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**ACTA FACULTATIS EDUCATIONIS PHYSICAE
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EFFECTS OF THE TRAINING PROGRAM ON THE LEVEL OF SPATIAL-ORIENTATION ABILITY IN THE CATEGORY U13 IN SOCCER

Martin Žamba, Miroslav Holienka

Comenius University in Bratislava, Faculty of Physical Education and Sports

Summary: The level of quality of the individual coordination skills often decides on the efficiency of solving game situations in the match. This study examined the effects of the 12-week training program, in order to develop spatial-orientation ability in the category U13 in soccer. Group of 32 boys from ŠK Slovan Bratislava team U13 (calendar age 11.8 ± 0.4 years, sports practice 6.1 ± 1.3 years, height 155.9 ± 6.3 cm, weight 44.0 ± 7.0 kg) and ŠK SFM Senec (calendar age 11.6 ± 0.5 years, sports practice 6.3 ± 1.4 years, height 153.9 ± 6.7 cm, weight 44.0 ± 7.0 kg) participated in this research. Motoric test "Run towards numbered cones" was used to determine the level of spatial-orientation ability in non-specific form (without ball). Control exercise "Space orientation and ball control" was used to determine the level of spatial-orientation ability in specific form (with ball). Results of the individual measurements showed that the experimental sample achieved significantly higher level of spatial-orientation ability both in its non-specific ($p < 0.05$) and in its specific form ($p < 0.05$). Increases in the level of spatial-orientation ability in its specific form were significantly higher in experimental sample ($p < 0.01$). Increases in the level of spatial-orientation ability in its non-specific form were significantly higher in control sample ($p < 0.01$) although this group in the course of the research achieved on average better performance in the individual measurements.

Key words: soccer, coordination skills, spatial-orientation ability

Introduction

Mastering the development of coordination skills for both coaches and soccer players is according to close relationship between them and playing skills rather important (Holienska, 2010). Coordination skills are the prerequisites which manage and regulate the movements precisely, and allow to handle rational technique more or less perfectly. They place high demands on analysers, CNS and lower on the energetic system (Šimonek et al. 2003). Bauer (1990) defines coordination as an ability of a player to deal with specific and non specific situations in soccer with safe, economical and fast movement. Ljach, Witkowski (2010) state that the training of the development of coordination skills in team sports, including soccer, is one of the most important modern concepts of improvement of the technical skills and sport achievements, which has been demonstrated during the past two to three decades. The importance of an individual components of coordination skills differs when solving

different game situations. Their importance and contribution to an individual game performance is determined by variety of game situations (Holienska, 2010).

This contribution deals with development of spatial-orientation ability in soccer, which is defined as an ability to determine and change the position and posture in space and time in relation to surrounding environment (Kasa et al., 2007). Buschmann et al. (2009) define spatial-orientation ability as an ability to determine the position of your body in space (pitch) or in relation to the object (ball, opposite player, teammate). Holienska (2010) states that to diagnose coordination skills according to different components relatively complicates. It is impossible to set the level of coordination skills when taking into account one test. Applying different tests we gain just some specific information on coordination. It is important to know that each physical ability carries its optimal (sensitive) period of development (Strešková, 2005). In the process of sports training for children and youth the phase development should be used to maximum and not to miss it. The appropriate use of sensitive periods the higher level of motor skills is reached and the training process is much more effective but also occurs long-term stabilization of the relevant physical ability. Optimal predispositions to develop coordination skills are at the age of 5 – 16/17 years (Holienska, 2010). The highest effectiveness is achieved at the age of 7 – 12 years. This aspect was the reason for our decision to choose the category U13.

Methods

In this contribution we used method of two-group parallel (parallel time) pedagogical experiment. Experimental sample (ES) consisted of ŠK Slovan Bratislava team U13 ($n = 19$, calendar age 11.8 ± 0.4 years, sport practice 6.1 ± 1.3 years, height 155.9 ± 6.3 cm, weight 42.5 ± 6.5 kg). Control group (CG) consisted of ŠK SFM Senec U13 ($n = 13$, calendar age 11.6 ± 0.5 years, sport practice 6.3 ± 1.4 calendar age, height 153.9 ± 6.7 cm and weight 44.0 ± 7.0 kg). In both groups the time of monitoring (testing) (Δt) was the same – 12 weeks. When developing spatial-orientation ability in the content of the sport training structure the most decisive factor showing the difference between experimental and control group was the preference of the (with ball). This fact as a part of sport training of experimental group showed significant percentage of play training during training process. Training program in experimental group was realized in the period from 27th of August to 18th of November 2012. Application of experimental factor was realized 3 times a week. Of the total amount of play training (1655 minutes) in experimental group, 1050 minutes (63 %) has been spent to develop spatial-orientation ability. For this purpose we have chosen different methodological forms – which represents our experimental factor. This meant in reality 35 training unites with a duration of 30 minutes in the main part of training. The factor to check this experiment was the program consisting of 12 weeks training cycle in control group which was based on recommended standards for the training process of U13 in soccer (Kačáni et al., 1989). To develop spatial-orientation ability in control group coaches used non specific stimuli.

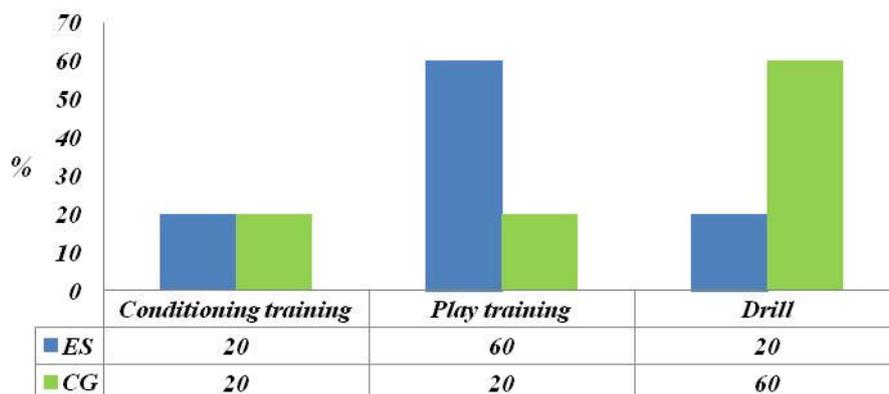


Figure 1

Proportionality of the parts in the training process

To obtain empirical data we have applied measuring as the main method of testing. At first we tested groups in motor tests "Run towards numbered cones," which in general is used to evaluate the level of spatial-orientation ability in its non specific form (without ball). Subsequently control exercise has been applied aiming at specific target (with ball) – "Orientation in space with the control of the ball", which was drawn up by soccer coaches from Manchester United Soccer School and has been modified for the need of our research.

• Motor test

Name: Run towards numbered cones (Belej et al., 2006; Šimonek et al., 2008).

Objective: Evaluation of the level of spatial-orientation ability in its non specific form.

Description: The test begins at the starting line, which is 3 meters long with the centre marked by cone. Another five cones are spread out round the circumference of a circle with radius of 3 metres. The cones are numbered (from left to right 1-4-5-2-3). The player's position is in the center of the starting line backwards to numbered cones. On the acoustic signal (calling numbers e.g. 5) the player touches the cone in the middle, makes turns and runs towards the cone marked by the number which was called. After touching it with one hand he runs back to starting point to touch the cone at the starting line. Just before this activity he gets the information, which number he has to run next (e.g. 2) and in the same way he moves on up to the third number. The test is completed when the player touches the cone on the starting line. The time is measured from the first signal up to the last touch of the cone. Sequence of numbers is constantly changed and it is individual to each player.

Equipment and accessories: ball, measuring equipment (stopwatch), numbered cones (6 pieces), measuring tape (photocell), spray to mark the lines.

Evaluation: The player is allowed two attempts. The best time in two completed trials with an accuracy of 0.01s is taken into account. Rest interval between attempts is 5 minutes.

