

The swimming trainings begin by dividing pupils into two groups: basic and improving group. The criterion for the improving group registration was basic swimming skills and 25 m distance of swimming. The reason for such categorization was the fact that some pupils had already participated in the preparatory swimming training and it would be redundant for them to learn the basic skills again (in case they have them). These pupils can continue in improving the skills already gained. In our research we analyzed the groups of pupils from the improving swimming course.

Pupils under study did specific tests of swimming skills at the beginning and the end of the improving swimming course. The improving swimming course takes place during one week, every day, twice 90 min with a 15 min break, which is total of 15 hours. The number of pupils per instructor is 20.

In order to find out the effectiveness of the improving swimming course we prepared the following test battery:

TESTING METHODS

a) Swimming skills tests before the improving swimming course:

- Jump in water (pullout to the edge of the pool without help)
- Taking a puck out of water
- Distance in metres swum by their own style (25 m – criterion for the enlistment in the improving swimming course).

b) Swimming skills tests after the improving swimming course:

Distance in metres swum by their own style:

- less than 50 meters
- 51 - 100 meters
- 101 - 199 meters
- 200 meters

RESULTS

The data gained by testing and evaluation are presented according to individual schools. In our research we were interested in knowing how many pupils of elementary schools took part in swimming trainings and how many pupils out of all participating were enlisted in the improving swimming course.

Table 1 Numbers of pupils of 3rd grade in Považská Bystrica participating in swimming trainings, percentage of participation and swimming skills tested.

Elementary schools in PB	Number of pupils in the 3 rd grade	Number of pupils in the swimming training	Participation in %	Number of pupils
				Improving course
Nemocničná	43	35	81%	14
Školská	80	67	84%	23
Stred	22	18	82%	6
Slov. Partizánov	96	75	78%	20
SNP	42	34	81%	9
Slovanská	39	32	82%	10
Rozkvet	40	36	90%	13
Cirkevná	19	18	95%	8
TOTAL	381	315	82,7 %	103

We managed to involve all 8 elementary schools in Považská Bystrica, 9 schools from the surrounding villages and 4 schools from nearby cities in our research. The total number of pupils involved was 517 of which 315 pupils were from urban schools in PB and 202 pupils from surrounding areas. The percentage of pupils of urban schools participating in the project was 82.7%, and of nearby schools 82.4 % (table 1 and 2).

Table 2 Numbers of pupils of 3rd grade in the vicinity of Považská Bystrica participating in swimming trainings, percentage of participation and swimming skills tested.

Elementary schools surrounding PB	Number of pupils in the 3 rd grade	Number of pupils in the swimming training	Participation in %	Number of pupils
				Improving course
Pov. Teplá	20	16	80	3
Plevník	22	21	95	3
Štiavnik	16	12	75	2
Brvnište	18	15	83	3
Papradno	15	13	87	3
Bytča (1)	22	17	77	4
Bytča (2)	21	14	67	3
Prečín	15	13	87	3
Domaniža	19	16	84	3
Rajec (1)	22	19	86	6
Rajec (2)	21	18	86	5
Mariková	19	15	79	4
Jasenica	15	13	87	2
TOTAL	245	202	82,4%	44

Of all elementary schools in Považská Bystrica 103 pupils were enlisted in the improving swimming course (table 1). From nearby schools 44 pupils were enlisted in the improving swimming course (table 2).

Total number of pupils enlisted in the improving swimming course was 147 (table 1 and 2). The majority of pupils enlisted were from the Church elementary school in Považská Bystrica (44 % of all participants) and from Nemocničná elementary school (40 % of all participants).

We consider the results as very good. The finding results in our opinion substantially exceed our expectations mainly for pupils attending urban schools in Považská Bystrica. Of 315 pupils of 3rd grades who came to the basic swimming training 103 were enlisted in the

improving swimming course. This fact may be due to better availability of a swimming pool for urban children, better transport means and higher interests of parents in this kind of physical activity and consequent support for their children.

Effectiveness of the improving swimming course in 3rd grade of elementary schools

The improvement phase is unlimited in practice. The most important point is that a swimmer should from the very beginning learn the correct swimming technique without mistakes which are difficult to remove later. The sequence of lessons is very important in the improving swimming course. Although the lessons are relatively independent they follow preceding ones in contents and make a base for the following ones. When improving the swimming technique various technical exercises are widely used on different levels of a swimming skill. The use of these technical exercises requires rich teaching experience. It is very important to follow the principles of sequence and adequacy. The result of an improved swimming technique is then better technical performance of swimming styles as well as motor relaxation of the limbs, decrease in the number of strokes per distance, synchronization of breathing and work of arms, and swimming longer distances in shorter times.

The results of tests for effectiveness (distance in metres) of the improving swimming course are given in table 3.

By our experience and research we can confirm that the result of 15-hour training is mainly improved technique of swimming styles. Improved swimming technique results in better confidence of pupils – pupils are able to swim longer distances without getting tired. 134 (91 %) children out of the total number 147 finished the improving swimming course. In the course there were 36 (27 %) regular swimmers (at least twice a week) (table 3). One of the requirements when testing the effectiveness of the course was to be able to swim 200 m. This requirement was met by only 34 pupils out of 134 who finished the improving course. The effectiveness can be also judged from the following point of view: all pupils enlisted in the improving swimming course improved their swimming distances as well as swimming techniques of three swimming styles. For this reason we think that the improving swimming courses are well instructed and are effective. This is confirmed by teachers' satisfaction and positive feedbacks from the public and parents, which are received by the responsible authority.

Table 3 Results of the swimming skills tests in the improving swimming course

Elementary School	Number of pupils in the improving course	Number of pupils who finished the course	Number of regular swimmers	meters swum			
				less than 50 m	50 - 100 m	100 - 200m	200 m
Nemocničná	14	14	6	4	2	2	6
Školská	23	21	5	8	6	2	5
Stred	6	5	2	2	1	1	1
Slov. partizánov	20	18	3	6	5	4	3
SNP	9	9	5	4	0	0	5
Slovanská	10	9	2	2	4	1	2
Rozkvet	13	10	4	3	0	3	4
Cirkevná	8	8	4	3	1	1	3
Pov. Teplá	3	3	0	3	0	0	0
Plevník	3	3	0	3	0	0	0
Štiavnik	2	1	1	0	0	0	1
Brvnište	3	1	0	1	0	0	0
Papradno	3	3	0	2	1	0	0
Bytča (1)	4	4	0	1	2	1	0
Bytča (2)	3	3	0	2	1	0	0
Prečín	3	3	2	1	0	0	2
Domaniža	3	3	0	3	0	0	0
Rajec (1)	6	6	0	4	2	0	0
Rajec (2)	5	5	0	2	2	1	0
Mariková	4	3	1	1	1	0	1
Jasenica	2	2	1	1	0	0	1
TOTAL	147	134	36	56	28	16	34

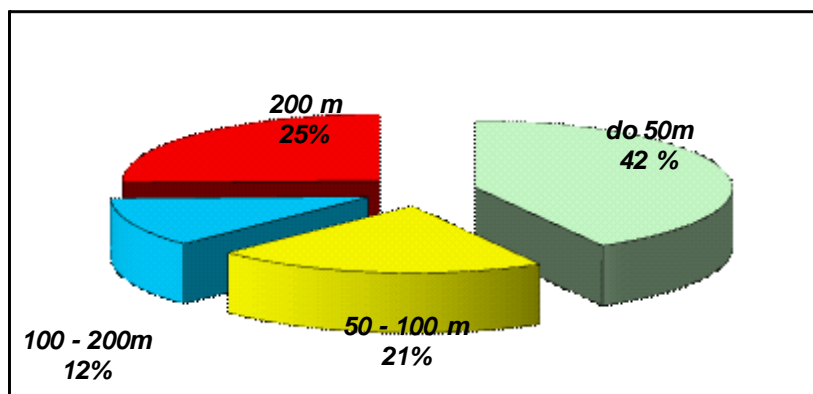


Figure 1 Numbers of meters swum in the improving swimming course of 3rd grade pupils in elementary schools in Považská Bystrica

CONCLUSION

Teaching swimming is an educational process which has its phases and each phase has its specific tasks. Learning how to swim should not be a life-time trauma for a human. For this reason swimming instructors should be professional trainers or teachers of swimming. The sooner a child enters this process the simpler for him/her as well as their parents since it is a well acknowledged fact that the younger a human is the less afraid of water he/she is and he/she is not able to evaluate the risks and dangers and is more easily manageable.

In our research we focused on investigating the effectiveness of improving swimming courses from the point of view of requirements by authors dealing with the issue. Although some of the pupils who were enlisted in the improving swimming course they did not reach the aim of swimming a 200-m distance by one swimming style they were able to improve the technique in three swimming styles. By this research we want to point at the fact that effectiveness of trainings cannot be considered only by swimming distance but it is important to consider the swimming technique improvement in individual styles, decreased tiredness after swimming, better attitude and enjoyment in swimming.

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SUMMARY

The aim of the research was to analyse the effectiveness of swimming training in improving swimming courses at elementary schools. The improving swimming course takes place during one week, every day, twice 90 min with a 15 min break, which is total of 15 hours. The number of pupils per instructor is 20. Although some of the pupils who were enlisted in the improving swimming course they did not reach the aim of swimming a 200-m distance by one swimming style they were able to improve the technique in three swimming styles.

THE LEVEL OF THE OVERHEAD PASS TECHNIQUE AT BASIC SCHOOL

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KEY WORDS: volleyball, overhand pass, technical mistakes

INTRODUCTION

In this paper we present results of starting period of the grant task UGA called as Reengineering volleyball teaching methods on the second degree of basic schools where we found out the most common mistakes in the technique of overhead passing. The overhead pass is any pass, which is contacted above the player's head. This pass is usually arranged as the second contact made in setting up an attack (<http://www.y-coach.com/volleyball.html>). It is the basic passing the ball very often used in the play and it is used mainly at passing balls swinging highly and fast above the ground, where a player can contact the ball above the forehead (<http://www.thinkquest.org/en/>). The mentioned technique is started teaching at school physical education as the first. The reason is that it is possible to realize more possibilities of individual passing like pass and service (Zapletalová, 1997). We agree with authors Zapletalová and Přidal (1996), that there is no other more exact way to obtain the correct height and speed of passing than using fingers.

THE PROBLEM

The control over the learning encompassment in the recent sport plays on the second degree of basic schools recommends the School Education Programme (SEP) to the 7th school year and the plan from the 8th school year. In general, we can understand the evaluation in physical education as well as in sport games as the process of recognition and assessment of pupils. In some cases it is necessary to get certain data before the start of teaching a sport game like the level of development of special motional abilities or development of game activities (Peráček et al, 2004). We agree with authors (Kasa, 2006; Lehnert, Zháněl, 2006)

who point to the fact that the diagnostics is an important part of management of an educational process in sport games at detection of performance pupil's assumption. The other authors (Mandzák, Popelka, 2009) realize diagnostics and analysis of the most common mistakes as very important factor which enables to teachers of physical education to eliminate technical failures by choosing suitable exercises. In volleyball we can use several ways for evaluation like specialized evaluation using valuation scale or tests (Zapletalová, Přidal, 1997). The other authors (Nemec, Kollár, 2009) present diagnostic techniques like observation, appraisal and testing. In the past the authors (Vojčík, 2006; Popelka, 2009) were dealing with diagnostic techniques of individuals for game activities.

THE GOAL

The goal of this paper is to evaluate the level of the technique at pupils of 8th school year of the study for overhead pass by both hands in volleyball and to put attention to the most frequent mistakes and the frequency of their presence.

On the basis of the goal we have based following tasks of research:

1. to analyse and evaluate the technique of pupil's overhead pass from a video record
2. to find out the most common mistakes placed in individual phases of motion
3. to create the conclusions and recommendations for practice

THE METHODOLOGY

We realized the analysis of the basic technique of overhead pass by both hands in volleyball in school year 2010/2011 in February to find out the level of obtained abilities from volleyball at the beginning of thematic set of the sport game. The video camera was placed in the side in the distance of 7 m from a player. The qualitative evaluation of overhead pass technique used specialized evaluation with the usage of valuating scale according to Popelka (2009) consisting of nine ways practicing technique, which we evaluated during **working**:

- **arms**: pass is not over the forehead, pass is made by a palm, fingers are all together, a ball is thrown, an incorrect position of elbows during pass, pass in incorrect height,
- **lower extremities**: straight extremities during pass, side-step before pass,
- **movements and body positions**: backward bend during pass, bounce after pass, pass a ball in movement.

The observed group consisted of 40 pupils attending the 8th year of study at basic school in Klačno in Ružomberok.

THE RESULTS

The percentage share of mistakes made by pupils during arms movement in overhead passing by both hands is shown in Fig. 1. On the basis of obtained results we can say that the biggest mistake in arms movement we recorded at 70% of pupils by incorrect position of elbows during passing. The mentioned mistake is typical in volleyball of beginners mainly with the position of elbows places very closely to each other. The opposite extreme is when elbows are far away from each other. The incorrect position of elbows causes incorrect contact of fingers to a ball and it disenables creation of so called “volleyball basket”.

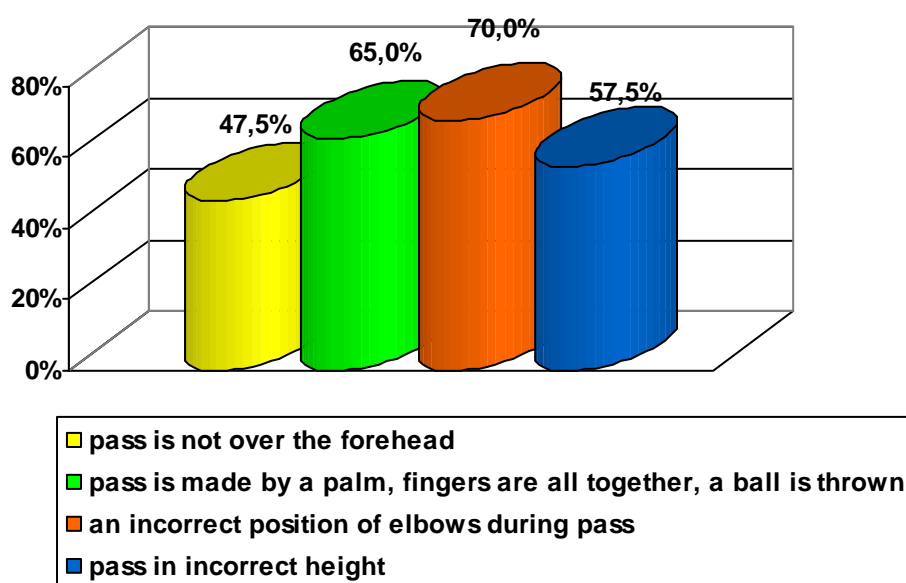


Fig. 1 The percentage share of mistakes made by pupils during arms movement

We think that just this is the reason of the second most common mistake when pupils pass the ball by a palm or fingers closely to each other. Both mistakes have the reason in incorrect contact of fingers to a ball what is not in accordance with rules and such pass is called “double”. In 57,5% we found out mistakes at pupils where a ball is left over a chin and a trunk. The ball passed this way is classified as a move and it is also not in accordance with volleyball rules.

The percentage share of mistakes made by pupils during legs movement in overhead passing by both hands is shown in Fig. 2. In the analysis of legs we recorded straight legs during passing in 55%. It means that pupils cannot use the basic position during overhead passing and mentioned mistake cases rigid movement of the whole body.

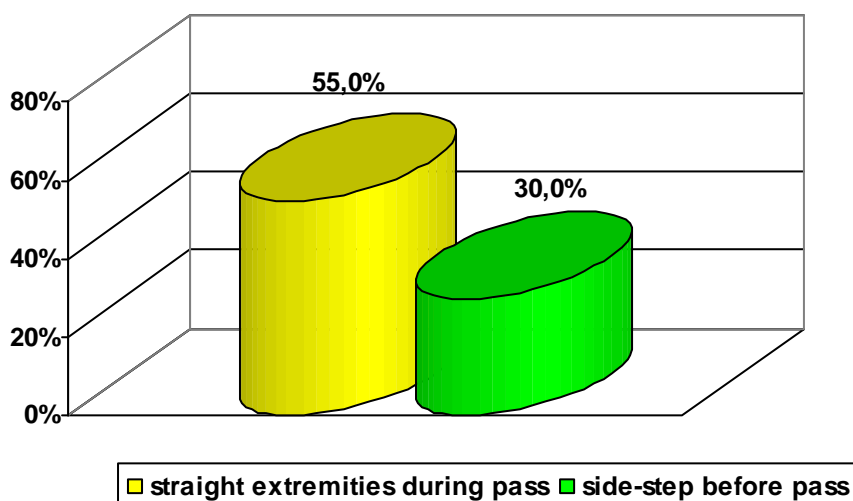


Fig. 2 The percentage share of mistakes made by pupils during legs movement

We think that the second mistake called side-step before pass follows the first one because pupils stand during passing on straight legs and cannot modify an incorrect body position during passing by legs movement.

The percentage share of mistakes made by pupils during movements and body position in the technique of overhead pass by both hands is shown in Fig. 3.