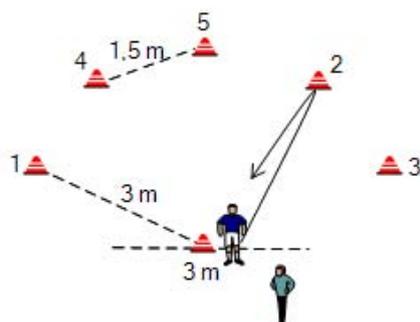


Figure 2

Motoric test "Run towards numbered cones"

- **Control exercise**

Name: Orientation in space with the control of the ball

Objective: Evaluation of the level of spatial-orientation ability in its specific form.

Description: The player's position is in the middle of inner square (2 x 2 m). 4 numbered cones are placed in each corner of the outer square (10 x 10 m). The player should react to the sound signal (number) with the ball control to the relevant cone (number). After passing the cone he is again dribbling the ball towards the inner square. The number of touches when dribbling the ball is not limited. The next number is called when the player's position is again in the inner square. The player advances with the ball until he hears the third number. This drill begins by calling the first number and ends up by dribbling the ball through the inner square. Sequence of numbers is constantly changed and it is individual to each player. **Equipment and accessories:** ball, measuring equipment (stopwatch), numbered cones 1 to 4 (4 pieces), measuring tape (photocell), spray to mark the lines.

Evaluation: The player is allowed two attempts. The best time in two completed trials is taken into account. The accuracy of 0.01 s. Rest interval between attempts is 5 minutes.

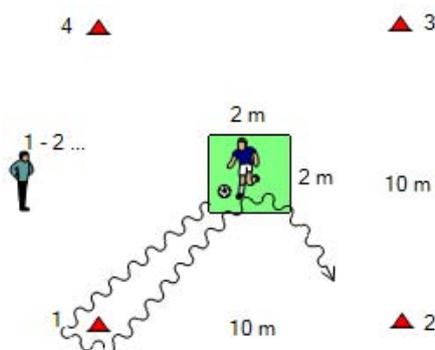


Figure 3

Control exercise "Space orientation and ball control"

When elaborating the results we used comparative method based on the data obtained in this exercise. The basic mathematic and statistic characteristic were used when processing and evaluating the research data followed by using non-parametric statistic method. Monitoring was carried out on small samples $n < 25$ using two non-parametric tests of statistical significance: Wilcoxon T-test for dependant samples and Whitney U test for non dependant samples. On the basis of calculated values T and U, which are the test criteria and comparing them to critical values we have found out whether the differences were significant on the 1 % or 5 % of the level of statistical significance. Evaluating and analyzing the content of the program and stating conclusion we used basic logical processes (analysis, synthesis, induction, deduction).

Results

Based on the input and output measurements we can assess the level of spatial-orientation ability in its non specific and specific form and to interpret differences arising between the investigated samples.

Motoric test "Run towards numbered cones" was aimed at monitoring the level of spatial orientation ability in its non specific form (without ball). When comparing input and output data in experimental sample we found out statistically significant improvement in the level of $p < 0.05$. Average time achieved in input measurements was 6.61 s (median – 6.53 s) and in output measurement 6.35 s (median – 6.42 s). During the course of pedagogical (teaching) experiment experimental sample achieved an average increase of 0.26 s. Out of the total 19 players of experimental group, 14 players achieved improvement (it means 74 %).

When comparing input and output data in control sample the results reached statistically significant improvement in the level of $p < 0.01$. Comparing average values (input – 6.96 s, output – 6.47 s) we have recorded an average increase of 0.484 s. Looking at the total number of the players in control sample (13), 12 players during monitored period achieved an improvement of 92 % and only 1 player made the result worse (0.01 s).

Table 1

Changes in the level of spatial orientation ability in its non specific form

Run towards numbered cones	ES		CG	
	Dt0 (s)	Dt1 (s)	Dt0 (s)	Dt1 (s)
Arithmetic mean	6.61	6.35	6.96	6.47
Standard derivation	0.48	0.47	0.48	0.46
Median	6.53	6.42	7.09	6.43
Minimum	6.03	5.56	6.03	6.01
Maximum	7.93	7.38	7.78	7.65
Variation margin	1.90	1.82	1.75	1.64
Wilcoxon T-test	2.435*		3.075**	
	p < 0.05		p < 0.01	

Control drill "Space orientation and ball control" was aimed at monitoring the level of spatial-orientation ability in its specific form (without ball). Input and output data in experimental sample were compared and there was statistically significant improvement in the level $p < 0.05$. An average time achieved in input measurements was 16.07 s (median – 15.25 s) and output 15.48 s (median – 15.21 s). Comparison of two measurements showed mean growth by 0.59 s. 14 players in experimental group have not achieved any positive improvement (it means 74 % of total). Comparing measured input and output values in control sample there was no statistical significance. An average time achieved in input measurements was 16.34 s (median – 16.21 s) and output 16.13 s (median – 15.96 s). Comparison of two measurements showed mean growth by 0.21 s. Seven players in control group gained better results (it means 54 % of total).

Table 2

Changes in the level of spatial orientation ability in its specific form

Orientation in space and ball control	ES		CG	
	Dt0 (s)	Dt1 (s)	Dt0 (s)	Dt1 (s)
Arithmetic mean	16.07	15.48	16.34	16.13
Standard derivation	1.80	1.44	0.98	1.02
Median	15.25	15.21	16.21	15.96
Minimum	14.15	13.56	14.56	15.09
Maximum	20.40	18.62	18.25	18.32
Variation margin	6.25	5.06	3.69	3.23
Wilcoxon T-test	2.354*		0.629	
	p < 0.05			

Base on the results we compare the acquired increases in the level of spatial orientation ability in its non specific and specific form in both samples and then point out statistical significance between them.

Comparing the values gained in motoric test "Run towards numbered cones" (non specific form) during the period which was monitored the results show statistically significant increase in performance at the level of $p < 0.01$ in favour of control sample. Looking at an average growth (ES: 0.253 s, CG: 0.484 s) it is obvious that control sample achieved higher values (0.231 s) in spatial orientation ability level in its non specific form despite the fact that experimental sample has been gaining higher values in performance than in partial measurements during the research.

Table 3

Comparison of increased values in spatial orientation ability level in its non specific form and statistical significance between them

Run towards numbered cones	Increase	
	ES (s)	CG (s)
Arithmetic mean	0.253	0.484
Standard derivation	0.398	0.292
Median	0.320	0.500
Minimum	-0.700	-0.010
Maximum	0.930	1.070
Variation margin	1.820	1.640
Mann-Whitney U-test	4.722**	
	p < 0.01	

Comparing the values gained in control exercise "Space orientation and ball control" (specific form) pointed out that experimental sample achieved statistically significant improvement at the level $p < 0.01$. An average increased values in both samples (ES: 0.594 s, CG: 0.211 s) show that experimental sample achieved higher level of (0.383 s) in spatial orientation ability in its specific form than control sample.