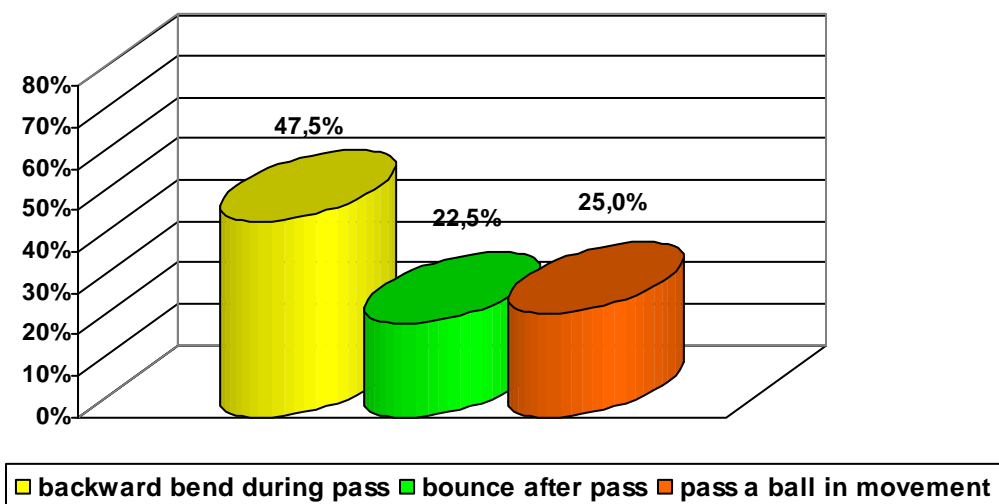


Fig. 3 The percentage share of mistakes made by pupils during movements and body position

Using analysis of the technique movement and body position during passing we can say that 47,5% of mistakes occurred when pupils are in the time of passing in backward bend and these mistakes are closely connected to insufficient legs work. When pupils stand on straight

legs using backward bend of a trunk they modify place of a ball pass. We think that next reason is incorrect estimation of pupils (height, length and direction of a ball).

CONCLUSION

The analysis of the technique overhead passed by both hands we got several conclusions. The most common repeating mistakes we recorded during movement of arms when pupils did not have the correct position of elbows during pass, they were not able to create so called “volleyball basket” and left the ball over a chin or a chest. The fourth most common mistake was the pass made by straight extremities. On the basis of results we think that work of legs and body movements are connected very closely. If a pupil is not able to take the correct position during pass he/she tries to modify the mistake by work of a trunk.

Finally, we can summarize the biggest amount of mistakes pupils made by arms and when we speak about overhead pass by both hands we can say that it is a serious mistake in the technique. That is why we would recommend teachers during training this technique to pay higher attention to work of arms before, during and after passing the ball and training so called “volleyball basket”.

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SUMMARY

The goal of this paper was to evaluate the level of the technique at pupils of 8th school year of the study for overhead pass by both hands in volleyball and to put attention to the most frequent mistakes and the frequency of their presence. Author deals with frequency technical mistakes in volleyball technique – overhead pass. Analysis by the videogram shows most mistakes in hands movement. We found out that in 70% pupils have got an incorrect position of elbows before and during pass. 65% students didn't know cup their hands around the ball and used correct passing technique. Also we found out in 55% increased number of mistakes in ready position.

ANALYSIS OF MOTIVATION FACTORS OF STUDENTS ON PHYSICAL EDUCATION LESSONS

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KEY WORDS: inducement, teaching process, physical education, evaluation methods

Among the important activities in the life of man is physical activity. More and more often highlight the need to develop various forms of physical activity, such the simplest prevention of diseases, stress, and particularly offer area for self-fulfilment. The health benefits of physical activity in the development of the young generation we can not discuss. Physical exercise helps the healthy development and help with many health problems. Physical education as a major means of locomotive development of young people plays an important social function. Effectively develop the physical, moral and mental qualities of the individual. Physical education teaches human endurance, fitness, ability to overcome obstacles. With long-term cultivation of physical activity creates a correct mode of living.

PROBLEM

The success of each teacher's pedagogical work depends on the degree of pupil motivation. Motivate any human activity, hence its teachings may be what is important to him, what attributes and what has value for him particularly great personal importance. Thus, if the teacher find the optimal approach to motivating students to learn, must necessarily find out through personal knowledge of individual pupils, what is the hierarchy of motives and needs of the pupil.

Motivation is an important factor in the learning process, which can significantly help to resolve contradictions between the demands of teaching and learning prerequisites, which has a pupil.

Consequently, it is obvious immanent need to study the qualitative indicators of student motivation to learning and based on information define pedagogical conditions and means by

which the teacher is able to perform successfully set formation of desirable themes and increasing motivation of pupils (A. Ewiaková, 1998).

One element that is significant in the view motivation of the pupil in the lesson is the content of education (curriculum) and aim which have in the system of basic elements equal, mutually supportive position. Through them, is solved the application relationship between content and objective, it is how to work with content in order to achieve the goal, respectively to achieve the goal through the content (K. Laszlo, 2004). It can be notes that by the assessment the teacher adopt the attitude on the activities of students, analyze their activity, so on the basis of corrected their work and pupils' work (feedback). Evaluation significantly affects the work motivation of students (J. Kuss, 1992).

Motive is understood as a force that encourages activity that leads to the goal. Motive is thus an internal cause of external behaviour.

There are two kinds of motives, which are interconnected:

- General motives, namely needs associated with the whole personality and life of the pupil,
- Motives that are based on learning (K. Laszlo, 2004).

In the educational process the extent of activities affect pupil, which directs and regulates their activities in accordance with their needs, interests and beliefs. Role of the teacher is to create the conditions which will bring learner's orientation with the requirements of the educational process.

OBJECTIVE

The aim of our work is to identify and analyze motives of learning high school students in physical education lessons, as well as methods and preferences of individual sporting sector within the structure of school physical education.

H1: We assume that high school students who participated in our research has a greater motivational force rather positive than negative assessment.

H2: We believe that boys will prefer the movement activities in a team as opposed to girls who will prefer the movement activities carried out individually.

H3: We anticipate that the majority of secondary school pupils will consider physical activity on lessons of physical education useful for good health and quality of life.

H4: We believe that there are differences in terms of motives evaluation preference in teaching methods for implementation of physical activity and structure of sport interests on lessons of physical education from the perspective of gender.

H5 We assumes that more than half the students perform physical activity besides of physical education.

METHODOLOGY

As a method of obtaining empirical data, we chose the questionnaire method. The questionnaire consists of 30 questions and deal with their most effective form of motivation of physical activity and also identifies the most frequent method of learning on the lessons of physical education. The research sample consisted of girls and boys of 1 - 3 grade grammar schools and secondary technical schools in the city of Banská Bystrica. On research involves 442 respondents, of which were 265 girls and 177 boys. Research was conducted in the May 2005.

RESULTS

Questionnaire Part A contains eight items that focused on teaching methods best suited for hours of physical education and implementation of physical activity.

Table 1 Ways of implementation and evaluation of physical activity on physical education lessons for girls in secondary schools by attraction %

1 Most girls prefer a practicing physical activity step by step 77.35

2 Most girls enjoy physical activities by free choice 76.60

3 Best idea for the training of physical activity can make girls by demonstration 73.58

5 Most girls have experience that their teacher sometimes communicate with the theoretical aspect of physical activity 65.28

6 Girls prefer to carry the physical activity in a pair 50.18

7 Most girls will delight assessment mark 44.52

8 Most girls hurt assessment mark 43.77

By observation the implementation process and evaluating the implementation of physical activity in physical education lessons by attractiveness we see more differences than the correlation between responses of girls and boys (Table 1 and 2). For girls in second place with 76.60% of the responses and boys in the first place with 63% are interested in the implementation of physical activity according to free choice.

Table 2 Methods of evaluation and implementation of physical activity on physical education lessons for boys at secondary schools by attraction %

- 1 Most boys enjoy physical activities by free choice 63.27*
- 2 Most boys will delight assessment mark 62.71*
- 3 Boys prefer to perform physical activity in the group 59.88*
- 4 Most boys hurt assessment mark 59.88*
- 5 Best idea about exercise make boys with training by demonstration 57.06*
- 6 Most guys have experience, that their teacher is always informed of the theoretical aspect of physical activity 54.23*
- 7 Most boys in the training of physical activity preferred phased training 53.10*
- 8 First, the boys learn the motion activity in games and competitions 37.85*

The best idea in the physical training activities by demonstration will do girls 73.58% and boys 57.06%. Preference of these responses in girls is in third place and boys in fifth. Most girls will enjoy assessment by mark 44.52%, for boys it is 62.71%, among girls is this assessment in seventh place and the boys have this assessment a greater preference value, in terms of placing the order, and is on second place. By the next evaluation is mark applied again as a motivational factor that hurt the most, and at 43.77% for girls, located on the eighth and 59.88% boys in fourth place (Tables 1 and 2). In other questions referred girls and boys different alternative answers in a dominant preference.

Questionnaire in the second (B) section contains nineteen questions with three alternative answers questions and three multiple-choice questions. By questions, we detect the response to the way of learning and performance of physical activities in physical education lessons, what they most impedes the progress in physical activities which methods are most often encountered in teaching physical education and which physical activity is preferred by thematic units.

Table 3 Evaluation of the girls' responses - secondary school female students on method of teaching physical education %

- 1 Praise, encouragement, a good mark usually gives joy and encouragement 90.94*
- 2 The most common is the number of pupils appropriate in lessons of physical education 80.37*
- 3 Most students are on the TV lessons sometimes active, sometimes passive 77.73*
- 4 The teacher uses a warning and reprimand when necessary 76.60*
- 5 For most girls reprimand by teacher and a bad mark will discourage and frustrate 72.83*
- 6 Most girls believes that the hours of TV didactical. tech. is used partially 69.50*
- 7 Most girls suggested that the interest on the motion activity partly offset by different performance 68.67*
- 8 For most girls is learning pace suitable 66.03*
- 9 Most girls considered physical activity for good quality of life very useful 65.66*
- 10 Most girls think that physical activity on TV lessons is interesting 64.90*
- 11 Most girls are interested in implementation of physical activity partially 58.49*
- 12 Girls in the classroom curriculum considers TV to be reasonably difficult 58.11*
- 13 Girls do physical activities outside the classroom unorganized 58.11*
- 14 Most report that the teacher's demeanour on TV lessons is nice and tactful 56.98*
- 15 Girls mentioned most often that the time on TV lessons expires very 56.98*
- 16 The most girls enjoy lessons of TV sometimes but sometimes not 56.60*
- 17 Practicing a new element is for most girls difficult to teach 51.32*
- 18 Most states that the method of TV teacher practice is suitable 45.28*
- 19 Most of the girls at the failure does not worry 36.22*

According to the evaluation of the data found in Tables 3 and 4 we can conclude that praise, encouragement and good mark, which gives pleasure to the girls ranked first with 90.94%, and for boys is that response on the second place with 66.10%. Reprimand and a bad mark will discourage girls and disgust at 72.83% and is in fifth place. Boys reprimand and a bad mark considered rather as a stimulus for further work in 46.32% and is located in sixteenth place. From these findings we can assume that for girls and boys of secondary school have a greater motivational value of praise and good mark against reprimand and bad mark assessment. Consistently ranked on third place show girls 77.73% and boys 66.10% that

are on physical education lessons sometimes active, sometimes passive. For girls 58.49% is physical activity on physical education lessons partly interesting, also for boys 54.23% and in agreement, this response is found in both genders in eleventh place. Physical activity deemed useful to the health 65.66% of girls and are located in ninth place and 52.54% boys and twelfth place.

Table 4 Evaluation of the boys responses - secondary school students on the classroom method of teaching physical education %.

- 1 For most boys is learning pace suitable 66.10*
- 2 The most often praise and good mark gives joy and encouragement 66.10*
- 3 Most boys believes that they are on TV lessons sometimes active, sometimes passive 66.10*
- 4 Most boys believes that the teacher uses a reprimand when necessary 59.32*
- 5 Most boys claim that practice of the new exercise makes them no difficulties 58.19*
- 6 The most common curriculum is considered on physical education lessons as a reasonable difficult to 57.62*
- 7 boys mentioned most often that the time on TV lessons expires very fast 57.06*
- 8 Most argue that on TV lessons is an adequate number of students 55.93*
- 9 Most boys believes that on TV lessons is equipment sufficiently used 55.36*
- 10 Most boys perform physical activity outside the classroom and unorganized 54.8*
- 11 Most boys think that physical activity is on the TV lesson interesting 54.23*
- 12 Most boys claim that the TV lesson is useful for health 52.54*
- 13 Most states that the method of TV teacher practice is suitable 49.15*
- 14 Boys states that the implementation of physical activity is very interested in 48.02*
- 15 Most report that the teacher's demeanour on TV lessons is nice and tactful 47.45*
- 16 A lot of boys considered a bad sign and reprimand as a stimulus for further work in 46.32*
- 17 The most boys enjoy lessons of TV sometimes but sometimes not 45.76*
- 18 different performance is not a breaking moment by interest in the physical activity 42.93*
- 19 In the case of the failure most guys try to improve working out the mismanagement of the element and show that it is only a partial failure 41.80*

According to data from the responses to the question 28 which we prepared (Tables 5 and 6), we were able to identify the most common causes that prevent students of secondary

schools to make progress in physical activities for physical education lessons. Girls in the first place 31.69% mentioned fear of ridicule from classmates, for boys is this cause in third place with 23%. Boys in the first place 31.63% stated that they have no barriers to progress in physical activity. Just for girls 27.54% and 29.94% for boys in second place is non-systematic of own training.

Table 5 Evaluation of girls' responses to the question according to frequency: "The successful progress in physical activity will prevent"%

- 1 c) the fear of ridicule from classmates 31.69*
- 2 a) non-systematic of own training 27,54*
- 3 b) unnecessary jitters 24.90*
- 4 e) an unreasonable burden on the physical activity 15.47*
- 5 g) I have no inhibitions in progress 12.07*
- 6 d) fear of ridicule from the teacher 10.56*
- 7 f) insufficient explanation of the curriculum 6.79*

In fourth place again girls 15.47% and boys 15.25% presents as a reason that prevents them in the successful progress of the disproportionate burden in physical activity. Unnecessary jitters, as one reason is among girls 24.90% on the third place, 13.55% for boys in fifth place.

It is gratifying that last up to two places for girls and boys appears the fear of ridicule from teachers and inadequate explanation of the curriculum, and teacher and thus his work is only a minimum level possible reason for the progress of students in physical activity.

In Question. 29: "Which method is most often used by your teacher on physical education lessons (table 7.8), girls frequently mentioned training method 28.13% and boys 38.19% mentioned gaming methods. These responses are based and also agree with the replies to previous questions in part A, where the girls indicate that the new motion learn soon to work under the guidance of the teacher and the boys learn in games and competitions.

Table 6: Evaluation of boy responses according to frequency to the question: "The successful progress in physical activity will prevent" %

- 1 a) I have no inhibitions in progress 31.63*
- 2 b) Non-systematic in own training 29.94*
- 3 c) The fear of ridicule from classmates 23.72*
- 4 e) An unreasonable burden on the physical activity 15.25*
- 5 b) Unnecessary jitters 13.55*
- 6 f) Insufficient explanation of the curriculum 8.47*
- 7 d) Fear of ridicule from teachers is 5.08*

Table 7 Evaluation of frequency responses of girls to the question: "Which methods are most commonly used by your teacher for physical education lessons" %

- 1 d) the method of training 28.13*
- 2 e) a method of improving 26.41*
- 3 c) gaming methods 24.90*
- 4 a) motivational competition 23.77*
- 5 b) creative methods 14.33*

Table 8 Evaluation of frequency responses of boys to the question: "Which methods are most commonly used by your teacher for physical education lessons" %

- 1 c) gaming method 58.19*
- 2 d) the method of training 46.32*
- 3 e) a method of improving 37.85*
- 4 a) motivational competition 32.76*
- 5 b) creative methods 11.86*

Method of improving for girls is 26.41% in second place and for boys 37.85% in third place. In the fourth and fifth place only in reverse order in both groups were placed the motivational competition and creative methods. This finding shows that teachers in physical

education lessons to a lesser extent give space for students to demonstrate their creative abilities in physical activities.

Question 30 records preferences of responses of preferred physical activities for physical education lessons by thematic units (Tables 9, 10). Girls in the first place 59.62% prefer swimming and boys, as we anticipated, sports games 85.87%. In both groups, the second place there are winter sports, girls and boys 35.09% with 50.28%. In third place in girls placed games 27.92% and 30.50% of boys swimming. Gymnastics girls placed in fourth place 20.75% and boys placed it at the last seventh place with 20.33%, while for boys in fourth place appears weight training 25.42%, but among girls, which is understandable, it is weight training up in last place with 2.64%.

Table 9 Evaluation of frequency responses of girls to the question: "Which physical activity are preferred at the physical education lessons by thematic units" %

- 1 d), swimming 59.62*
- 2 e) winter sports 35.09*
- 3 c) sports games 27.92*
- 4 b) 20.75 gymnastics*
- 5 g) hiking 12.07*
- 6 a) athletics 8.67*
- 7 f) weight training 2.64*

Table 10 Evaluation of frequency responses of boys to the question: " Which physical activity are preferred at the physical education lessons by thematic units " %

- 1 c) sports games 85.87*
- 2 e) winter sports 50.28*
- 3 d), swimming 30.50*
- 4 f) weight training 25.42*
- 5 a) Athletic 24.29*
- 6 g) hiking 22.03*
- 7 b) gymnastics 20.33*

Athletics and tourism are the fifth and sixth in popularity for girls and boys, only in reverse order, the girls prefer hiking 12.07% and 24.29% boys athletics. We believe that in these physical activities is relatively highest physical load and requires sufficient volitional qualities by which they must overcome some discomfort occurring mainly in developing motor skills, which are particularly dominant in athletics.

CONCLUSION

Our work has focused on identifying themes affecting students in physical activity, most often used teaching methods and structure of sport interests in school physical education in secondary schools.

Confirmation of the first hypothesis we document the results in group of girls and group of boys. For girls praise and good mark cause most joy and encouragement, and overall assessment is that argument in the first place. Reprimand and bad mark girls disgust and discourage from further physical activity and is in fifth place. For boys, the evaluation using commendation and good mark is also a good sign for the top tier (the second place). Reprimand and a bad mark appears only at the point sixteenth, but with the difference that such an assessment of their physical activity does not deter, but on the contrary, it stimulates their further work in the improvement in physical activity in which they had negative evaluations. Here we can observe the difference in the mentality of girls and boys, and hence their different responses to negative evaluation.

Hypothesis number two, we confirmed only partially. Boys, so we thought, prefer the implementation of physical activity in a team, girls didn't carry out physical activity individually, but in pairs. This claim to us in both groups illustrates the result found in Question. 28 that the successful progress of physical activity most girls prevent fear of ridicule from their classmates, therefore, don't prefer the implementation of physical activity with others. For boys, this claim is in third place. It occurs most frequently in boys answer that they have no barriers to progress in physical activities as well as in girls is non-systematic of their own preparations in the second place.

The assumption in the hypothesis three we confirmed as girls as boys consider the motion activity in physical education lessons useful for good health and quality of life. To continue and contribute to the consolidation of this view, students need to occur in significant changes in the management of school physical education and as already mentioned in

particular the completion of the concept of physical education in schools. In setting goals there are vital aspects, which are based on understanding of preventive health and physical education, are focused on education and physical education in the field and provide an individual experience of the activity with the requirement of personal responsibility for their own health. It began a shift of preferences informative functions of physical education to emphasize the formative process functions. Contents are classified into non-traditional physical education activities, which accept pupils' inclination to them. The content incorporates not only skills and abilities, but also knowledge and attitudes, interests, value system.

We partially confirmed the hypothesis number four, where we assume that there are differences between girls and boys in preference assessment of motives, in the methods of implementation of physical activity and structure of sport interests in school physical education.

In the evaluation, girls and boys most pleases mark, it is preferred more then the word evaluation before the evaluation team of fellow students as well as praise from parents. Bad mark hurts them the most. Although many teachers of physical education advocate assessment of physical activity through marks, still shows the mark is a legitimate motivational factor in school physical education. If we want evaluate pupil who does not have prerequisites for achieving good results in physical education, but reflects the commitment to achieve at least the average improvement, has knowledgeable and knows the benefits of physical activity to health, then the classification of pupils' loses its meaning. From another perspective, however, is the present state of human consciousness in our society is important to evaluate and classify student in physical education continue to be, because for many who do not realize the necessity of physical activities for physical and mental health of humans, is a sign-in such a way to at least in minimal time involved in such activities. Therefore, if we do not classify, the importance of the subject compared with other items will fall even more. If a man will emerge in the future and appreciate the benefits of this course, then we will be able to abandon the evaluation in the physical education and evaluate simply in words.

Significant difference observed in terms of gender preference in teaching methods in physical education lessons. Girls prefer more to practice physical activity step by step but the boys prefer a more comprehensive method. New physical activity girls better learn under the guidance of a teacher, but boys will acquire a new activity by the movement in games and

competitions. Boys show at the lessons of physical education more autonomy and initiative, which appears to stem from the increasing interest in physical activity.

We also noticed the difference in preference of different types of sporting activity. Girls prefer swimming and boys playing sports games. At current trends, students lose interest in some hitherto preferred types of curriculum, on the other hand, show interest in new species. Therefore, the innovative curriculum of physical education in our country should be lead to significant changes in curriculum content. The varying interests of students and the impact of physical education activities required for the harmonious development of pupil's personality is a requirement for different and varied curriculum content. The current trend in physical education is starting to respect the need for inclinations of students to specific content and focus of physical education (boys - fitness, sports, recreation, girls - aesthetic, fitness, recreation). Respect the interests of pupils in full is not possible because the school physical education can not be merely a means of compensation and recreation, but excluding the acquisition of motor skills must develop basic motor skills and pupils work on their emotional and intellectual development.

We also confirmed the fifth hypothesis, that more than half of the students perform locomotive activity beyond physical education. We found that girls and boys performed largely unorganized locomotive activity, which can only be a seasonal pattern, is irregular, and therefore is not for development of motor skills and strengthening of health sufficient. But according to our research, as proposed by Bebčáková (2000), there are still many students who do not perform physical activity outside the lessons teaching physical education. Filling leisure time by passive rest is typical for contemporary youth, in particular, the excessive television viewing etc. Preparing for school, which also belongs to the common activities of students, may be one of the reasons that prevent pupils to carry out sports activities outside the classroom. We believe that addressing issues related to improving student performance at school will increasingly gain in importance. For boys and girls from secondary schools may be the reason why they don't practice sport outside classroom the lack of nearby sports facilities. In our view this is to some extent due to lack of material security. Although we realize the complexity of this problem. We think that the lack of provision of sports facilities outside the classroom by the school can be compensated. We propose to increase the efforts of school leaders, and particularly physical education teachers in the field canvassing and promotion of sports among students. Based on this draft recommendation to increase the

insufficient number of sporting events at school. The success of similar school-related activities by us is in the attractiveness and the proper selection of any sporting activity.

As a final conclusion, we can note that with our work we succeeded at least partly contribute to enhanced understanding of motivational factors affecting secondary school students in the implementation of physical activity in school physical education, teaching methods as well as on the structure of sport interests within thematic units

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SUMMARY

Aim of our work was to identify factors affecting student motives to sports activities, the most frequent teaching methods, as well as the structure of sporting interests in school physical education in secondary schools.

THE IMPACT OF NON-TRADITIONAL GAMES ON THE CHANGES IN THE LEVEL OF COORDINATION ABILITIES OF PRIMARY SCHOOL PUPILS

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KEY WORDS: coordination skills, non-traditional games, motor skills, tests of coordination abilities, input testing, output testing

INTRODUCTION

The period of younger school age (from 6-7 to 10-11 y.) is often called „the period of pre-puberty“ or, more often, „golden age of motoricity“ since it is most suitable for the development of basic skills of a child. The childhood age is a vital period and the marked mobility in 6-8-year-old children is accompanied by even a surplus of movements. At school, playing games remains the most important engagement for a child. Prevailing are constructive-creative games with an effort to employ fine motorics and with a more marked movement content. Another trend is the one from thematic game to games with more fixed rules. Thanks to coordination prerequisites the course of movement has been improving. This development results in harmonization of the whole movement (Halmová – Šimonek – Veisová, 2007). Unlike spontaneous unlimited movement prior to the beginning of compulsory school attendance, children are now limited as to their movement and have to sit calmly behind benches (Halmová, 2005). One of the results, besides the threat to correct body posture, is the forced attenuation of motorics, accumulation of „undischarged movement instinct“, which is manifested by a „special state of excitement“. Differentiation of the cerebral cortex, its layers and cells reaches the level, when functional prerequisites for the activity of the second signal system have already been created. Dynamism of nerve processes is developing, however, processes of irritation prevail over the ones of attenuation. This is the way of explanation of the increased mobility, when every activity is accompanied by an amount of accompanying movements originating also during motor learning (Turek, 1999).

As stated by Drlíková et al. (1992), in this period sensing is intensively developing. Analysers have been formed already, but their sensitivity is increasing during the developing process.

- Visual acuity between ages 6 and 15 increases by 60%.
- Sensitivity of colours differentiation increases to 45%.
- Hearing sensing rapidly increases under the impact of musical education.

Sensing of children depends on stimuli, in which the child lives. Its course is effected by emotions, subjective attitudes and interests. Under the influence of school, sensing becomes more and more accurate and systematic intentional process. At this age develops selectness of sensing – the child gradually differentiates certain properties of objects and neglects others. According to Doležalová & Lednický (2002) the development of attention of pupils in their early school ages plays a very important role. It decides on the quality of other cognitive processes, and thus also on successfulness, or unsuccessfulness in the sphere of learning.

Childhood is considered a sensible period for the development of the whole complex of coordination abilities. Kinesthetic-differentiation, rhythm, balance, spatial-orientation, the ability of training and others show a massive development already at the age of 7 to 11/12 years. In connection with the development of coordination abilities improves also the course of movement. At this period movements of children begin to be fluent, while children learn how to chain individual phases of motion and in the course of practical exercises spatial and temporal structures are fixed. This development results in a harmonious movement course (Turek, 1999).

Central nerve system controls and coordinates the activity of motor system, analysers and other systems of the organism, which participate in the movement, as well as psychic functions, which are activating factors upon performing exercises (motivation, senses, willpower), as well as developing the conscious cognitive activity. By improving coordination, sensoric, motoric, physiologic and psychic functions of CNS improve the abilities of orientation, differentiation of rhythm observation and further prerequisites. It is accruing from the above mentioned facts that plasticity of cerebral nerve processes and fine muscle sense play a very important role in these prerequisites (Sýkora, 1990).

In conclusion we can sum up that coordination abilities form prerequisites of fast, good quality and persistent acquisition of motor habits and skills, sport technique and for effective adjustment of body motions to the changing internal and outer conditions. They allow for more economical utilization of energy potential acquired during the development of fitness.

Development of coordination abilities in the early ages is closely connected with an intensive course of natural biological growth of the organism, i.e. with cognition and utilization of sensitive periods.

The most favourable ages are between 6 and 9 years. It means that it is easiest to reach the development of these abilities just in younger school age, when there comes to an accelerated increase in the level of individual coordination abilities (Šimonek, 2002).

Table 1 Sensitive periods in the development of coordination abilities (Šimonek, 1999)

Coordination abilities	Age
Kinesthetic-differentiation	6 - 9 years
Rhythmic ability	8 - 11 years
Reaction speed	8 - 11 years
Balance	8 - 12 years
Orientation ability	9 - 14 years

Ljach (2007) stated that boys aged up to 12 years and girls up to 11 years reach 75% of the terminal level of coordination abilities.

When planning physical preparation (fitness and coordination), it is necessary to take into account the fact that coordination maturity arrives earlier in girls by 1 to 1.5 years than in boys. This means that the most suitable period for the development of coordination abilities in boys will be prolonged (Šimonek, 1998).

Whether the development of coordination abilities will be effective or not depends on the selection of means, coordination exercises, as well as methods of their development, extent and frequency of loading (volume, intensity, coordination complexity, psychic demandingness). Coordination abilities can be developed only by a methodical, long-term active motor activity (Šimonek, 1999).

We can consider the means for the development of coordination abilities according to Šimonek (1999) all movements, or motor activities, which are for the pupil new, unusual and have high coordination demandingness, are carried out in changing conditions under full consciousness. If the pupil acquires the exercise perfectly, carries it out almost automatically, without consciousness, the exercises ceases to be effective means of development of coordination abilities. Coordination exercises can have general, special, but also sport-specific character. We can use also movement games and sport games.

Almost all exercises applied in general and special preparation in sport, if they require overcoming of coordination difficulties, belong among the means of development of coordination abilities of a sportsman. If the exercise becomes ineffective, it should be a little bit modified, or replaced by another one. Novelty, unusualness and the conditioned degree of coordination difficulties are the determining criteria upon selecting motor tasks in the development of coordination abilities.

For the development of coordination abilities at the lower grade of elementary school it is necessary to use in a larger degree movement games. By means of them we can better motivate pupils and thanks to the zest of games and natural competitiveness they will go in for more volume of exercises.

Movement games have a great meaning for the correct physical and motor development. At this age they have a team character. The course of movement is markedly improved by coordination prerequisites. There comes to the chaining of individual movement phases. Spatial as well as temporal structure are thus fixed. Movement and sport games, along with game-like forms belong among basic and most important means of the teacher. Physical and psychic strengths can be manifested during a game (Chovanová - Majherová, 2010).

The main starting point upon selecting movement games is that the movement content corresponded to the motor ability to be developed, and that the extent of loading was adequate to age and forwardness of the practicing pupils (Chovanová, 2009).

AIM OF WORK

The aim of research was to verify effectivity of the selected non-traditional movement games on the level of coordination abilities of pupils at the first grade of elementary school.

MATERIAL AND METHODS

The main research method used was a two-group parallel pedagogical experiment realized in natural environment of gym. School, in which we carried out experiment, disposes of a well-equipped gym and material provision. For the measurement of the level of selected 6 coordination abilities in both Experimental and Control groups were used testing and measurement. We used motor tests according to Hirtz (1985):

Test 1: *Running through a bench with 3 turns – T1*

Test 2: *Stopping the rolling ball – T2*

Test 3: *Keeping the movement rhythm – T3*

Test 4: Shuttle run – T4

Test 5: Precision broad jump - T5

Test 6: Precision throw from seated position – T6

Object of our observation were pupils of 2nd grade of an Elementary School in Nitra. Experimental group consisted of 19 (12 female and 7 male) pupils of 2nd B class (average age = 7.682474 y.; average height = 132.89 cm, average body weight = 33.21 kg) and the Control group consisted of 17 (9 female and 6 male) pupils of 2nd A class (average age = 7.853647 y.; average height = 133.18 cm, average body weight = 32.94 kg). Input tests were carried out between December 20th and 21st, 2010, output tests between April 13th and 14th, 2011. Experimental factor was a set of special exercises and movement games focusing on the development of individual coordination abilities of pupils. Experimental program was applied in opening and main parts of P.E. lessons during 15-20 minutes. The program was carried out twice a week, always on Tuesday and Thursday. Pupils in the Control group went through a regular content of P.E. lessons.

For the assessment of the data were used non-parametric statistic methods in order to find out statistic significance of mean values – *Wilcoxon's t-test* and *Mann-Whitney U-test*

We also made use of logic methods of *comparing, generalizing, analysing and synthesizing*, based on which we formed conclusions and recommendations for the practice.

RESEARCH RESULTS AND DISCUSSION

Results are presented in tables 2-7 and figures 1–12.

Based on the statistic data we can state that statistically significant changes between the input and output data occurred in control as well as experimental group. More significant change can be seen in experimental group, where the program of non-traditional games was applied. This significance was proved also by Mann-Whitney U-test, which showed a statistically significant difference between input measurements in individual groups, but also after the experiment in favour of experimental group. Experimental group improved by 4.39 % and control group by 3.59%. Pupils showed interest in games and participated with pleasure in them. Among the most popular became „Kings and Queens“ and „I will not be a stone“.