Table 4

Comparison of increased values in spatial orientation ability level in its specific form and statistical significance between them

Orientation in space and ball control	Increase	
	ES (s)	CG (s)
Arithmetic mean	0.594	0.211
Standard derivation	0.876	1.114
Median	0.400	0.040
Minimum	-0.800	-1.810
Maximum	1.860	2.270
Variation margin	5.060	3.230
Mann-Whitney U-test	4.720**	
	p < 0.01	

Discussion

Coordination skills in the play itself rarely appear isolated. They introduce "mosaic" of different, interconnected skills. Wide diapason of coordination skills increase the level of technical side of playing activities and support the opportunity to promote variable solutions of game situations in soccer. We are aware of the fact that the issue of development of coordination skills via specific means (with ball) in the training process of youth is not clear enough. It is complicated to eliminate and e.g. develop just one specific coordination skill during play training. From this point of view the players of experimental group were strongly and clearly explained the main idea of chosen methodological-organizational forms (specific training stimuli) which were used as an experimental factor. If we consider the progress and tendency in training process in soccer where specific features began to prevail then according to this fact it is necessary to take into account not only development but diagnostics of an individual locomotion abilities in specific conditions. The issue of testing coordination skills is rather demanding and it is influenced by large number of factors. Some thesis deal with the influence or effectiveness of training programs focused on the development of coordination skills but mostly with non specific motor tests (without ball). Then the question is: "What is the affinity like using motor tests focused on revealing the level of coordination skills in player's performance according to player's performance itself?" Situation itself is considered to be very important indicator of the match and stems from countless number of variable game situations which are difficult and complicated to solve (Peráček et al., 1993). The players have to respond to an object of the match – a ball and deal with different complicated game situations – to solve them the player uses particular coordination skills (Holienska, 2010).

It is obvious that the issue of testing coordination skills using control exercises (with ball) gives us a lot of unanswered questions. One of them is the relationship of coordination skills to playing skills. Performance in control exercise is to some extent conditioned by the level of playing skills which are seen in playing activities of an individual player. The level of development coordination skills influences speed and mastering of sport technique, its stabilisation and adequate use in different situations. There are a lot of studies showing the direct influence of the development of coordination skills on sports technique (Šimonek et al., 2008).

Conclusions

Based on the results obtained, we came to the following conclusions:

- It was proved that proportionality of the parts in the training program chosen by us reflects positive influence on the changes in the level of spatial - orientation abilities players in experimental sample.
- Under the influence of experimental factor the level of spatial orientation ability was significantly increased both in non specific and specific sample.
- Changes in the level of spatial-orientation abilities in its non-specific form were not significantly higher in experimental sample in comparison to control group.

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RESUMÉ

VPLYV TRÉNINGOVÉHO PROGRAMU NA ÚROVEŇ PRIESTOROVO-ORIENTAČNEJ SCHOPNOSTI MLADŠÍCH ŽIAKOV VO FUTBALE

Martin Žamba, Miroslav Holienka

Úroveň kvality jednotlivých prejavov koordinačných schopností mnohokrát rozhoduje o efektívnosti riešenia herných situácií v zápase. Príspevok je zameraný na zistenie vplyvu 12-týždňového tréningového programu, prostredníctvom ktorého sme rozvíjali priestorovo-orientačnú schopnosť v kategórii mladších žiakov vo futbale. Výskumu sa zúčastnila skupina 32 chlapcov z družstiev ŠK Slovan Bratislava U13 (kalendárny vek $11,8 \pm 0,4$ rokov, športová prax $6,1 \pm 1,3$ rokov, výška $155,9 \pm 6,3$ cm, hmotnosť $42,5 \pm 6,5$ kg) a ŠK SFM Senec (kalendárny vek $11,6 \pm 0,5$ rokov, športová prax $6,3 \pm 1,4$ rokov, výška $153,9 \pm 6,7$ cm, hmotnosť $44,0 \pm 7,0$ kg). Na zisťovanie úrovne priestorovo-orientačnej schopnosti v jej nešpecifickom prejave (bez lopty) sme použili motorický test „beh k očíslovaným kužeľom.“ Na zisťovanie úrovne priestorovo-orientačnej schopnosti v jej špecifickom prejave (s loptou) sme použili kontrolné cvičenie „orientácia v priestore s vedením lopty.“ Výsledky jednotlivých meraní preukázali, že v experimentálnom súbore sa počas sledovaného obdobia významne zvýšila úroveň priestorovo-orientačnej schopnosti v jej nešpecifickom ($p < 0,05$), ale aj v špecifickom prejave ($p < 0,05$). Prírastky v úrovni priestorovo-orientačnej schopnosti v jej špe-

cifickom prejave boli významne vyššie v experimentálnom súbore ($p < 0,01$). Prírastky v úrovni priestorovo-orientačnej schopnosti v jej nešpecifickom prejave však boli významne vyššie v kontrolnom súbore ($p < 0,01$), aj keď experimentálny súbor dosahoval v priebehu výskumu v priemere lepšie výkony v jednotlivých meraniach.

SPORT AND OTHER LEISURE ACTIVITIES OF YOUTH FROM RURAL AREAS ON THE EXAMPLE OF CIESZYN POWIAT, POLAND

Marcin Hyski

The Jerzy Kukuczka Academy of Physical Education in Katowice

Summary: The subject of this article is the leisure activity of children and young people from rural areas. The subject is implemented on the example of Cieszyn district (Silesia, Poland). The analysis takes into account the activity in sport, tourism, recreation and cultural sphere. However, special attention is paid to sport. The study was conducted on sports, tourism, recreation and cultural activity of children and youth of rural areas. A questionnaire was addressed to children and young people (attending primary and secondary schools) from selected rural communities and served as a research tool. The assessment has covered the intensity of the realisation of specific forms of leisure activities. The analysis allows knowing the social, economic and other conditions of different free time activities.

Therefore, the balance between leisure and learning time was examined. Most of the surveyed secondary school pupils (38.26 %) declared that there is no excess of free time. 48.34 % of respondents from primary schools possessed too large (in their opinion) amount of free time. Among the various leisure activities, youth of secondary schools and children of primary schools usually chose, respectively, computer games and surf the web – 79.7 % and 62.2 %, meeting with peers – 64.3 % and 53.2 %, watching TV – 60.0 % and 65.9 %, outdoor games – 43.9 % and 62.1 %, self-education and cultural activities (foreign language learning, playing an instrument, art, dancing, reading books, etc.) – 21.2 % and 13.4 %, sports facilities – 34.3 % and 4.2 %. The vast majority of surveyed secondary school pupils (67.8 %) have taken the high rate of physical activity (in various forms) in their spare time. Forms of physical activity of the examined students often are not institutionalized. Participation in sports club declared only 44.76 % of the surveyed secondary school pupils and 38.48 % of primary school pupils. The amount of free time decreases when the children are growing up. Sedentary behaviours play a significant role in the free time activity and it is also increased depending on age. Access to the Internet and computer games dominate within the leisure time activities of children and youth. Activity in the sphere of culture and further education activities increases with age of children. Young people should be encouraged to participate in various forms of physical education because recreational physical activity, tourism and sport are the best ways of absorbing harmful consequences of reduced mobility.

Key words: sports activity, rural youth, spare time

Introduction

Free time is treated as a component of lifestyle and as a factor of its quality. Studies have shown that proper management of leisure time contributes to the development of

personality, enhances physical performance, eliminates states of nervous tension and allows the regeneration of physical and mental health (Z. Kubańska, D. Nałęcka, 2009).

Free time is defined as the time at the disposal of the unit after its mandatory tasks: work, compulsory education in school and at home, the necessary homework (Sikora, 1998). Having regard the research problem, it should be noted that realisation of the activity in leisure time is determined by different conditions appropriate to people from rural and urban areas, as well as to children and youth as opposed to adults. Pastime for children and youth is an important issue that deserves our attention. Many authors emphasize that you should learn how to spend it rationally. Young people need to acquire this knowledge in a natural educational environment - in the family and at school.

Free time can be spent in an active or passive way. Nowadays there are many factors that encourage in a greater extent the passive forms of leisure activities. In children and adolescents one of the factors is the development of new information and communication technologies with the use of computers and the Internet. They are attractive to young people and competitive in relation to physical activity. Therefore, the article includes the study of physical activity and sedentary activities (i.e., performed in stable position of the body, usually in a seated position) at your leisure.

The subject of this article is the activity of children and young people from rural areas carried out in their spare time. The analysis takes into account the activity in sport, tourism, recreation and cultural sphere. However, special attention was paid to the sport. Sport and recreational activities have its important place among other functions of rural areas (Chudy, Hyski, 2009).

The article aims at identification of the range of children's and young people's activity in sport, tourism, recreation and cultural sphere in rural areas. The amount of free time has also been the subject of evaluation.

The article assumes that children and young people of rural areas are involved to a small extent in collective initiatives in sports, tourism, recreation and cultural activities which are only available in municipal institutions. Rural youth manage their free time alone (or in informal groups), which may contribute to pathological behaviour.

Methods

The study was conducted on sports, tourism, recreation and cultural activity of children and youth of rural areas. A questionnaire addressed to children and young people (children and young people attending primary and secondary schools) in selected rural communities served as a cognitive tool. During the fulfilment an interviewer was in constant contact with the respondents and constantly could explain all possible ambiguities and help in filling the questionnaire. The assessment covered the intensity of the realisation of specific forms of free time activities of children and youth, as well as features of the studied population. The analysis allowed knowing the social, economic and other conditions of different leisure time activities.

The survey was conducted among pupils living and attending schools of the Cieszyn powiat (ślaskie province, Poland). The study included all the rural communes of the province. The study involved 710 students in total, representing 10 % of the students from the surveyed communes. Three criteria were used in selection of units for research: commune (seven

communes), type of school (34 primary schools, 11 secondary schools), and gender of students. Given the specified criteria, a stratified proportional choice has been applied – the proportions of the general population have been retained. However, due to the limited volume of the article, the presented results are only fragmentary.

Results

The key question concerns the possibility of implementing various activities by children and young people is to determine the amount of free time they have. Therefore, the balance between leisure and learning time was examined.

Most of the surveyed secondary school pupils (38.26 %) declared that there is no excess of free time. 35.12 % of them stated that they haven't it too much, and 26.62 % had no definite opinion on the matter. 48.34 % of respondents from primary schools possessed too large (in their opinion) amount of free time. The lack of spare time was declared by 28.16 % of them, while 23.50 % of the students did not respond clearly to the question.

Analysing the amount of free time spent by secondary school pupils to various forms of activities, it can be concluded that 42.1 % of students have at least four hours of rest per day, 22.4 % have three hours, 23.4 % – 2 hours, and 12.1 % respondents have only one hour of free time daily. For primary school pupils the results were respectively: 48.9 %, 27.2 %, 17.6 % and 6.3 %.

Among the various leisure activities, youth of secondary schools and children of primary schools usually chose, respectively, computer games and surf the web (79.7 % – 62.2 %) meeting with peers (64.3 % – 53.2 %), watching TV (60.0 % – 65.9 %), outdoor games (43.9 % – 62.1 %), self-education and cultural activities (foreign language learning, playing an instrument, art, dancing, reading books, etc.) (21.2 % – 13.4 %), and sports facilities (34.3 % – 4.2 %).

The vast majority of surveyed secondary school pupils (67.8 %) have taken the high rate of various forms of physical activity in their leisure time. Occasionally it was 29.45 % of the respondents, and never just 2.75 %. Respondents from primary schools declared taking physical exercise occasionally (43.37 %) or often (51.28 %). 5.35 % of them have never undertaken physical activity in leisure time.

Forms of physical activity of the examined students often are not institutionalized. Participation in sports club declared only 44.76 % of the surveyed secondary school pupils and 38.48 % of primary school pupils.

The survey allowed also assess if the students attend classes organized by special interest groups (e.g. theatre circle) and by their parents (e.g. private language training, playing an instrument). 54.4 % of students indicated that they did not attend any classes, 45.5 % of respondents said they had taken part in the activities organized by community centres or schools. 41.1 % of respondents attended private classes, organized by the parents.

Most of the young people from secondary schools spent their summer holidays on leave with their parents (23.55 %), with relatives (31.18 %) or on colonies or camps (19.84 %). Family home was the least popular summer destination for secondary school students (25.43 %), and the most popular among surveyed primary school pupils (51.42 %). The colonies or camps were attractive for 12.33 % of the respondents from primary schools, stays with relatives – for 27.41 %, while holiday with their parents – for 8.84 % of them.

Discussion

The low level of physical activity is a major problem of public health. A sedentary lifestyle is dominated by the behaviour among children and adolescents. It is observed that the dynamic of sedentary behaviour keeps rising which concerns mainly girls (Sallis, Prochaska, Taylor, 2000). In addition, physical activity decreases with the transition from childhood to adulthood. Physical activity is especially important during the development of the human body, so during childhood and teenage period. In particular, adolescence is a critical moment when physical activity and participation in various types of organized physical activity is very important. During this period, due to rapid growth of body size, the physical activity predisposes young people to acquire posture influencing the functioning of the body in their later life.

Maturation period is also a period of rapid mental maturation of human, which predisposes him to acquire many risky health behaviours including smoking, drinking alcohol or using psychoactive substances. In addition, physical activity improves the young body's ability to concentration, so they can achieve better learning performance and reduction of aggressive behaviour. Physical activity also reduces their tendency to depression and neurosis (Motl, Birnbaum, Kubik, Dishman, 2004).

We observed that among secondary school students their physical activity can be assessed as satisfactory. The disturbing fact is that teenage youth restricts their activity to participate in physical education classes and to movement associated with coming to school. Participation in extracurricular physical activities, including sports suggests that in general physical activity usually exceeds moderate intensity.

Especially during the adolescence it should be placed great emphasize on the shape of the youth customs to an active life (Sallis J, Prochaska J, Taylor, 2000).

The period of adolescence is the time when the formed and developed habits and behaviour will result in the following years of life. In this early period of life the emotional states like dissatisfaction with your appearance or acquired complexes will move to adult life. Therefore, the habit of lifestyle with physical activity increases self-confidence, self-satisfaction with your figure and appearance. In that period, all of these translate into a reduction of likelihood of food intake disorders because of acceptance of your appearance and lack of complexes in this respect what minimizes this risk (Sallis J, Prochaska J, Taylor, 2000).

Parents play an active role (which cannot be underestimated) in the process of development of habits for an active lifestyle of children and especially of teenagers (Davison, Cutting, Birch, 2003). Encouraging and pushing into physical activity (Anderssen, Wold, 1992), serve as an example when playing sports and various other forms of physical activity (Moore, Lombardi, White, Campbell, Oliveria, Ellison, 1991) are well established form of incentives used in this regard. These ways of influencing the behaviour of teenagers are more efficient with girls (Biddle, Goudas, 1996). Creating conditions for your children for sports and other physical activity and persuading them to take an active part in those positive behaviours improve their mood, increase confidence in their abilities and as a result give a sense of self-confidence, and satisfaction with their appearance (Troost, Kerr, Ward, Pate, 2001).

Conclusion

Taking into account the findings resulting from the research, we can draw the following conclusions:

1. The amount of free time decreases with growing up of children.
2. Sedentary behaviours have a very significant part in the free time activity and are also increasing with age.
3. Access to the Internet and computer games dominate the leisure time activities of children and youth.
4. Peer groups play a significant role in shaping the forms of leisure time activities.
5. Activity in the sphere of culture and additional education increases with the age of the child.
6. Youth from secondary schools does physical activity in a slightly wider range than primary school pupils.
7. Among the various types of activities outweigh unorganized forms (individual or in groups of peers).
8. Young people should be encouraged to participate in various forms of physical education because physical recreation, tourism, and sport are the best means absorbing harmful consequences of reduced mobility.