Table 2 Running through a bench with three turns

Running through a bench with three turns						
Experimental group				Control group		
Input		Output	Difference	Input	Output	Difference
x	21,96	20,99	0,96	21,87	21,08	0,70
me	21,21	20,15	0,88	21,54	20,61	0,58
max	27,13	26,90	2,81	27,13	25,31	2,03
min	18,59	17,99	-0,04	18,99	17,95	-0,60
S	2,588848329	2,61836798	0,6552126	2,4522602	2,401776	0,6390607
%	4,39			3,59		
Wilcoxon's test:			Experimental group		Control group	
Wilcoxon's statistics [W]			189		143,5	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			154,5		166	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

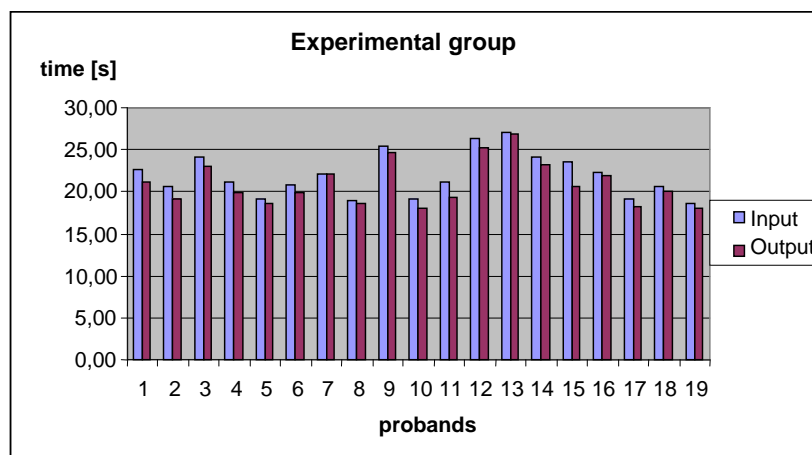


Figure 1 Input and output values in experimental group in test Running through a bench with three turns

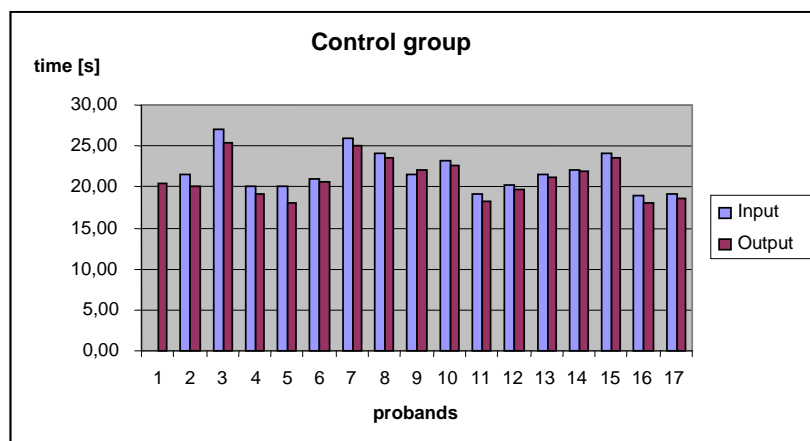


Figure 2 Input and output values in control group in test Running through a bench with three turns

Table 3 Stopping the rolling ball

Stopping the rolling ball						
Experimental group				Control group		
Input		Output	Input	Output	Input	Output
x	172,56	158,16	14,40	166,84	159,88	6,96
me	171,77	157,97	13,80	165,99	159,43	6,56
max	200	182	18	190	186	4,00
min	143	141	-2,00	142	139	3,00
s	2,588848329	2,61836798	0,6552126	2,4522602	2,401776	0,6390607
%	4,42			2,58		
Wilcoxon's test:			Experimental group		Control group	
Wilcoxon's statistics [W]			188,5		149	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			174,5		197,5	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

We can state that both experimental and control groups improved in reaction speed. It was proved by Wilcoxon's test, which showed statistically significant differences between the measurements in both groups. The fact that differences in experimental group are greater proves our expectation that the program of exercises will improve coordination.

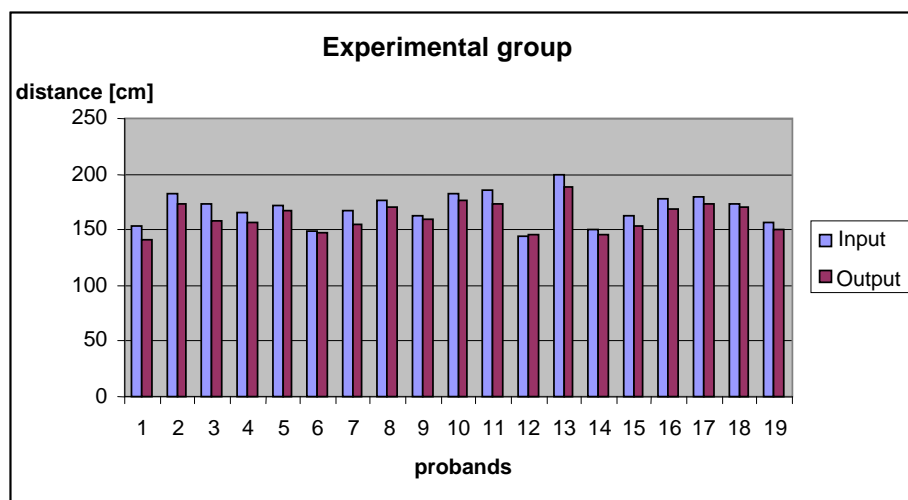


Figure 3 Input and output values in experimental group in test Stopping the rolling ball

This was proved also by Mann-Whitney U-test, where the difference between inputs and outputs were in favour of experimental group. Experimental group improved by 4.42 %, while control group by 2.58 %. Based on this we can state that more significant increments were found in experimental group, where games were applied. Pupils were fascinated by the hunting game „Fox“ and pair exercises.

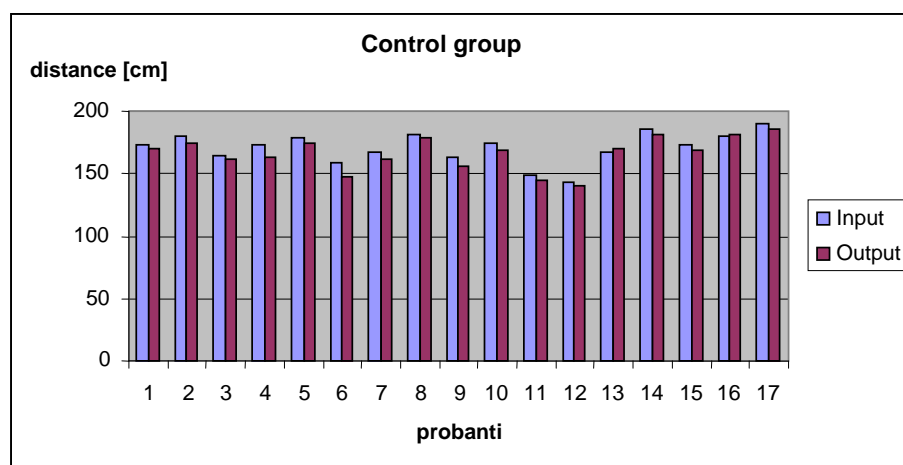


Figure 4 Input and output values in control group in test Stopping the rolling ball

Statistically significant differences were recorded in both groups. Based on Wilcoxon's test we found out more significant differences between input and output measurements in experimental group, which gives us a proof of the effect of special program on rhythm abilities. This is also proved by Mann-Whitney U-test, which proved that in both tests we found out statistically significant differences, but in favour of experimental group. We can state that our program of non-traditional games effected the level of rhythm ability of pupils

in experimental group more markedly. The improvement in experimental group was by 10.99 %, in control group by 6.36 %.

Rhythmic games were very popular with pupils. Girls liked mainly the „Hopping ring“, since they like rope-skipping. Positive responses recorded also motion-to-music exercises accompanied by rhymes and songs.

Table 4 Keeping the movement rhythm

Keeping the movement rhythm						
Experimental group			Control group			
	Input	Output	Input	Output	Input	Output
X	2,14631579	1,9105263	0,2357895	2,3411765	2,1923529	0,148823529
Me	2,16	1,89	0,18	2,31	2,05	0,09
Max	3,65	3,48	0,58	3,25	3,14	1,17
Min	0,98	0,63	-0,04	1,54	1,14	-0,08
S	0,73389532	0,7571839	0,1826142	0,5372835	0,6276298	0,273058656
%	10,99			6,36		
Wilcoxon's test:			Experimental group		Control group	
Wilcoxon's statistics [W]			185		146	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			186,5		198,5	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

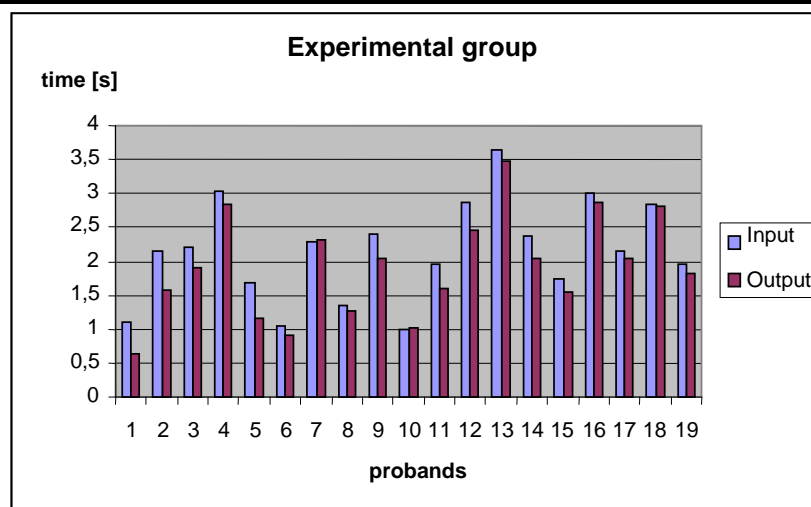


Figure 5 Input and output values in exp. group in test Keeping the movement rhythm

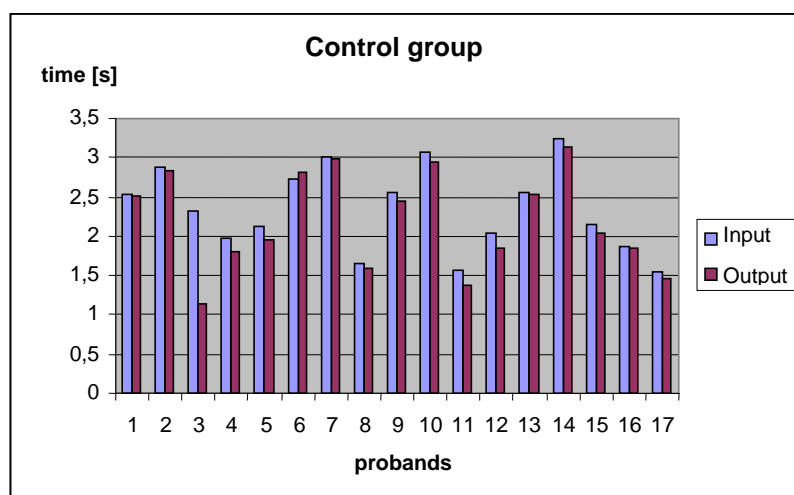


Figure 6 Input and output values in control group in test Keeping the movement rhythm

We can state that the results of tests showed a significant improvement in both groups, which is proved by Wilcoxon's test. Larger differences were observed in experimental group, based on which we can state that games positively influenced the level of spatial orientation ability of pupils.

Table 5 Shuttle run

Shuttle run						
Experimental group				Control group		
	Input	Output	Input	Output	Input	Output
x	14,87	14,06	0,81	14,88	14,57	0,31
me	15,38	14,39	0,86	14,93	14,95	0,40
max	16,95	16,28	2,13	16,18	16,02	0,58
min	11,51	10,60	-0,65	12,51	11,93	-0,42
S	1,4860157	1,512586	0,5418956	1,2261027	1,2271958	0,2651207
%	5,46			2,05		
Wilcoxon's test:			Experimental group		Control group	
Wilcoxon's statistics [W]			186		140	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			159		191	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

This is proved also by Mann-Whitney U-test, which showed that between input measurements in individual groups are statistically significant differences in favour of experimental group. Control group improved by 2.05 %. Experimental group improved more significantly - by 5.46 %. Pupils liked mostly games like „Pairs“, „Calling numbers in a circle“ and „Train“.

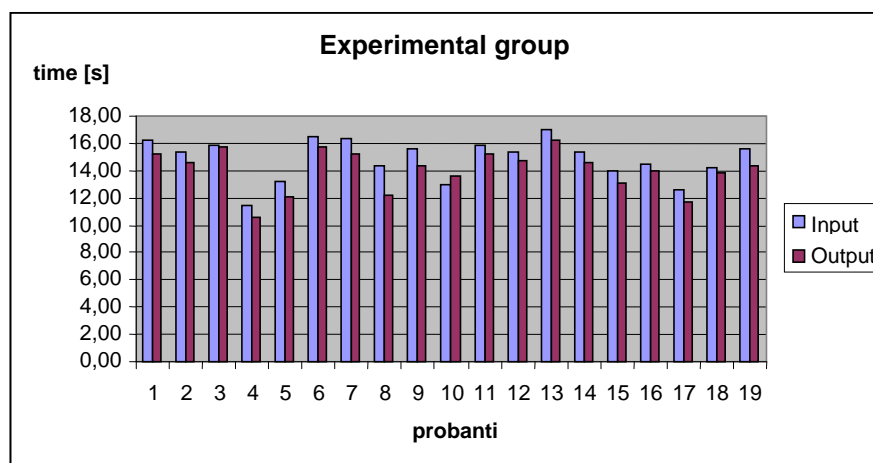


Figure 7 Input and output values in experimental group in test Shuttle run

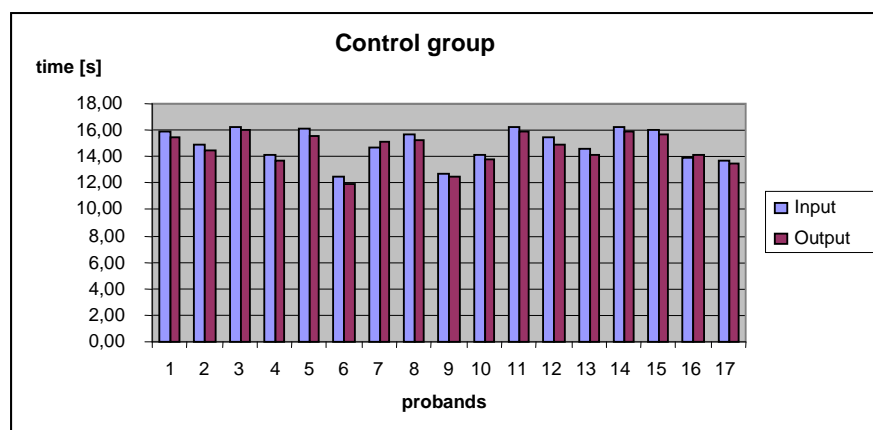


Figure 8 Input and output values in control group in test Shuttle run

When assessing the level of kinesthetic-differentiation abilities of legs we can state that there came to statistically significant differences both in control and experimental group. This is confirmed by Wilcoxon's and Mann – Whitney U-test, with more pronounced differences in experimental group.

Table 6 Precision broad jump

Precision broad jump						
Experimental group				Control group		
Input		Output	Input	Output	Input	Output
x	7,54	5,57	1,96	7,92	6,58	1,34
me	7,57	5,10	2,11	7,60	6,20	1,60
max	12,60	9,30	4,58	12,60	10,90	3,10
min	4,06	2,40	-1,17	4,20	4,20	-1,40
S	1,95	1,91	1,51	2,19	1,83	1,38
%	26,07			16,91		
Wilcoxon´s test:			Experimental group		Control group	
Wilcoxon´s statistics [W]			186		140	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			177,5		211,5	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

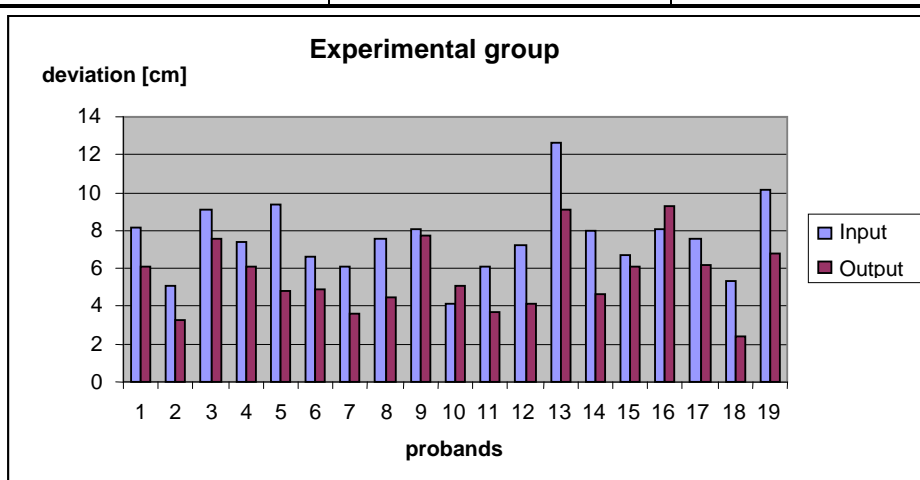


Figure 9 Input and output values in experimental group in test Precision broad jump

In this test we can see changes in both experimental and control group. The sensitive period for the development of kinesthetic-differentiation ability of legs has thus been confirmed. The increase in experimental group was 26.07 %, while in control one 16.91 %. This makes a proof of the fact that non-traditional games influenced positively the development of the ability to differentiate strength. Children liked the competitive character of the majority of games, such as „Cangaroos“, „Relays“, „Hurdles“.

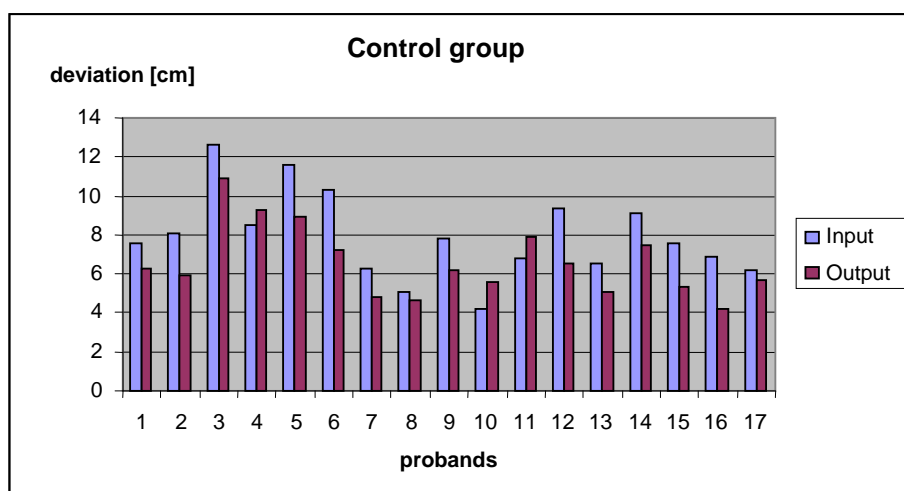


Figure 10 Input and output values in control group in test Precision broad jump

According to Doležalová – Lednický (2002) the age 6-12 years seems to be the most sensitive for our intervention. In our experiment we confirmed that more significant growth in kinesthetic-differentiation of arms was recorded in experimental group (Wilcoxon's and Mann-Whitney U-test). Experimental group improved by 18.76 %, while the control one by 14.24%. Based on this we assume that our program was successful and effective. We recommend the following games: „Frogs“, „Catch me!“ and „White stork“.

Table 7 Precision throw

Precision throw						
Experimental group			Control group			
	Input	Output	Input	Output	Input	Output
x	38,16	31,00	7,16	37,18	31,88	5,29
me	36,00	31,00	10,00	36,00	25,00	11,00
max	79,00	51,00	28,00	71,00	57,00	27,00
min	13,00	11,00	-16,00	14,00	13,00	-17,00
S	19,250579	12,991450	13,913475	17,706762	16,301389	13,080351
%	18,76			14,24		
Wilcoxon's test:			Experimental group		Control group	
Wilcoxon's statistics [W]			145,5		113	
Tabular critical value [Wp]			46		35	
			W>Wp		W>Wp	
Mann-Whitney U-test:			Input CG/ExG		Output CG/ExG	
Mann-Whitney statistics [U]			158		162	
Tabular critical value [Uk]			99		99	
			U>Uk		U>Uk	

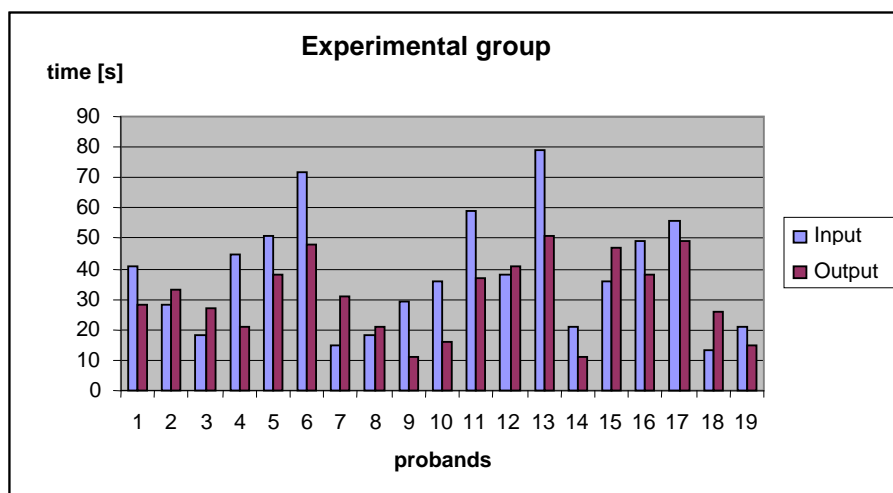


Figure 11 Input and output values in experimental group in test Precision throw

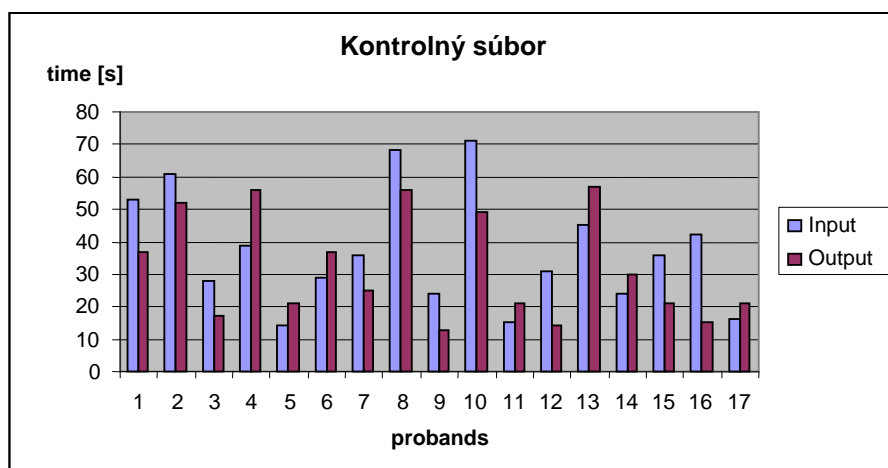


Figure 12 Input and output values in control group in test Precision throw

CONCLUSION AND PRACTICAL RECOMMENDATIONS

Having applied the experimental factor and based on the measurements of the level of coordination abilities prior to and after the experiment, as well as statistic processing we can state that statistically significant changes were found in all tests. Experimental group recorded slightly better results than the control one. Most significant increase was recorded in complex reaction, spatial orientation and kinesthetic-differentiation of legs in experimental group (T2, T4 and T5). Despite of that we state that our hypothesis was confirmed. However, in order to reach even more striking increase in the level of coordination abilities we would need a longer time period of implementing the special coordination program.

Based on our research we can draw the following conclusions for practical lessons:

- The work documents the possibility to improve coordination abilities in school P.E. using special exercises and games.
- It is inevitable to develop coordination abilities just in younger school age (untill puberty).
- Suitably selected physical activities (non-traditional movement games) in a sufficient volume stimulate coordination development in children of the younger school age.
- Movement games and exercises focused on coordination development should be implemented in preparatory as well as main part of the lesson.
- It is also necessary to continuously check the level of coordination abilities and record the results of testing.
- It is inevitable to variate games according to the structure and type of lessons, in order that they would be interesting and would attract attention of children.
- Novelty character and competitiveness of games and exercises bring new quality in coordination development of children.

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SUMMARY

The main objective of the research work was to verify the impact of non-traditional games on the changes in the level of coordination abilities of primary school pupils. The work documents the possibility of application of an exercise program focusing on the systematic development of coordination abilities in physical education lessons.

Our research was aimed at determining whether the application of these games in regular physical education lessons affects the level of coordination abilities of children. Based on the processing of the results we can conclude that the level of coordination abilities of pupils has improved. In addition, pupils enjoyed playing non-traditional games, which encourage their physical activity.

Younger school age is a very favorable period for the development of coordination abilities. We therefore recommend that the teacher did not neglect the impact of such skills and tried to develop them by targeted exercises and motion games.

DEFENSIVE TEAM CONCEPT FOR SLOVAK NATIONAL TEAM U16

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KEY WORDS: basketball, screen, defense, player, coach

INTRODUCTION

The coaching profession is unique among professions. We are not only building team and programs, but we are, more importantly, building players and at the same time developing a great winning spirit. For me, it is honour to be a coach, because we coaches should take a responsibility for the education of young players to make them better people throughout their live. As a coach I have basketball role models, but I do not copy them. Experiences suggest, that the winning teams play good defense, and good defense makes winners. There are always two parts of basketball - offense and defense.

First of all, I believe that the game of basketball starts from defense - gaining the possession of the ball; through fast break - trying to score before your opponent is organized; through set offence – trying to attempt a high percentage shot. If you score you may win but if you stop your opponent you will never lose. I believe, that aggressive defence often creates scoring opportunities from the fast break and thank to it they build an offensive confidence and self-confidence of all players. If we play good defense, we will always get more respect from our opponents. Defense should be based on good individual fundamentals. I believe that good defense is only about twenty percent technique and eighty percent is mental, measured by desire to be successful. In my daily practices I try to stress on defense and boxing out at least more than third of the training unit.

There are a lot of defensive team tactics – man-to-man defense, zone defense, pressure defense, match-up zone, combination of defenses, etc. However, on the principles of man-to-man defense are based the others.

PROBLEM

By my experience, in this range of age (boys U16), the physical and psychological growth of the boys allow to combine individual skills (technical and tactical) together with the first concept of team defense. In the same way of teaching offense we want develop the individual offense skills within of game concepts.

- allows us to encourage important qualities as: proud, responsibility and team spirit;
- it's preparatory also for the zone defense, since inside of the responsibilities areas the players have to defense by the same fundamental skill of the individual defense.

AIM

The main goal is to develop in all young players the attitude to solve the problem by their self, in autonomy way. We don't give them closed solutions for the problems the game put in front of them. The players in these age groups must be ready to react and read their players, who they are marking and to be prepared to react on instructions of the coach.

METHODS

We use a lot the four against four situations because they are very useful and give us some appreciably advantages.

- the game situations on the court are more clear and easy to read;
- the offense can reverse the ball by passes changing the help side for the defense;
- in any case the spacing is realistic enough and more dilated, so more difficult to defense;
- is easy applicable to normal practices with twelve players;
- by this disposition the rapport between time of work and time of rest is in average two/one and this allow to maintain a good intensity;
- when we consider important to have a more accurate spacing we use a coach as support .

We always want the defense work with the transition so the players can remark the key point of our defense: we defend very hard to steal the ball and run to get an easy basket in fast-break.

RESULTS

During the European Championship Men group “B” in Tallinn/Estonia, took our National team in average 7th place in defense from 20 teams. It means that whole defensive activity like rebounding, steals, blocked shots are. In preseason period we were working very hard. The physical and mental strength of the players and the skills were full mastered and the opponents were not capable to read and punish any mistakes done in defense for easy scoring.

We are playing 1-2-2 zone defense during our games (Picture1). I decided to play this kind of zone, because we have always opponent’s playmaker under control with our first defender

In his day, I considered this the most difficult of the straight zones to attack. This is still probably true, today, and should be in your arsenal of defenses.

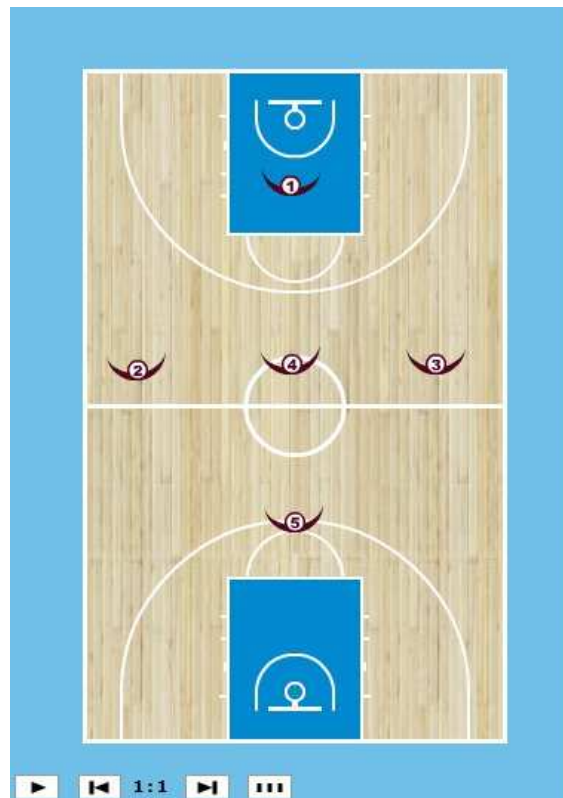
This picture illustrates the individual positioning and areas of responsibility of defenders. Defenders X4 and X5 have the heaviest burden in this zone. They must move farther and faster to get the job done.



Picture 1 Show types of zone defence we played 1-2-2 zone defence.

Stunting with pressure defenses is a good way to destroy an opponent. Pressure defenses have changed the game about as much as the jump shot. This helps take the game away from the big boys by forcing a wide-open game where speed and aggressiveness can be utilized to its fullest potential. In category U/18 we are improving our zone press 1-3-1 and we used it mainly after opponent's successful free throw. The goal is to change rhythm of our defense with consequential effort to gain the ball. When the ball crosses the first line of the 1-3-1 zone press we change it to the 2-3 zone defense.

Picture 2, shows the starting positions for each of the presses. The matching principle is once again employed since a defensive player is useless guarding an area of the court that is unoccupied. On the press, the defensive players must rely heavily on peripheral vision to pick up offensive players as they move from one spot to another.



Picture 2 Show types of zone defence we played 1-3-1 pressure zone defence.

CONCLUSION

We have to make the players ready to play at senior level for every kind of team, independently of the defense and offensive system they will find to play, independently from the play system of the coach, they have to manage all the tactical elements of the game. We can reach this important general target by neutral and balanced chooses from a technical point

of view. Mainly for this reason, for example, we choose to defend on the ball with a “wall” stance.

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SUMMARY

Significant task during writing this article is to introduce you, my concept and philosophy in developing team defense.. My main effort in coaching is to teach proper fundamentals in man-to-man defense and I believe after studying a lot of materials, discussions with very experienced coaches from my country and also from abroad and visiting coaching clinics and also major European championships the good aggressive defense can win the championship. Another point is that these principles and rules of individual technique and tactics in aggressive man-to-man defense can help to develop individual players and the whole team. A good aggressive man-to-man defense comes from very good learnt fundamentals and when players understand the fundamentals of the man-to-man defense it is very easy to teach them zones, zone presses etc. defenses.

OVERVIEW OF SOME KNOWLEDGE ABOUT THE MUSCLE IMBALANCE AND BODY POSTURE IN PUPILS OF SPORTS HOCKEY CLASSES USING STRETCHING AND FITBALL

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KEY WORDS: body posture, muscle imbalance, fit ball exercises, stretching, hockey classes

INTRODUCTION

It is known that the current youth sport requires much more dynamic and demanding. Also hockey is not an exception. In children, it is used the new technique and they are tested the new means and methods to achieve the best possible sporting performance. However, forgetting the fact that the unilateral exercise can be a cause of shortened and weakened muscles, incorrect movement patterns, which are formed from early childhood, not only in everyday life (school, family), but it is also due to the sport.

PROBLEM

Lack of regeneration and compensation in physical activity for young hockey players can cause muscle imbalances, which is a limiting factor in achieving sporting performance. Incorrect, or unilateral loading hockey players may lead to incorrect body posture, as well as other weakening or injury, causing increased fatigue, which may directly affect player performance, and thus the outcome of the match. Unfortunately, in many cases the athlete himself, respectively his coach sees the problem when it is too late, when failing to achieve the necessary performance. It is sad, that the mentioned factors are often an important reason for early ending sporting career of young hockey players.

There are works that show the level of bad posture and muscle imbalance in the general pediatric population. The cause of these disorders is the reduction of physical activity in life

arrangements of children and sedentary lifestyle. They are researches as Kováčová (1993, 2003), Kanášová (2001, 2002, 2004), Thurzova (1991, 1992, 1993, 1998), Bartik (2006), Jurášková - Bartik (2010) and others which confirm it.

There are many works pointing to muscle imbalances and incorrect body posture in young athletes. Dlhoš (2002), Thurzova (2003), Kanášová (2005), Thurzova - Štulrajter (1993), Adamčák (2000) agree that these disorders result are unilateral load and often overload.

Some young athletes have even worse results compared to the normal child population. To this group belong young hockey players, respectively pupils of hockey classes. Based on available literature sources shows that functional locomotor disorders of young hockey players have not been many times examined. However, we have some alarming findings. Kováčová-Tokar (2008) shows the results of young hockey players compared with the normal child population. These authors found that pupils' hockey classes showed much worse results, so in total muscle imbalance as well as its individual components (incorrect movement patterns, shortened and weakened muscles) compared with the normal child population.

OBJECTIVE

The aim of our contribution is to remind the coach, physical education teachers, young hockey players and their parents the importance and necessity of compensation (of releasing, stretching, and strengthening) exercises.

RESULTS

- Body posture

In daily life, a man seldom thinks of his body posture. A man sees this as something obvious, with which he encounters in different forms every day from birth, childhood, adulthood, even in old age. The upright posture is a typical position for a human and represents his whole personality.

Labudová (1992) characterizes the body posture as the relative position of the limbs, torso and head, what person occupies in the position or by the movement in certain time.

It further states that this is actually the exercise habits. They can be improved by every person, but also by the environment. It is created from birth, from childhood based on congenital and acquired (inherited) genes.

Vajcziková (1992) characterizes the body posture as the ability of muscles to adapt to changing mechanical demands. Any weakening of the muscles is manifested by a change body posture and by longer mechanical stress changing the shape of the spine.

To have correct body posture needs a lot of practicing. Thurzová (2003) understands the proper education to correct body posture how the process of keeping the resting position and in the various physical actions. This concept in itself involves relationships of body parts in a standing position, correct use of muscles in releasing position and in the various physical actions. Creating appropriate conditions for the acquisition of habituation correct posture it is also the foundation of the development of healthy musculoskeletal system, as well as for other vital functions - breathing, cardiovascular, digestive and other. Conversely, unsuitable conditions can cause health problems such as headache, loss of appetite, breathing difficulties, faster aging. It is manifested bad posture, and creates permanent deformation (Labudová, Thurzova, 1992).

Kanásová (2004) describes the correct posture as an optimal state of dynamic balance and support functions of the locomotive apparatus in direct relation to the good operation of the internal organs and nervous system. Disruption of this balance (for example, inadequate physical activity) can cause of variations in the correct posture.