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RESUMÉ

ŠPORT A INÉ VOĽNOČASOVÉ AKTIVITY POĽSKEJ MLÁDEŽE Z VIEDIECKYCH OBLASTÍ SLIEZKA

Marcin Hyski

Predmetom príspevku je prieskum voľnočasových aktivít detí a mládeže z vidieckych oblastí. Sledovaný súbor tvorili žiaci základných a stredných škôl z okresu Cieszyn (Sliezske, Poľsko). Analýze boli podrobené činnosti z oblasti športu, turistiky, rekreácie a kultúry. Osobitná pozornosť je venovaná športu. Základnou výskumnou metódou bol dotazník distribuovaný deťom a mladým ľuďom z vybraných vidieckych komunít. Hodnotenie sa vzťahuje na intenzitu realizácie špecifických foriem trávenia voľného času. Analýza umožňuje poznať sociálne, ekonomické a ďalšie podmienky jednotlivých aktivít vo voľnom čase. Predmetom skúmania bola rovnováha medzi voľným časom a časom na učenie. Väčšina žiakov sledovaných stredných škôl (38,26 %) konštatuje, že nemá prebytok voľného času. Naopak, 48,34 % respondentov zo základných škôl má k dispozícii príliš veľa voľného času. Z rôznych voľnočasových aktivít si mládež stredných škôl, resp. deti základných škôl zvyčajne vybrali počítačové hry a surfovanie na internete – 79,7 %, resp. 62,2 %, ďalej stretnutie s rovesníkmi – 64,3 %, resp. 53,2 %, sledovanie televízie – 60,0 %, resp. 65,9 %, hry v prírode – 43,9 %, resp. 62,1 %, samovzdelávacie a kultúrne aktivity (výučba cudzích jazykov, hranie na hudobný nástroj, umenie, tanec, čítanie kníh atď.) – 21,2 %, resp. 13,4 %, športové zariadenia – 34,3 %, resp. 4,2 %. Drvivá väčšina opýtaných žiakov stredných škôl (67,8 %) realizuje fyzickú aktivitu (v rôznych formách) vo svojom voľnom čase. Formy pohybovej aktivity skúmaných študentov často nie sú inštitucionalizované. Účasť v športovom klube potvrdilo iba 44,76 % z opýtaných žiakov stredných škôl a 38,48 % žiakov základných škôl. Množstvo voľného času klesá s vekom detí. Sedavý spôsob trávenia voľného času zohráva významnú úlohu vo voľnočasových aktivitách a zvyšuje sa s vekom. Dominantnou súčasťou voľnočasových aktivít detí a mládeže je prístup k internetu a ovládanie počítačových hier. Činnosti v oblasti kultúry a ďalšieho zvyšovania vzdelania narastajú s vekom detí. Je preto veľmi dôležité povzbudzovať mladých ľudí, aby sa zúčastňovali na rôznych formách telesnej výchovy a športu, ktoré predstavujú najlepšie prostriedky pohlcujúce škodlivé následky spojené s nedostatkom pohybovej aktivity.

EFFECT OF CAFFEINE ON MOTORIC PERFORMANCE OF FEMALE FLOORBALL PLAYERS

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Summary: Effect of caffeine has been shown to improve performance in various laboratory tests and also in sport-specific tasks, including several team sports. However, we did not find any study focusing on caffeine effects in floorball. Therefore, the aim of our experiment was to examine the effect of caffeine on motor performance in the female floorball players. Fourteen female floorball players volunteered for this study. They were given either caffeine (on average 4.4 mg/kg) or placebo (wheat flour) in randomized, double-blind manner on two occasions, separated by 7 days. Both caffeine and placebo were ingested 30 min before the beginning of a testing battery, consisting of five performance tests. Caffeine improved performance significantly only in the shuttle run test 6x40 m (54.0 ± 5.3 s. vs. 52.1 ± 4.4 s. in caffeine treatment, respectively, $p < 0.01$). In standing long jump test, shuttle run test, reaction speed test and shooting accuracy test the differences between caffeine and placebo treatment were not statistically significant.

Keywords: floorball, caffeine, performance testing

Introduction

Stimulants of the central nervous system have been commonly used by athletes in order to decrease fatigue, pain perception and improve alertness, vigilance, concentration, and aggression during the competition and training, especially when the load is "over the threshold of pain" (Pyšný, 1999).

According to Atkinson (2003) caffeine is generally considered a stimulant. It is one of the most commonly used stimulants in sports, mainly due to the fact that it is not currently listed among prohibited substances issued by the World Antidoping Agency. Despite body of research performed, the actual effects of caffeine as a performance-enhancing agent is still somewhat controversial and may be dependent e.g., on the duration and intensity of the performance. Based on the literature reviewed, it could be concluded that:

- caffeine is beneficial during high-intensity activities of short duration of time (sprint, intensive short-term training).
- caffeine improves performance in endurance sports.

For instance, Bishop (2010) studied effects of two doses of caffeine (6 mg/kg and 9 mg/kg) in elite rowers during a 2000 m time trial. Results of the study revealed improved performance after caffeine ingestion compared with placebo. Duration of the time trial was

shorter by an average of 1.3 % when taking 6mg/kg caffeine dose. Higher dose 9 mg/kg did not result in a further increase in performance.

Floorball is currently one of the fastest-growing collective sports game. This sport came to Slovakia only recently, but even during this short period of time it has become really successful and very popular. It's an indoor team sport, which has the character of an interval and intermittent activity, requiring a wide range of motor skills and specific skills (Máček, 2002). It could be therefore expected that caffeine could have beneficial effects also for performance in floorball. The purpose of this study was to examine performance in selected floorball-specific and non-specific tests with or without caffeine ingestion.

Methods

Subjects

Fourteen female floorball players volunteered for this study. All tested players were active members of the extra-league team VŠK FTVŠ UK Bratislava, Slovakia. Anthropometrical data of the subjects are presented in Table 1.

Table 1

The basic characteristic of the subjects

	Age	Height (cm)	Weight (kg)	BMI
Average	23.29	167.57	63.71	22.54
Standard deviation	5.33	6.43	11.26	2.53
Min	16	158	52	20.06
Max	37	178	90	29.39

Experimental protocol

All subjects underwent two identical test occasions, separated by 7 days and performed at the same time of day. At both occasions, subjects were given either caffeine (Scitec Nutrition®, Scitec Kft., Budapest, Hungary, anhydrous form) or placebo (wheat flour) encapsulated in identical gelatine capsules. Subjects who weigh less than 55 kg have been given two capsules (200 mg in total) of caffeine and subjects with the body mass of 55 kg and more have been given three capsules (300 mg) of caffeine. This accounted for the average amount of 4.4 mg per 1 kg of body weight. The caffeine dosing was based on the recommendations for team sports (Bishop, 2010). Before the actual testing, all subjects were informed about possible side-effects of caffeine (sweating, increased heart activity, irritability and others) and an informed consent was signed. In addition, a questionnaire was filled out to determine that caffeine use in normal life conditions. None of the subjects used more than one serving of caffeinated beverages per day.

Both caffeine and placebo were ingested 30 min. before the beginning of a testing battery, consisting of five performance tests as follows: standing long jump test, shuttle run test 6 x 9 m, reaction speed test, shooting accuracy test and shuttle run test 6 x 40 m).

Standing long jump test

This test was performed according Moravec et al. (2002). The better of two attempts is taken. Results are given with an accuracy of 1 cm.

Shuttle run test 6 x 9 m and 6 x 40 m

Subjects were asked run as fast as possible times back and forth between two cones set 9 m and 40 m apart, respectively. Time was measured with custom-made light gates with an accuracy of one tens of second.

Reaction speed test

(Fitro agility check, FiTRONiC s.r.o, Bratislava, Slovakia)

Subjects stood in the middle between four square contact mats placed 50 cm from each other. They were required to react as fast as possible to a visual stimulus appearing randomly on the screen in one of the four corners by touching the respective contact mat by a foot. No leg-crossing was allowed. One set consisted of 20 stimuli. Stimuli were randomly generated by software in the time range from 100 to 3000 ms after the last contact, and time from the stimulus onset to a foot contact was measured.

Shooting accuracy test

Repeated shooting from 8 m distance towards on a goal covered by a sheet with one central and four corner openings. The task was to score as many goals from 10 attempts as possible. Shooting had to be carried out continuously without breaks. There were two trials for each subject. A trial with higher scores was taken for further analyses.