Improper body posture is closely associated with an imbalance of muscle tension. It is a disorder of functional relationships between muscular systems postural (tonic) and kinesthetic as well as the failure of central regulation of motility. The resulting mismatch is the cause of development of muscle imbalances and variations in the correct posture.

- Muscle imbalance

Despite the fact that there is increased interest the current coaches, teachers and doctors on the musculoskeletal system, muscle imbalance is still always a huge problem. The muscle imbalances we say when we find the individual muscles shortened weakened and impaired movement stereotypes. Labudová, Thurzova (1992) considered muscle imbalance as an important cause of chronic musculoskeletal pain and disorders of the spine. It undermines the already mentioned posture, physical manifestations (motor stereotypes) and deteriorating muscle coordination. This increases the probability of the injury, accelerates the fatigue, increases susceptibility to joints, as well as the development of degenerative joint changes. Muscle imbalance occurs in high number by children, youth and adults. Labudová(1992) considered that the reason for existing muscle imbalance by athletes is imbalanced sport

program or improper sport training. Dlhoš (2002), Adamčák (2007), Bartík (2006) agree that muscle imbalance arises because of inadequate, excessive, and unilateral physical burden. Without compensation, may be the cause of shortened muscles, weakened muscles and disturbed motoric stereotypes that are forming by the influence of sport. They can be a negative limiting factor for achieving the required performance (Kováčová-Tokar, 2008).

Similarly, Kabelíková and Vávrová (1997) see the cause of muscle imbalance in the lack of movement in modern life, but also because of injuries and illnesses.

Janda (1982), Lewit (1996), and Thurzova Štulrajter (1993) found frequent disturbance of muscle balance and considered that the muscle is in today's lifestyles unilaterally or statically loaded or put into a situation that provokes them explicitly to the shortening.

In eliminating muscle imbalances by Thurzova (2003) is to achieve normal resting length and elasticity of muscles with a predominance of tonic fibers, which have been shortened, restore muscle strength in kinesthetic fibers that have been weakened, the muscles involved in movement stereotypes and reinforce these stereotypes. They have to be as economical as possible and to save the most important joints.

- **Stretching**

Štulrajter (1991) considered corrective and preventive method of eliminating muscle imbalances appropriately applied stretching exercises. Stretching further characterized as a system of stretching exercises, which improve joint mobility. Positive changes in the use of stretching in sports mark more experienced domestic authors (Adamčák, 2000; Bartík, 2006; Štulrajter, 1998; Kanásová, 2005 and others.). Also foreign research and practical experience show that appropriately chosen stretching exercises help to develop joint mobility, muscle flexibility and relaxation at the same time (Anderson, 1982; Bursová, 2005).

- **Fit ball**

Inherent in the practice of preventive in medical rehabilitation of children and adults are fit balls. Fit ball exercises are one of the other options as to contribute to the elimination of muscle imbalance and improve body posture by Palovičová (2008). Variety of different exercise involve almost all the muscles to work, and they are gradually toning and strengthening. It improves not only muscle strength but also endurance and coordination, not least improved posture (Mundy, 2004). Also Koleničová (2003) recommended to include fit ball in to exercise program. Author argues that the fit ball is unstable spherical surface. It

forces involve and use muscles about which we did not know that they exist. These exercises have an impact on the deep stabilizing muscular system. Fit ball helps to engage muscles, which otherwise remain the weak and often forgotten. Such regular, proper exercises can be applied even to improve the musculature, contributing to the elimination of musculoskeletal problems Kyselovičova (1997).

- Loading on pupils from hockey classes

From a physiological point of view belongs hockey to a group exercises with alternate intensity. That is an exercise with rapid response to changing situations. The most common muscles which are use by playing hockey are trunk muscles (neck muscles, trapezius muscles, chest muscles, erectors, ribs muscles, pelvic muscles and gluts) and leg muscles (knee flexors, rectus femoris, triceps surae). These are involved in the whole movement when skating. However, also arm muscles are also very important.

A high pressure at play with peace of sitting on the bench requires adequate training for young bodies of students' hockey classes. Students have to train 4 times a week, where training on the ice lasts 75 minutes. They play a match 1 times a week; a match lasts 3 x 20 minutes. Characteristic for this sport, whether it is training or match itself, is cyclical (skating) and acyclic (shooting, passing) physical activities. It is important to note, that $\frac{3}{4}$ of the total stay, young ice hockey players spend in the operating position, which is in our opinion too much stress on a young body.

Typical for this sport is lowered, bent position with a stick resting on the ice, head is tilted back relative to the chest, the chest is bent, flattened, sacral part is opposite flexed, the butt is sticking out, legs are bent in all joints. Also baby hockey equipment is not helpful by moving on the ice. It weights around 10 kg for player and around 15 kg for goalkeeper. It is logical that these superfluous, but on the other hands necessary kilograms are increasing demands on fitness and technical burden on young players. It is worth noting that addiction hockey posture often pupils indirectly transferred to other activities outside of hockey training (walking, standing) as well. Also Starší (1999) notes that fixation hockey position in the game itself may lead to incorrect posture under the influence of abnormal curvature of the spine (round back, scoliosis, kyphosis with the flattening chest).

Most of the deviations of the spine is rooted in inadequate functional load (long-term static postures, non compensation), to which the children's organism is not ready. The current ice hockey in the child's form has high demands on developing basic motor skills. We

believe to Starší (1980) that by ice hockey players are placed particular demands on skating speed and agility, strength and stamina of hockey, hockey shooting, hockey and hockey coordination skills in constantly changing conditions of the game. If the sports training of children and youth does not comply with the principle of compensation and versatility, it can have negative health consequences. We agree with the recommendation of the authors (Starší, Jančoková, Výboh, 1999). They recommend to insert into the hockey training compensation and releasing exercises and at least 2 times the versatility training focused on the back and chest section. Balancing exercises with or without a stick, should include the mainly warm-up and final part of each training session. Many authors (Kostka, Wohl, 1979; Starší 1999 and others) agree that in the all-round training should hockey players swim. The backstroke position is the best prevention for problem with back.

CONCLUSION

We consider it necessary for ice hockey coaches, resp. physical educational teachers create more space for targeted exercises which are eliminating or minimizing muscle imbalances and body posture exercises affecting primarily young children. It is necessary to pay increased attention to prevention and elimination of functional disorders of the locomotors system since the youngest ages.

We think that in coaching and teaching work is important to educate youth, as well as educate their parents, explain to them the importance of compensatory exercises. It needs to be created habits to use of these exercises (for example stretching, fit ball exercises) in their future hockey track.

Examples of compensatory exercises:

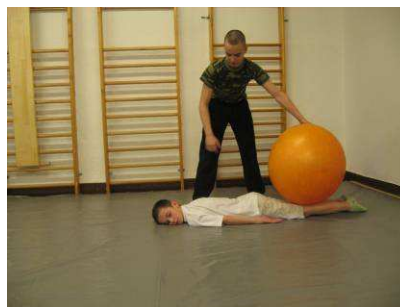
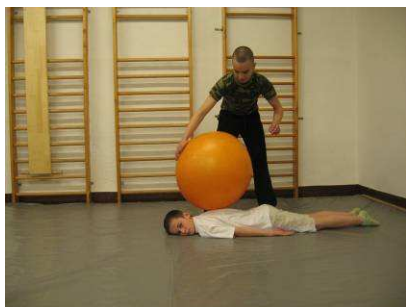
1. Releasing exercises

Pictures 1 and 2 Spine release



Lie over the ball, rely hands forward, legs squeeze fit ball and rotate in the left and right.

Pictures 3 and 4 Full body release



Roll the fit ball all over the lying body to relax all body.

Pictures 5 and 6 Spine release



Make squat and bend over the fit ball to relax the spine.

2. Stretching exercises

Pictures 7 and 8 Hamstring Stretch



Kneel; place your foot on the fit ball. Firstly, keep your knee and back straight, later lean forward at your knee until you feel the hamstring stretching

Picture 9 Hip Flexor Stretch – Lunge

Begin in the lunge position, with the stretched leg behind you. Keep your back straight and buttock muscles contracted gently, lunge forwards until you feel a stretch in the front of your hip.



Pictures 10 and 11 Groin (adductors) Stretch



Begin in wide sitting on the ball with the feet on the ground and back straight until you feel the stretch in the groin.

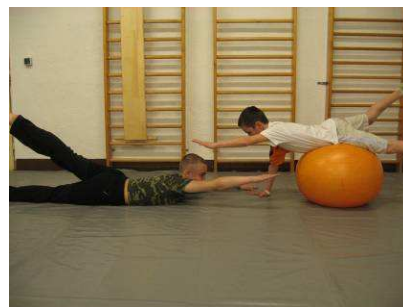
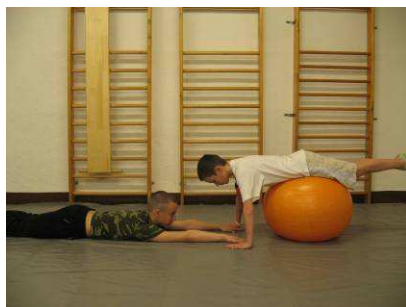
Pictures 11 and 12 Back Arch (Rectus Abdominis and Pectoral Stretch)



Lie down gently backwards over the fit ball; let your back fall into an arch. Keep your abdominals, pectorals and back relaxed. Stay in the arch position with hands touching the ground.

3. Strengthening exercises.

Pictures 13 and 14 Four Point Kneeling Opposite Arm Leg Raises (lower back strengthening)



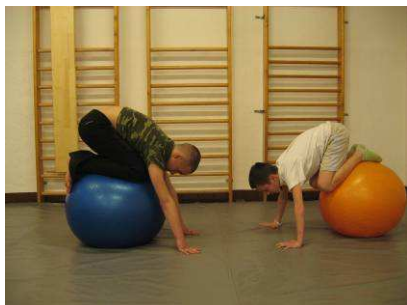
Begin this core exercise in Four Point Kneeling as demonstrated (figure 13). Maintain good posture and activation of your transversus abdominis muscle throughout the exercise. Slowly raise one arm and the opposite leg and then return to the starting position. Keep your spine and pelvis still throughout the exercise and breathe normally.

Picture 15 and 16 Abdominal Crunch (Abdominal strengthening)



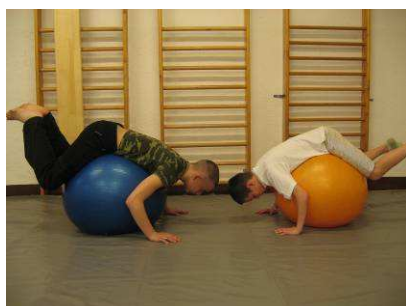
Begin with the lying on your back, with your straight legs. Keep the feet on the ball. Bend and put your hands on your head as demonstrated (pic. 15). Keep your neck straight, slowly lift your shoulders and trunk off the ground, tighten your abdominals, crunch, in the same time slowly roll the ball under your body with your feet, bent your knees and hip to 90 degrees.

Pictures 17 and 18 Core and hip flexors strengthening



Begin with the squatting on the ball with the hands on the floor. Then slowly bring your left knee towards the chest and rise up the right leg while maintaining good posture of the spine and pelvis. Slowly return to the starting position.

Pictures 19 and 20 Fit ball Prone Double Leg Lifts



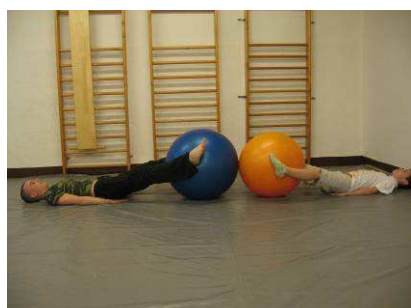
Begin with the lying over a fit ball as demonstrated (pic. 19). Slowly lift your legs, keeping the ball still and your knees straight (pic. 20).

Pictures 21 and 22 Stability Ball Kneel and Balance Exercise



Place your knees and hands on the top side of the fit ball. Slightly lean forward until your feet come up on the ball, and then slowly roll your shins up onto the ball. Hold your body up, your hands come away from the ball, raise your shoulders, and maintain your arms at your sides as balancing aids. Try to stay in a balanced position as long as you can.

Pictures 23 and 24 Fit ball leg lift (Abdominal and squats strengthening).



Lie on your back with the knees straight and ball between the lower legs, raise your leg with the fit ball up and hold for couple of second and then go back to the starting position.

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SUMMARY

Using compensatory training for young pupils of sport hockey classes is extremely important. It reduces the risk of muscle imbalances and poor body posture. This is demonstrated by the authors' knowledge in this report, who are dealing with the issue of locomotor's disorders. Appropriate form of release, stretching and fitness exercises can be fit ball exercises and stretching.

PSYCHOMOTOR GAMES AT GRAMMAR SCHOOLS

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KEY WORDS: physical training process, school age children, psychomotor

INTRODUCTION

Psychomotor have put in place to support the overall development of the pupil, not only in the physical but also psychological and cognitive areas: developing social skills and communication skills, promotes independence, improves concentration and cognitive development, is a means of learning opportunities - learning all the senses, constructive approach to problem solving, developing creativity, encourages development of motor skills, motor skills development and student.

The main difference content psychomotor lesson compared to traditional physical education lesson is that in no way a quantitative assessment of student performance. Everyone gets a chance to be good at his own level.

Pupils have this opportunity to get pleasure from the movement, to tackle the barriers and learn skills that enable them to perceive motion, and thus subject to be taught physical education as something positive. For hours psychomotor pupil is perceived globally, with its strengths and weaknesses. Methodologically, however, are always of what a student knows what the interests and wishes. Individual approach is essential, regardless of movement exercise, which is always guided by the developmental level of the pupil. Pupil teacher always perceived as an active and independent personality. Already this approach will allow more pupils to appreciate you and learn to trust in their abilities. "If you take other positive, I have no reason to doubt him. If someone convinces me more about my disability, how do I start to believe?

"The inclusion of psychomotor activity in physical education in first school grades has prompted our interest in the readiness of teachers - elementaristics to teach these activities. For this reason we have chosen thesis topic.

Psychomotor is fundamental to the development of personality, and expresses it's because the link between perception and movement and survival act in a social context (Adamírová, 2000).

Novotna, Vladovičová, Slížik (2009, p. 5) suggest that psychomotor reflects the close link between the psyche - the mental processes - and dexterity - physical processes. Psychomotor is a feeling, perception, thinking and movement, the movement is not possible without the participation of mental or sensory processes.

Dvorak (2006, p. 5) describes the characteristic psychomotor interactions as physical, emotional and educational spheres in relation to their importance for the development of competence in the conduct of an individual in psychosocial context.

According to Janik (1961) psychomotor effects are all physical manifestations, whether striated or smooth muscle, which is the immediate expression of the higher nervous activities are integrated into the overall framework of personality and expression of the mental functions of the organism.

A primary objective psychomotor harmonize personality is put on site mental, physical, but also social, which is able to act independently, purposefully, planned, controlled, but also approachable and considerate while maintaining their individuality. In addition to the physical and psychomotor emphasis on mental and intellectual field, and specifically develops social skills and ability to communicate natural way by supporting independence, improves concentration and cognitive development, is an effective means of learning opportunities to all senses, constructive approach to problem solving and developing creativity (Novotna, Vladovičová, Slížik, 2009).

According to the above-mentioned authors Psychomotor as a whole is in addition to cognitive (knowledge, intellectual skills) and affective (emotional area, attitudes, opinions) targets a separate subgroup specific (sub) goals of the educational process.

The main task is to get as much experience perception of movement in three areas:

- from the body's own (people), his own "I"
- from the material (things and objects)
- in the area of social

According to several authors (Adamírová 2000; Blahutková, 2003; Novotná - Blahutková - Ottmárová, 2007) in psychomotor methods must accept the current knowledge, skills and also his pupil's interests and wishes. Teaching practices and methods of work

respecting each individual practitioner. Based on the principle first win over every practitioner of the movement and regular physical activity and discouraging setbacks his gym, so physic starts at the individual level first to the positive development of motor skills as a practitioner, and only then pay attention to care and elimination of deficiencies gradually. Practitioners work, as much as possible according to their own abilities.

OBJECTIVE AND TASKS OF WORK

The work is to find out which psycho games and exercises are to be assigned to teachers of physical education in primary education of. Also ascertain the views of teachers - elementaristics their readiness to teach psychomotor performance.

To achieve the goal we set swig following tasks.

1. Develop a survey for teachers to obtain information from the educational process of Physical Education
2. Analysis of questionnaire data obtained by third
3. Create a set of games that we recommend for school practice, for 1 and 2 year of primary school

METHODOLOGY THE SURVEY

Work was conducted in the month of January 2010. Poll was in school in Banska Bystrica distributed individually, in Zilina students through physical education. Overall, we gave out 30 sheets served them, and came to us 21, it is 70%. The sample consisted of 21 teachers are first -primary schools in Banska Bystrica and Zilina. Of the surveyed sample was 16 teachers with a qualification for primary education and three teachers with a qualification for the second stage of primary school. Two teachers had secondary education. Teachers taught in all grades of First Instance.

According to seniority, we studied a set of considered skilled, which means that it consists of teachers with a relatively large length of practice. The largest group consisted of teachers with long experience of 21 years. By education we can say that the research sample consisted of teachers with appropriate qualifications for primary education, where we carried out a survey. Teachers who are qualified for the second stage of primary schools have been focusing on physical education. Even these can be considered qualified. Only insignificant parts of the file were not qualified teachers.

According to years of primary education of our respondents were fairly regular file layout. In the first year of teaching 26% of respondents in the second year 21% of respondents in the third year 29% and 24% of fourth grade. Although the content of physical education in the various grades of primary education varies, psychomotor activity can be made age appropriate for each of them. For this reason, we think elementaristics teachers should not teach only one year to will not slip into a routine and knew from working with children of different ages. Poll in our final work was the main method of obtaining information. It contained 10 questions, with which we detect the state of psychomotor use games and exercises. Survey was anonymous.

THE RESULTS OF OUR WORK

At work wondering whether taught by teachers surveyed sample psychomotor performance in school. Most respondents (81%) indicated that psychomotor taught. Only one respondent does not address psychomotor (Fig. 1).

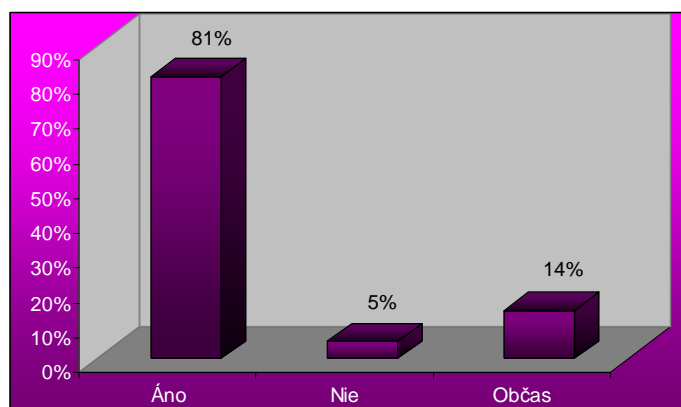


Fig. 1 to the respondents for use in psychomotor%

It is encouraging that most respondents made psychomotor activity, because it enriches the teaching of physical education for children of school age.

Next, we wanted when teachers frequently use psychomotor activity. Analysis and synthesis has shown that it is during the hours of physical education. Thus, it said more than half of teachers surveyed sample (57%). It is gratifying that the teachers surveyed sample included psychomotor and in other lessons, particularly the fatigue of students. Thus 25% of respondents expressed (Figure 2).

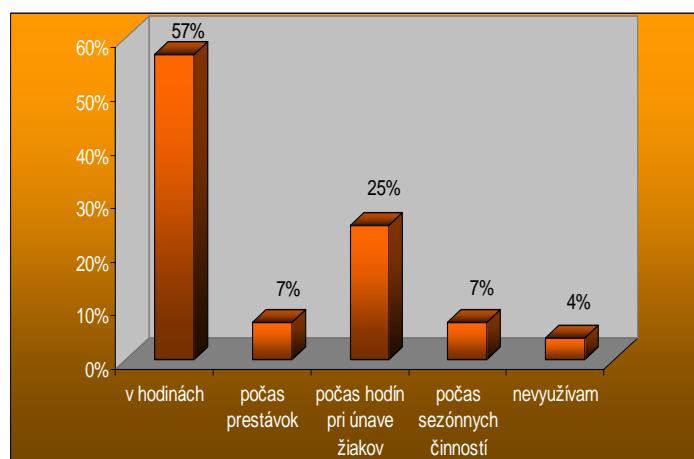


Fig.2 psychomotor use games and exercises in school

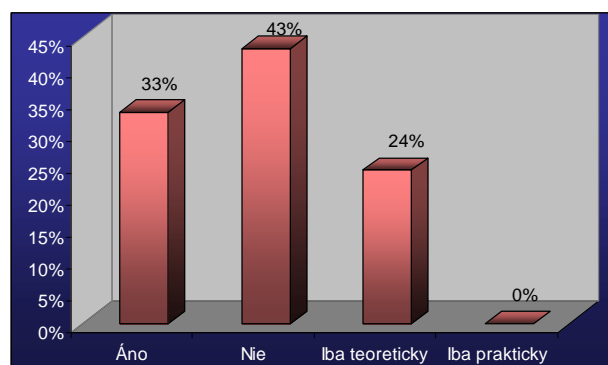


Fig. 3 Information on the psychomotor%

On the question of whether our survey respondents have enough information on psychomotor games and exercises (Fig. 3), responded most negatively (43%). The answer seems to us logical, if compared with the age structure of the file. Teachers with length of service over 15 years are a matter of fact, during his university studies with psychomotorics met. Their knowledge to draw its own study of literature, or attending various training courses or seminars. Relatively high% of respondents has only theoretical knowledge of the psychomotor (24%). However, it is gratifying that the only practical knowledge obtained none of the interviewed teachers. We believe therefore that the majority of respondents' surveyed sample has both practical and theoretical knowledge.

We also wonder if the teachers wish to supplement their knowledge and practical skills on the theme of this national education program. Positively, we expressed 57% of respondents. Indifferent opinion has taken up 29% of what we consider to be a high number. Again, here we refer to the age composition of the surveyed sample. We assume that teachers

with long experience of 20 years have lost interest to complement their education. Not interested in training and other activities with a psychomotor showed 14% of respondents (Figure 4).

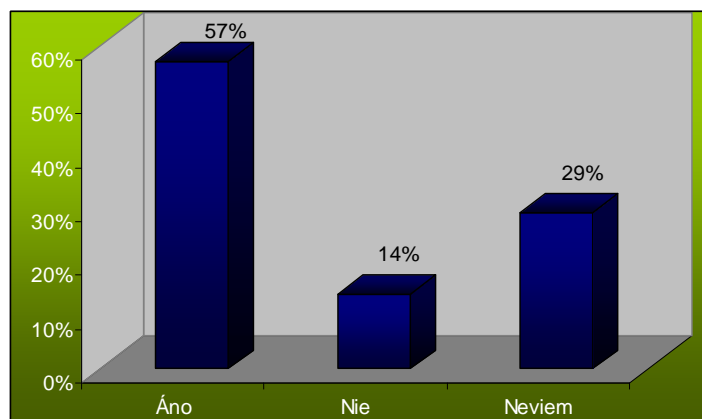


Fig. 4 Interest on teachers' seminars and workshops

When asked to tackle the use of psychomotor, most responded that the ball (33%), newspapers (7%), rope (7%), cassette and CD (5%), mat (5%), PET bottles (5%), scarves (5%), wooden pegs (2%), rings (2%), cups (2%), coasters (2%), blankets (2%), whistle (2%), catkin (2%) and sticks (2%) No (7%). Up to 10% of respondents of respondents that used musical instruments, which actually in psychomotor or not.

Last question of the questionnaire was that the psycho-games and exercises are most frequently used. Among the most frequently practiced exercises for correct breathing (8%), relaxation exercises and using the mat (8%), ball games (7%), chases (5%), but are used very well with paper exercises, or with newspapers, which form (6%), while the most popular game is "paper war".

CONCLUSION

Children need movement and psychomotor games are very suitable form, as applied to a wide range of exercises that are focused on the perception of the interaction of psychological and motor skills, relaxation, self-acceptance and confidence in our own strength. Children have these games very quickly take a liking to, because during them creates a nice friendly atmosphere, learn to work together, strengthen your friendships, while also creating new friendships between children who were previously not endeavour to find each other in games.

Theoretical knowledge we have gained by writing this work, we hope to be able to apply in practice. The aim was to assess the methodological part, which psychomotor games and exercises are to be assigned by teachers in teaching physical education in primary education of, but also to ascertain the views of teachers - elementaristics their readiness to teach psychomotor performance. We found that psychomotor is relatively unknown, often in schools and at most hours of physical education, but also during other lessons in the manifestations of fatigue in students.

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SUMMARY

This thesis is aimed at the orientation within the issue of psychomotoric games and exercises by children on the 1st grade of the elementary school. The aim of our thesis is the cognition of the activity of elementary schools and of the possibility of using of psychomotoric games and activities, namely within the theoretical and practical level. The theoretical part consisting of 4 chapters is processed in the thesis. The evidences from a research were got by means of the public opinion poll. In the research we concluded that teachers use psychomotoric exercises and games in their lessons of the physical education. The most used tools are represented by balls. The teachers of the examined set think that the ball games belong to the psychomotoric games. From the psychomotoric activities used within the lessons of physical education the relaxation and respiration exercises are most frequently applied.

ANALYSE AND CAUSE OF INJURIES IN SMALL FATRA, IN SUMMER AND WINTER SEASON AND PERIOD OF YEARS 1993 - 2007

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KEY WORDS: alpine hiking, injuries, alpine rescue service, summer and winter movement activity

INTRODUCTION

Alpine hiking is very famous and favorite sport, not only in Slovakia, but in all over the world. We can see nature everywhere around us, not only mountains but meadows, fields, forest too. The reasons, why people like alpine hiking are different. Somebody feels better, when the hiking is oriented on technical and physical terrain, the others like relaxing and watching and listening the beauty and the sound around them.

Alpine hiking give you a chance to relax without stress, rush and psychical exhaustion of this quickly time with people who like it too. Of course, we can not forget to remain for everybody, that each of you can meet many nice and kindly people maybe later friends in the nature, who have same hobbies and opinions (Adamčák – Mandzák, 2004).

Alpine hiking includes free movement in the nature. Junger and his company said:., The movement in free nature included healthy activities on a fresh air and at the free time.

Surrounding for free time activities in the nature can be light walking path or hard technical part of alpine walking, which require good equipment and very good alpine walking skills, knowledge and experience. It is logical, that it can happen strange and dangerous situation on alpine hiking.

The most common situation for hiking are injuries, exhaustion and losing the way. We can separate the causes of accidents on the mountains on two parts:

- 1 Part – subjective causes
- 2 Part – objective causes

The subjective causes are happened by person, who doesn't have proper equipment for alpine hiking, not enough experience or poor healthy preparation for alpine hiking.

The objective causes are happened by nature elements and unpredictable situation in the nature. But it doesn't mean, that we have to conciliate with the subjective causes. We should prevent them for example: watching weather forecast, website or meteorological conditions during alpine hiking, listening advances of alpine rescue service.

We don't have to walk on dangerous places like dangerous paths with steel chain or stay on the top of peak during the thunderstorm, etc (Neuman, 2000).

AIM

The aim of our project is to find causes of injuries on the mountains Small Fatra and separate these injuries by frequency and character.

METHODOLOGY

The primary method, what we used in our project are reading different literatures and use different important information from them. For example: analyze of alpine rescue service's documentation, interview with members of alpine rescue service, who work in Small Fatra.

RESULTS

Analyze of collecting important information shows us that the most common causes of injuries in the mountain are :

- ✓ Overestimation of own abilities, poor physical, mental, theoretic and practice experience for alpine hiking
- ✓ The bad choice of hike, not enough time for safety return
- ✓ Ignorance of hike
- ✓ Hard movement in mountain hike
- ✓ Bad weather, visibility and another nature factors (low temperature, windy)
- ✓ Bad equipment for hiking

The objective assessment is, that all these factories are connected to each other. If there is a situation, when tourist has proper equipment, good physical and mental conditions, but

the weather is getting worse with the combination of darkness, it doesn't have to seem bad and it is not important to immediately call alpine rescue service.

If there is a situation of inexperienced tourist, who doesn't have proper walking equipment or doesn't have good physical and mental conditions, just only bad visibility can bring situation of immediately call alpine rescue service.

The question is: how many injuries are on Slovak mountain, and which rescue activities are performed by the alpine rescue service?

The important thing, what we should know is to separate a year on two seasons. Winter and summer season, which both are very different. The beginning of winter or summer is very difficult to find (Picture 1), because each year is specific and each locality had different position and altitude. But from the previous experience, the winter season starts in November and the end of winter is in April.

We can arrange the injuries by personal accident rate (the alpine rescue service actions):

- ✓ Searching for lost and missing people
- ✓ Traumas of bottom limbs
- ✓ Traumas of upper limbs
- ✓ Exhaustion and hypothermia
- ✓ Avalanche injuries

ACTIVITY	Number of injuries	%
Outdoor hiking	44	2,47
Outdoor alpine hiking	168	9,42
Downhill skiing	1065	59,70
Cross country skiing	3	0,17
snowboarding	211	11,83
Off pist skiing	142	7,96
Ride on the lift	2	0,11
Boarding and getting of form OHDZ	19	1,07
Sledging, bobsledding	3	0,17
paragliding	1	0,06
Ride on the mountain bike	4	0,22
Other activities	41	2,30
Free ride skiing	37	2,07
Ski hiking	5	0,28
Ride on the ski cars	1	0,06
profession	7	0,39
Cave science	1	0,06
Mountaineering	30	1,68
together:	1784	100

Picture 1 Evaluation of summer and winter movement activities, where the accidents happened

We can arrange the number of injuries (activities of alpine rescue service) in summer season like this:

- ✓ Traumas of bottom limbs
- ✓ Traumas of upper limbs
- ✓ Cardiovascular problems
- ✓ Anaphylaxis (several allergic reactions)
- ✓ No good movement ability in terrain
- ✓ Lost in terrain

✓ Thunderstorm's injuries

In the winter and summer season, the most of injuries are happened in the afternoon hours. We suppose the causes can be exhaustion, not good concentration, low visibility, temperature etc.

FRACTURE	441	22,76
contusion	186	9,60
Injury of joint	745	38,44
Open wound	259	13,36
Local frostbite	2	0,10
hypothermia	2	0,10
Heart failure	1	0,05
Injuries of internal organs	8	0,41
unconsciousness	12	0,62
exhaustion	5	0,26
Death	10	0,52
Without injuries	110	5,68
Other injuries	72	3,72
illness	9	0,46
concussion	76	3,92
together:	1938	100,00

Picture 2 Assessment and type of injuries in summer and winter season

CONCLUSION

The tourism in high mountains could be risking for children. It is important to have knowledge about tourism and possible dangerous in mountain. We recommend give instructions to parents and children about some risks in mountain and develop the prevention.

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SUMMARY

All these information about injuries and rescue activities, what we collected can say us, that the injuries of traumatic types are mostly happen in summer season. In winter season is very common situation of searching for lost people. The following accidents are the injuries of traumatic types.

Hiking and alpine hiking in the nature can leave in our hearts very nice experience, because the nature is something special for everybody. It can give us health, relax, beautiful views, fresh air, friends etc.

But on the other site we should still have in our mind that we must respect our nature and be carefully.

CURRENT KNOWLEDGE IN SKI-TEACHING

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Downhill (or alpine) skiing belongs to the most popular winter activities of all age groups in our country (Žídek, J. et al., 1999). School ski courses are often the main reason of a lifetime passion for ski-related sports. It all depends on a skilled and patient instructor, on the conditions of the ski training course, and last but not least on the skiing equipment. “You have to know how to move the ski, how to stand it on its edge, you have to know how to reduce the load on it. You must master the basic preparatory and locomotory movements, or you will not be able to stop.” These words have been said by none other than three-time Olympic winner and Austrian “Skier of the Century” Toni Sailer. This means that just carving is not enough for somebody to be able to ski. We must agree with this opinion. Skiing experts have for decades been discussing the best and, above all, the fastest way to teach this ability. Long-term debates have led to a unanimous conclusion that only such teaching methods and procedures must be selected, which can be applied to vast majority of skiers, and that the basics of skiing presented by anyone anywhere must fulfil the requirements of further athletic growth (Žídek, J. – Petrovič, P., 2009). The prevailing opinion is that the synthetic method (teaching of technique as a whole – the whole turn) is the most effective.

The final step of ski-teaching basics is the parallel turn. Mastering of turning with skis in parallel position requires the skier to master a sequence of several actions – especially the reduction of load on the ski with simultaneous rolling to the required direction. This action is very demanding and cannot be performed by a beginner. We therefore use a “methodical aid” – the stem, which allows splitting this action into two phases (Žídek, J., 2001). The ski is first rolled in the desired direction and then the skier's weight is alternately transferred from one ski to another, which results in a change of direction. Using this aid (stemming), the trainee can regulate speed, which is very important for beginners, and acquires the unconscious habit of transferring the load, which is the fundament of the parallel turn and other skiing techniques. We talk about the equal movement principle (equal internal structure of movement) of basic and perfect techniques of changing the direction.

We consider the fact that the stem gives the trainee a greater feeling of security as commonplace. For skiers, who do not have the possibility to be on slope often or who are of an older age, stemming becomes the ideal technique which enables to safely manage almost any skiing terrain (Zálešák, M. et al., 1989). Skiing can be learned significantly faster on carving skis. They are shorter, easier to control, and their greater sidecuts allow easier turning.

However, just as with conventional skis, when carving is taught, one must learn such skiing skills which apply to all skiing techniques: maintaining the balance, downhill posture, transferring the load from one ski to another, rolling of the skis, balancing the centre of mass on uneven terrain, sensing of edge and surface of the ski, driving the ski on an arc, and slipping the skis. These skills are taught as part of elementary movements when sliding down the hill, skating and slowing, inclined sliding, turning with both-sided stem, slipping, stopping, passing on uneven terrain, etc. The main goal of every skier is to master the turn on parallel skis. When this “basic technique” is mastered, the wonderful world of skiing lies ahead of the skier.