The test battery was chosen to cover the main limiting factors in floorball from conditioning and coordination point of view.

Standard descriptive statistics (mean \pm SD) were calculated. Data at each time-point were analyzed for normality using the Shapiro-Wilk test. Parametric paired t-test was used to test differences between treatment conditions.

Results

Explosive power of lower extremities was tested by standing long jump test. No additional benefits of caffeine were present in this test. Floorball players could jump on average 189.9 ± 20.8 cm and 186.8 ± 23.5 cm after ingesting placebo and caffeine, respectively, with no statistically significant difference between the treatments (Figure 1).

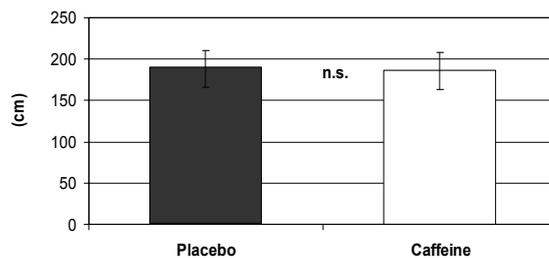


Figure 1

Test 1 – Standing long jump

Shooting accuracy was statistically unaffected by caffeine. After ingestion of placebo, an average number of successful attempts was 2.8 ± 1.6 from ten executed trials. After ingesting caffeine, the number of successful shots was to 2.7 ± 1.5 (Figure 2).

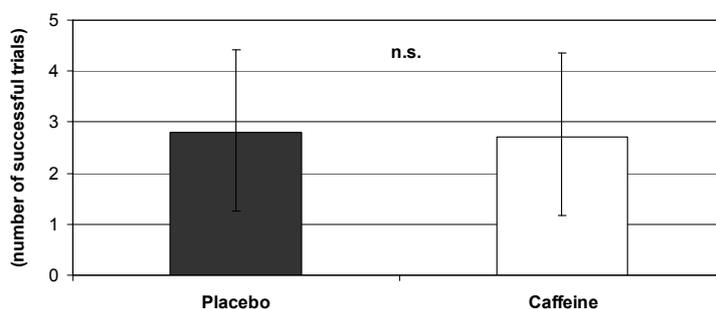


Figure 2

Test 2 – Shooting accuracy (skill)

In the test of reaction speed, average time for task completion of was 694.1 ± 104.3 ms after placebo treatment. Ingestion of caffeine resulted in shorter (better) average time of 671.4 ± 68.9 ms. However, the difference of 22.7 ms between the treatments was not statistically significant (Figure 3).

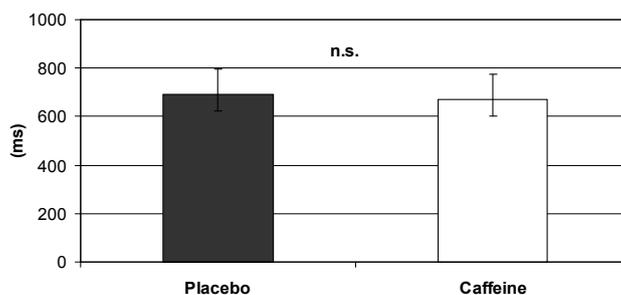


Figure 3

Test 3 – Reaction speed

Running speed and agility of female floorball players, as measured by the shuttle run test 6 x 9 m, were not improved by caffeine either. After ingestion of placebo, average time recorded was 15.7 ± 1.0 s. Average time recorded was similar also after ingesting caffeine (15.5 ± 0.9 s – Figure 4).

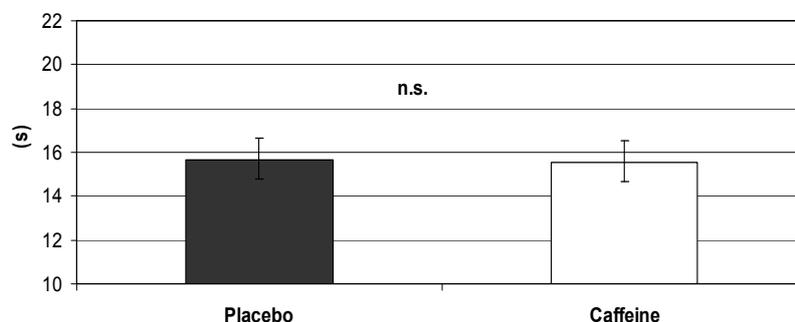


Figure 4

Test 4 – Shuttle run 6 x 9 m

Time to completion of the shuttle run 6 x 40 m was the only performance parameter improved by caffeine compared to placebo. Under placebo treatment, average time was 54.0 ± 5.3 s. After ingesting caffeine, average time was improved to $52, 1 \pm 4.4$ s ($p < 0.01$, Figure 5).

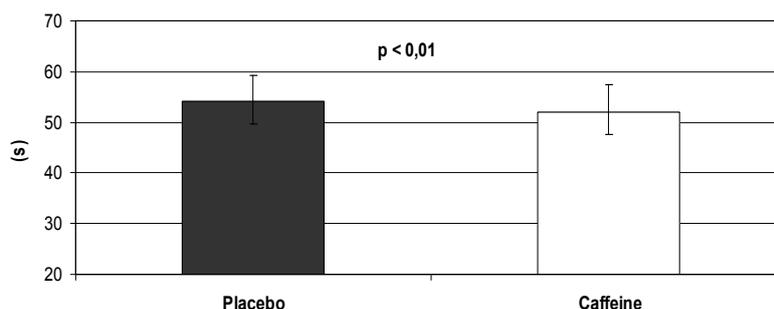


Figure 5

Test 5 – Shuttle run 6 x 40 m

Discussion and Conclusion

The main finding of the present study was that caffeine could improve performance on average by 1.9 s in the shuttle run test 6 x 40 m compared to placebo in floorball female players. This test is generally used as a marker of so-called endurance in speed. The present study, however, does not allow explaining possible mechanisms behind caffeine's beneficial effects on the ability to maintain higher speed over 50 s of all-our running performance, including several acceleration and deceleration phases. Hypothetically, the mechanisms

could come from local (muscle – improved anaerobic energy restoration/acidosis resistance) and/or from central (brain – delayed fatigue perception) and other possible sources.

Graham (1998) stated that caffeine can delay fatigue in athletes. There are several other studies, supporting the view that caffeine is ergogenic to some extent with high intensity exercise in the duration range from 60 to 180 s. On the other hand, other traditional models investigating the performance (30 s Wingate test) showed minimal effects of caffeine on performance (Greer, F., McLean, C., Graham, E. 1997). However, studies using sport specific methodologies (such as hockey, rugby, soccer) with a shorter duration (4 – 6 s), show that caffeine is ergogenic during high intensity intermittent exercise (Davis, J., Green, J. 2009).

Caffeine has been shown to be a stimulant of the central nervous system. According to Spiller (1998), caffeine can shorten reaction times and increase mental vigilance. This fact was, however, not confirmed in our reaction speed test. A partial explanation for this discrepancy can stem from differences in test procedures. In our test settings, the final time to task completion is a sum of choice reaction time plus time needed to perform a motor task (stepping on platforms placed 0.5 m from the starting point).

Sokmen, et. al. (2008), found that caffeine plays an important role in the greater concentration in the target shooting and in a simulated combat experience in the military, suggesting that caffeine may increase concentration. We did not confirm this in our study as the shooting accuracy was similar with or without caffeine. Of course, it is possible that a skill level of the selected group of players could interfere with the effects of caffeine. Indeed, rather large standard deviation relative the mean within our group of subjects supports this notion.

Caffeine has been also shown to enhance muscle contraction, resulting in higher and faster force production (Spiller, 1998). For instance, one study looked at how caffeine influences the power of football and basketball players (Wolf et al., 2009). Their results showed that caffeine improves performance by about 16 %. We did not measure muscle strength and power in our design. However, we used two performance tests where results are highly dependent on muscle strength and power – standing long jump and shuttle run 6 x 9 m. The later test includes several acceleration and deceleration phases putting high demands on muscle strength capabilities. However, caffeine could not improve performance in either of the two tests.

This was in line with conclusions of Nehliq and Debry (1994), who claimed that caffeine is able to increase muscle contractility, may increase the time before exhaustion but has no effect on performance intensive short-time performance.

Practical recommendations:

Based on our findings, caffeine could be beneficial for delaying fatigue caused by repeated high-intensity runs lasting tens of seconds. Therefore, to prevent fatigue onset typically occurring in the later and final phases of the match, we recommend ingesting caffeine either just before or during the second third of the match. The exact timing may be individual, depended on inter-individual differences in caffeine's effects onset and duration.

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RESUMÉ

**VPLYV KOFEÍNU
NA MOTORICKÚ VÝKONNOSŤ HRÁČOK FLORBALU***Ivana Krasňanová, Milan Sedliak, Anton Lednický*

Výskumy viacerých autorov potvrdili pozitívny vplyv kofeínu na výkonnosť športovcov, a to nielen v laboratórnych testoch, ale aj v špecifických úlohách športovej špecializácie. Pozitívne zmeny boli zaregistrované nielen v individuálnych, ale aj v kolektívnych športoch. Nepodarilo sa nám však nájsť žiadnu štúdiu, ktorá by sa zameriavala na vplyv kofeínu a jeho účinky vo florbale. Cieľom nášho experimentu bolo preskúmať vplyv kofeínu na motorickú výkonnosť žien – florbalistiek. Sledovaný súbor tvorilo 14 hráčok prvoligového tímu VŠK FTVŠ UK. Jednej polovici hráčok sa v prvom testovaní podával kofeín (v priemere 4,4 mg/kg), druhej polovici hráčok placebo (pšeničná múka). Užívané látky sa o 7 dní hráčkam vymenili. Išlo o takzvaný dvojito slepý experiment. Kofeín i placebo hráčky prijímali vždy 30 minút pred začiatkom testovacej batérie, ktorá sa skladala z piatich motorických testov. Zistili sme, že kofeín spôsobil štatisticky významné zlepšenie výkonu iba v člnkovom behu 6 x 40 m (kofeín $52,1 \pm 4,4$ s. vs. placebo $54,0 \pm 5,3$ s., kofeín zaznamenal štatistickú významnosť $p < 0,01$). V skoku do diaľky z miesta, člnkovom behu 6 x 9 m, reakčnom teste a v teste presnosti. Rozdiely medzi kofeínom a placebom neboli štatisticky významné.

THE LEVEL OF SWIMMING CAPABILITIES IN CHILDREN AT PRIMARY OF SCHOOL AGE

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Summary: In this contribution we present the results of research aimed at updating the level of swimming skills at primary school children (n = 235). When testing primary school children 25 metres freestyle test is usually applied. Results confirmed our hypothesis. Actual level of swimming skills is stagnated or is descending. We suppose that this negative situation is caused not only by a new lifestyle of our young population. Their interest is influenced by IT, and by the fact that there is not enough attention paid to basic swimming courses at elementary schools than it was in the past.

Key words: Swimming, swimmer, swimming capability, primary school children

Introduction

In the past, in 1979 – 1993, according to the Directive of Ministry of Education all 3-rd grade primary school pupils were allowed to attend basic swimming courses. Swimming courses were included to curriculum and became a part of compulsory Physical Education at schools. This was the way for creation conditions to increase the level of swimming capabilities in school age children. Current social and economic changes in Slovakia significantly influenced the quality of swimming training at schools by decreasing the number of swimming lessons. Swimming in the course of compulsory Physical Education as subject in curriculum, was reclassified as voluntary sport, which is organised or is not organised by the schools, depending on their own material and economic conditions. We suggest that these conditions are not sufficient. Participation of all pupils is conditioned by parents' financial situation. This change in the organisation of basic swimming courses has a negative influence on swimming skills of primary and secondary school pupils (Macejková, Benčuriková, 2001, 2002). This fact also confirms the statistics of drowned children. The drowned children have number increased by 15 % in 1997 – 2007 (Baran, 2009).

According to experts' opinions the analysis of swimming skills of school age pupils is constantly actual and in the progress. It represents the quality of swimming skills which reflect the level of swimming technique, physical a coordination abilities and mental peculiarities. These create preconditions for movement in the water. Mostly they reflect the influence of external factors, in particular, swimming conditions. Analysing this problem we met some differences in definition of "swimming skills". When testing swimming skill in non-sporting population in 70's they tested their swimming performance, in 80's swimming ability and advance, and at the beginning of 90's swimming illiteracy. In 1995 Slova-

via accepted and unified the term – swimming skills. Common population consider this term to be related to physical fitness. Its predecessor was swimming performance and it was based on diagnostic means which were usually used in sport swimming. Nowadays there is a departure from maximal level of performance and swimming courses are mainly focused on preventive and health sphere of children and youth.

In the context with experts' results in research we meet a lot of open questions connected with this term and suitable content of appropriate definition of term "swimmer". The term "swimmer" in accordance with common population is described as: an individual who can move safely in the water and can swim (Macejková et al., 2005). In this context there is a question "What is the meaning of – to swim at the level of common population"? We agree on Jursík's opinion (1995), who defined the swimmer and his performance, in other words his swimming skills, as a level of acquired swimming motion practice. It means that the level of swimming performance which is typical for basic swimming influenced by individual predispositions for swimming and his relationship to water environment. Among the demands which will evaluate the swimmers there is a terminological discrepancy to evaluate the specific performance of active swimmers and swimmers at the level of common population. Swimmer is prepared to increase his swimming performance by systematically targeted long-lasting sports training. According to common population performance is not evaluated because it is not targeted and systematic sport training focused on sports performance but it is a skill practice to manage water environment. Result of this skill practice is ability to swim according to individual abilities sufficient to move in water environment.

In practise, quality of swimming skills is evaluated by its quantity – to swim the distance or to swim for time. Criterion of evaluation of an individual – a swimmer or non-swimmer is his/her age and comes from the aim of basic swimming training. Šajber, Pincolič (1996) claim that swimmer is an individual who is able to swim 50 meters with deep water start jump can swim 25 meter by two different swimming styles. According to Jursík (1993) a swimmer is a person who can continuously swim 200 – 400 meters by any swimming style, can help exhausted swimmer, can swim under the water and can pull out a thing from the depth of 3 meters. According to Macejková et al. (2005) these swimming skills which are higher than standard are necessary for safe movement in water environment and to rescue drowning person, and a pupil can manage them after completing all basic swimming phases. After 1 year of systematic training, a "half-swimmer" is becoming a swimmer in the case he or she is able to swim 200 m without any signs of exhaustion.

Some recommendations found in scientific literature are focused on evaluation of swimming skill with different attitude in methodological process of elaborating empirical results. Large number of results related to swimming skills in English youth aged 11 – 18 was presented by Atha (1980). He developed the first classification tables for practical use at schools in England. Norms for working age population were suggested by Cooper (1990) but focused on physical fitness development. In 90's in Slovakia there were elaborated norms to evaluate swimming capability of 7 – 18 year olds. The level of their swimming abilities was evaluated by 9 point scale (Moravec, Labudová, 1990). The research in basic swimming of children at schools was conducted by Jursík (1993). Research was based on his long-term pedagogical experience in teaching swimming and his own research studies. He defined the target standards of swimming skills for high school pupils (Jursík, 1998). Benčuriková (2001) monitored level of schoolchildren and their swimming skills in Slovakia (n = 5 223). The results were used for elaborating the standards for Physical Education

at schools and sports education and to evaluate the level of swimming capabilities in common population. Under the auspices of the Slovak Asthmatic Association it was done a research in 2007 which was targeted on motivation to regular sport activity of children with respiratory system allergy. 174 asthmatic children from Bratislava's primary schools of age 7 – 15 participated in this research and achieved better results than healthy children of the same age in 25 m swimming test (Benčuriková, Kováčová, 2008). The grant project realized by Zapletalová et al. in 2009 was focused on the tendencies in swimming capabilities and their progress within physical performance in the last 20 years, their relations to different levels of physical activity in school population.