The first part of any ski-training course should be the so-called preparatory and locomotory exercise: carrying and binding of skis, walking, climbing, and turning. A specific issue is the practice of a correct basic downhill posture (Fig. 1), which should accompany the entire practice of downhill skiing techniques.

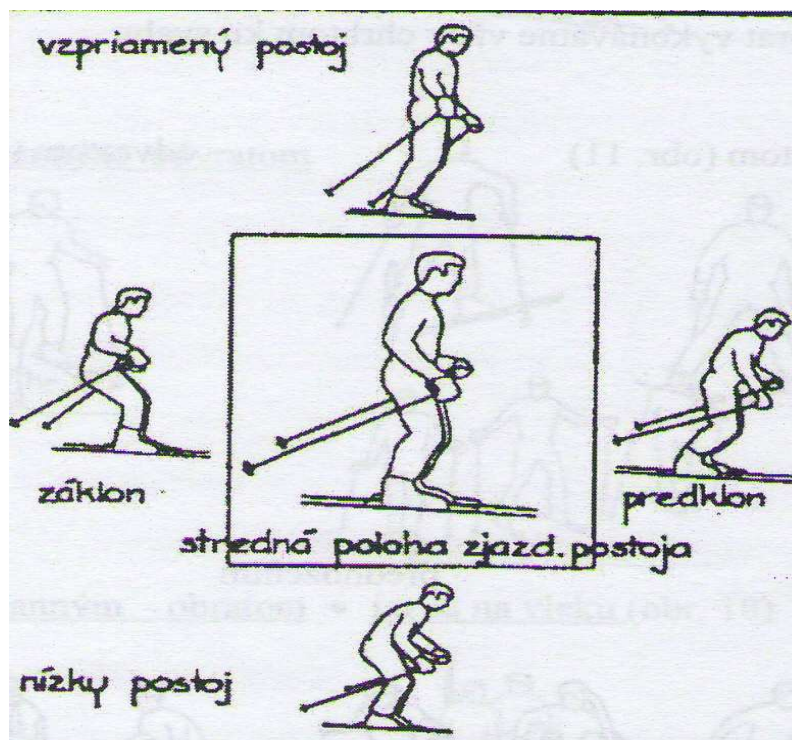


Fig. 1 Basic downhill skiing posture

A slightly wide apart position of the skis, bent “ski joints” (ankles, knees, and hips), trunk axis perpendicular to the ground, head upright, arms slightly bent before the body. The trunk should be in the so-called neutral position, which means that the skier should have enough space for moving up-and-down and forward-and-backward. The basic downhill posture belongs to the most important skiing skills. It has been proven that an imperfect downhill posture accompanies the skier all through their skiing career. This also applies to professional skiers.

Practice and training of the posture must be carried out in peace, on a direct downhill, on uneven surface and simple turns at slow speed. The most frequent mistakes include insufficient bending of the knees and hips (due to bad physical condition of the skier) and, when the slope inclination changes at adjoining arcs, the “backward bend” of the trunk axis when passing the arc away from the slope. This “backward bend” can often be found at the professional and competition level as well. It means that there is a greater load on the back of the ski, which results in a sliding down movement in turns even on carving skis (Žídek, J. – Petrovič, P., 2009). Correct dynamic posture of a skier also includes arm movements. We know that the current ski-turning technique starts at the legs and the trunk makes compensatory movements.

Holding of the poles and planting of the poles when connecting turns is crucial for the correct downhill posture. In the past, poles used to be planted near the tip of the skis, which results in an immediate counter-balancing motion of the trunk. Some ski instructors even emphasised the pole rebound as an aid to set a turn. This automatically disrupted the correct turning technique and, most importantly, the controlling of skis in a turn. Mastering of short connected turns using the carving technique directly excludes pole planting due to lower posture. Arms make a hint of pole planting. The poles are directed backward to interfere with forward-backward equilibrium as little as possible. The range of trunk motion, similarly as the track width, is defined by the level of openness of the turn, or by the inclination and segmentation of the terrain. The more closed a turn, the greater the compensatory trunk motion, and vice versa.

Turns are used to regulate speed. The radius size is defined by slope inclination and quality of snow.

To slow the downhill speed, we use a double-sided or single-sided stem or rolling of the skis, skating over hachure, and the turn in double-sided stem itself (Fig. 2) – basic technique for practising of continual change of direction on the skis. As noted above, this elementary change of direction serves for blocking the habit from current locomotion (inclining into arc), regulating the speed, and acquiring the locomotory habits which are fundamental to the downhill skiing technique (the angle between the trunk and slope, turning of the shoulders in the turn direction). It is very important to practise with poles, because the trunk is the limiting factor for a correct downhill posture. All the “auxiliary” exercises with no poles create a different locomotory habit. This usually is a near-upright posture which is not compatible with the correct technique.

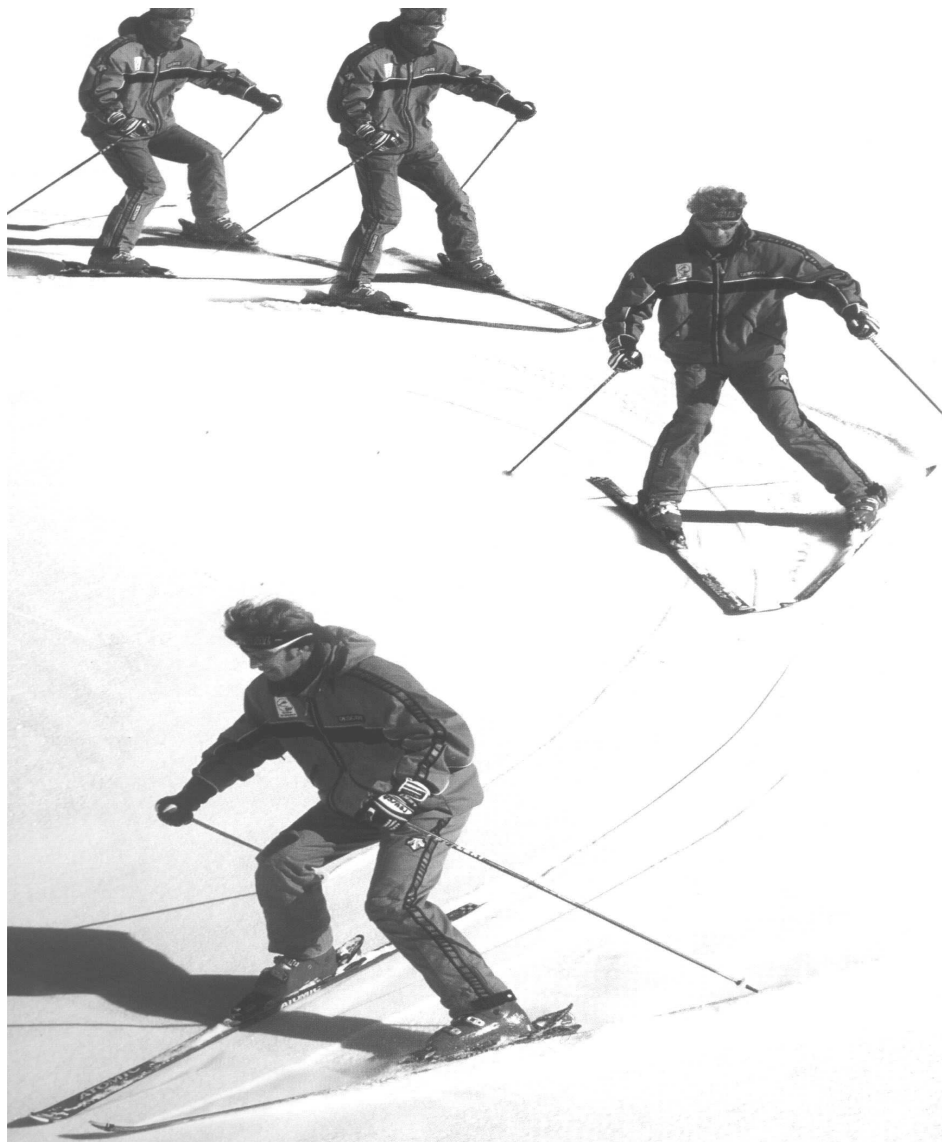


Fig. 2 Double-sided stem turn

Once the correct posture and locomotory assurance has been acquired, we can move on to turning from double-sided stems (Fig. 3), which is more dynamic and many skiers use it especially under more demanding conditions.



Fig. 3 Turn from double-sided stem

Options for stem removal

- stem turns at a greater speed
- maintaining a regular pace of alternating the turns
- change of terrain and speed
- racing around gates

Most frequent mistakes

- down-sliding of the outer ski (small load)
- rotation of the pelvis
- slow tempo

- backward bend, bending toward the turn
- bad coordination of legs and arms

Gradual increase of speed allows for turning with the legs together and turning on the edges – the carving turns. Carving turns can only be practised once correct locomotory habits and basic skiing technique skills have been acquired. Carving turns require a higher speed and locomotory assurance on various types of slope. Successfulness of carving turns depends on the correct loading of the skis in front-back direction resulting from the correct downhill posture.

The transition from the turn away from slope requires active engagement, transfer of the centre of mass to the front of the skis to eliminate down-sliding movement of the heels, and the correct trunk inclination. A wider carving track results in a greater load on the inner ski; however, one must remember that it is the outer ski that is dominant. The most frequent mistake at practice is tilting the entire body to the turn arc, which is typical for funcarving.

The carving turn can be considered the most perfect form of turning with the legs together. Mastering of turning on parallel skis is fundamental for terrain skiing. There is a big difference between a practice slope and skiing in the terrain with variable slope inclination and snow quality. It requires further perfecting of the skiing technique under more demanding conditions. It takes plenty of time, experience and practice for someone to become a good skier who is able to cope with any skiing terrain. Practice in the terrain makes the skier acquire such skills, which correspond to the specific situation, that is, he or she will be able to find an ideal solution for any situation based on his/her own experience. Very important for this period is working with balance. External factors – terrain, weather, snow quality – and internal factors, such as age, physical condition, mentality, and technique, determine the optimum behaviour in a specific situation, as every turn is different. Sometimes one must edge, slow down or speed up more, sometimes less. Quality of snow, terrain trimness, etc. varies. One must build a new feeling for the skis – this applies also to those who switch to carve skiing. Carving skis do not turn by themselves and using them does not mean elimination of all potential problems.

Carving means skiing on very shaped skis, taking advantage of their better turning ability (ski autokinetics) with minimum sideways down-slide. Carving is characterised by dynamic alteration of turns, limited vertical motion of the skier, and optimum edging which is more or less spread to both skis (Žídek, J. – Petrovič, P., 2009).

In carving technique, we must distinguish the basic technique, which is taught by ski instructors and forms the basis of racing techniques (so-called “racecarving”), and “funcarving”, which is used at freeriding and special competitions. Funcarving is in fact a variation of skiing; we can say it is close to snowboarding. Extreme sidecuts of funcarving skis (R appr. 10 m) is similar to snowboards. Strong tilting into the turn results from carver's high speed and serves to eliminate disruption to the balance in a turn and subsequent fall. Significant features of funcarving ride include:

1. Minimum vertical motion of the trunk.
2. Alternation of turns by rolling the skis and tilting the entire body, unlike racecarving, where only the pelvis and knees are tilted into the turn and the trunk is inclined away from the turn.
3. Marked forward-inclination of the outside of the trunk.
4. Sliding the turn mostly on the upper ski.

The track width in carving depends on openness or closeness of the turn. The more open a turn, the wider the track and the more involvement of both skis in edging there is.

Carving technique practice options (Fig. 4)

When sliding down the hachure on a gentle slope, start with regular continuous stem turns with gradual transition to parallel position. As the speed increases, gradually close the turn toward the hachure, sensing the edge of the outer ski.

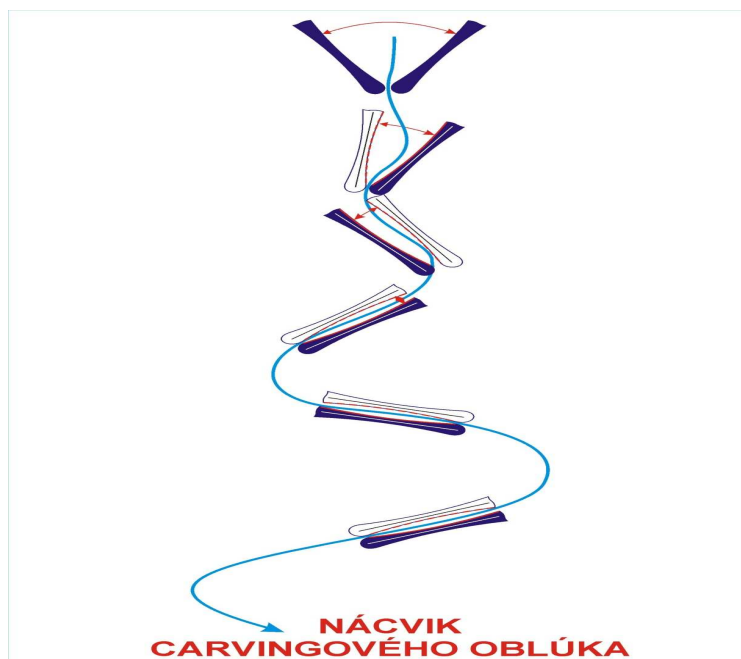


Fig 4. One of the options of carving technique practice

Never practice just one part of the turn (toward the slope), but always the regular continued turns. Otherwise the correct posture could be disrupted

The most frequent mistakes when learning to ski:

1. Lack of patience at practice of elementary skills: when turning with double-sided stems, always take care to tilt the trunk toward the outer ski (the opposite of common locomotion); bending and stretching of the outer knee; when stretching out, the trunk movement must point not only upward, but also forward; correct holding of the poles to eliminate trunk rotation.
2. Practise the carving technique once you have mastered turning with legs together on various slope inclinations. The fundament of a carving turn is skier's assurance at higher speeds. Taking advantage of autokinetics of the carving ski requires its correct loading in front-back direction. This means that the skier must actively direct the trunk forward in every turn. This movement (skill) must be realised from the very first elementary changes of direction.
3. There are still many ski instructors and ski schools which teach double-sided stem turns. However, we consider the stem only a means to acquire skills such as: transfer of load from one ski to another, rolling of the skis, correct trunk motion, sensing of ski slipping, speed regulation, etc.

4. One of the serious flaws in average skiers is the practice of carving turns by tilting toward the inside of the turn and skiing on the inner ski. This technique is typical for funcarving and is only a variation used by very skilled skiers on a trim and free terrain. We must point out that ski teaching basics must have a common base with race carving, where the fundament of motion in a turn lies in loading the outer ski, as noted above. There are various emerging pole exercises aimed at removal of incorrect locomotory habits. By using these exercises, you can correct one imperfection, but acquire another (bad downhill posture, which compromises the most important alpine skiing skill). We recommend the basic position for sliding down the hachure, slantwise, transition of weight, the tilting of the trunk must be practised (sensed) in a room using a chair, table or another person (ideomotoric exercise).

Table 1 Features ski technician

BASIC DOWNHILL TECHNIQUE	RACECARVING TECHNIQUE	FUNCARVING TECHNIQUE
Vertical motion at the start of the turn. Distinct transfer of load from one ski to another.	Vertical motion is adjusted to slope inclination and turn alteration. Alteration of turns is done mostly by rolling the skis on their edge.	Alteration of turns is done by tilting the whole body in the direction of the planned turn.
Pole planting provides an <u>impulse</u> for setting the pace of continued turns.	Poles serve to maintain balance and <u>pace</u> at continued turns.	No poles.
Turning of skis is facilitated by greater sidecuts and active work of the legs.	Turning of skis is done by greater sidecuts and active work of the trunk.	<u>Maximum use of ski autokinetics.</u>
Track width is relatively small.	Track width of the skis in a turn is regulated according to slope inclination and arc radius.	Greater load on the inner ski and the leg touches the snow.
<u>Distinct load on the outer ski</u>	In a turn, both outer and inner ski are loaded.	Wider position of the skis; more load on the inner ski.

We can conclude that even the best methodology and ski instructor cannot do anything if the trainee is not willing to learn how to ski. Also of great importance is good physical condition, which is a limiting factor in perfecting the art of skiing. Prior to ski training camps, physical education teachers should include regular weight training of legs and trunk, as well as rhythmical exercises.

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SUMMARY

Downhill (or alpine) skiing belongs to the most popular winter activities of all age groups in our country. School ski courses are often the main reason of a lifetime passion for ski-related sports. It all depends on a skilled and patient instructor, on the conditions of the ski training course, and last but not least on the skiing equipment.

Carving is characterised by dynamic alteration of turns, limited vertical motion of the skier, and optimum edging which is more or less spread to both skis. Great importance is good physical condition, which is a limiting factor in perfecting the art of skiing. Prior to ski training camps, physical education teachers should include regular weight training of legs and trunk, as well as rhythmical exercises.

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Termín zaslania príspevkov pre jednotlivé vydania časopisu **je 30. maj, resp. 30. november** v elektronickej forme na adresu:

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