On the basis of our long-term experiences we can figure out the proper assessment level of swimming abilities in common population by swimming given distance in certain time. Its quality has wide spectral information value as it includes the level of swimming technique, functional and also physical ability of our body and also wide range of swimming skills.

When comparing the children, we need to set the limit for distance and to evaluate the quality. Therefore we consider being correct to monitor swimming skills in common population and not their performance although similar diagnostic methods are applied as for active swimmers.

On the basis of research studies we recommend to evaluate the level of swimming skills in common population by tests in swimming according to age of pupils: 1st grade of primary school (1st – 4th grade) – 25 meters in any style, 2nd grade of primary school (5th – 9th grade) – 25 m or 50 m in any style, 3rd grade of high school – 50 m or 100 m in any style and 5 minutes continuous swimming. A criterion to assess the pupil's swimming ability is the time he/she has swum, the given distance or the distance in given time.

The purpose of our paper was to update the knowledge about the level of swimming skills of school age children.

Hypothesis

We assume that the level of swimming skills of young school children has been stagnating or declining in the past 20 years. Our assumption is based on the fact that nowadays less attention which given to swimming lessons in elementary schools, in comparison to the past.

Reasons: The transformation of our society in the teaching of swimming skills at primary schools is given by less attention at present than it was in the past. Prevailing economic and material priorities also indicate to negative effect on the level of swimming lessons at schools.

Tasks

Task 1: Determine the current level of swimming skills of young school age children.

Task 2: Compare the current level of swimming skills with the findings of other authors with the same subject of study (years 1993-2009).

Task 3: Determine a relationship between the level of swimming skills and specific factors which influence it.

Methodology

Subject of our research was a sample of 235 pupils aged 9 – 10 years, 131 boys and 104 girls. Gathering empirical data using questionnaire methods formed an integral part of our research. The questionnaire consisted of four questions with regards to pupils' previous experiences in a water environment. We tried to determine if selected criteria influence swimming skills of our sample. The first question "Can you swim?" was aimed at their self-evaluation. The pupils answered either "Yes" or "No". The second question was if the pupils had completed basic swimming course prior to our course. The answer was either "Yes" or "No". The third question contained a choice of free-time activities. Pupils could choose one of the three options (sports, arts, languages). The fourth question: "How often do you swim?" aimed at finding out the intensity, regularity or interest in swimming. The pupils could choose one of three answers: Regularly (at least twice a week, either at school or as a part of swimming training), seasonally (during school breaks or on holidays), not at all.

Results and discussion

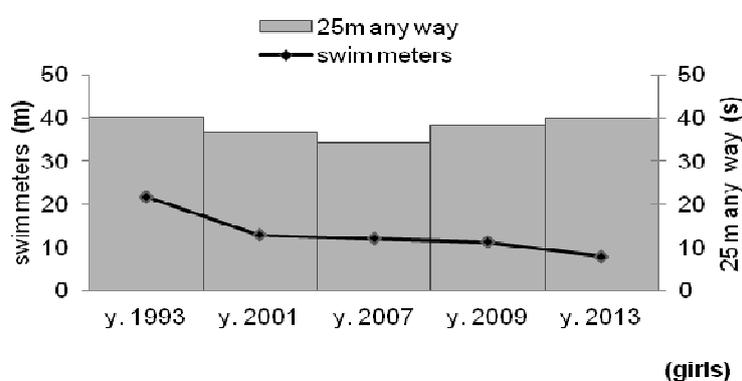
We compared swimming capability of 9 – 10 years old children with the authors who used to deal with this task in the past (Jursík, 1993; Benčuriková, 2001; Benčuriková, Kováčová, 2007; Labudová, 2009). Results achieved in the test 25 m of any swimming style indicate to objective picture on 9 – 10 year sample. For children in the early years of school the differences in development are not so fundamental. We have pointed out to certain extent at biological factor too because "performance" differences between girls and boys were minimal.

When comparing the level of swimming capability between girls and boys we have found out almost the same average performances (in terms of gender) (girls 39.24 s; boys 38.77 s). The best girl's time was (19.07 s) and the best time among the boys was 20.40 s, it means 133 s worse. The choice of swimming style was not deciding factor as much as in sport swimming (according to time). Very often the students had achieved better results in breaststroke in comparison to crawl with many technical errors. Most girls (74.7 %) chose swimming style breaststroke and most boys (75.1 %) crawl style. 8.9% of girls and 5.7 % of boys were able to swim less than 25 m. Girls on average could swim the distance of 7.9 m and boys 10.0 m (tab. 1). Samples consisting of girls and boys showed the continuous decrease in swimming ability during the years which were monitored, it means the length they were able to swim. The biggest difference in "performance" we recorded when comparing our results with the results presented by Jursík (1993). Girls (2013) on average were able to swim 7.94 m in comparison to 21.8 m (Jursík results). Boys' sample could swim on average 10.0 m in comparison to 24, 2 m above-mentioned author (fig. 1, 2).

In 25 m test, the group of our girls, except Jursík's sample (1993), compared to the other monitored groups was worse. The biggest difference was between sample of allergic in 2007 (Benčuriková, Kováčová, 2008). The average time of the girls was 0:34.3 s recorded 6 years ago – about 5.7 s better than the average time (0:44 s) the 25 m length in the sample in 2013. In general we can state continuous improvement of an average time in girls. However since 2009, they were getting worse (fig. 1).

Table 1*Basic statistical indicators of swimming performances in 9-10 year old pupils*

	Girls (n = 104)		Boys (n = 131)	
	25 m Free style (s)	meters able to swim (m)	25 m Free style (s)	meters able to swim (m)
number of pupils (n)	87	17	120	11
arithmetic average (x)	39.24	7.94	38.77	10.00
standard deviation (s)	10.315	6.628	8.995	5.916
minimum (Xmin)	19.07	0.00	20.40	0.00
maximum (Xmax)	70.00	20.00	83.00	20.00
variation margin (r)	50.93	20.00	62.60	20.00

**Figure 1**

The level of the swimming capability in girls of young age in swimming test – 25 m free style in different years of measurement

The boys (fig. 2) achieved gradual improvement in average times in 25 m free style since 1993 till 2009. The samples which were monitored over the last 20 years, achieved better average times than our sample. This time (0:39.5) was in comparison to other samples worse about 1.3 s to Jursik (1993) and 7.9 s by Zapletalová et al. (2009).

Results which were presented in this contribution indicate at current level of the swimming capability in 9 – 10 year olds at elementary schools which are lower in comparison to previous results in the past. This development is not easy to evaluate objectively. In our opinion, the main reason is the change in the economic situation in our school system and even more the conditions for compulsory teaching of swimming at elementary schools. Total 8.9 % of girls and 5.7 % of boys were able to swim less than 25 m. 108 % of children swim. When evaluating the questionnaire, we found out that school age children do not know how to assess their own swimming abilities objectively. Asking the question "Can you swim?" 56.9 % children answered "Yes", while only 37.3 % of boys and girls gained previous expe-

rience related to water environment after passing basic swimming course. Of the regularly (it means twice a week). In this context, we consider to be important to emphasize that self-estimation of children's swimming capabilities in 9 – 10 years old is very low. Children's answers showed that they often tend to overestimate their swimming skills ($\chi^2 = 95.54^{**}$; $p < 0.01$). Therefore we recommend to divide the children at the beginning of the course in groups based on their performance by swimming test and not according to their personal evaluations.

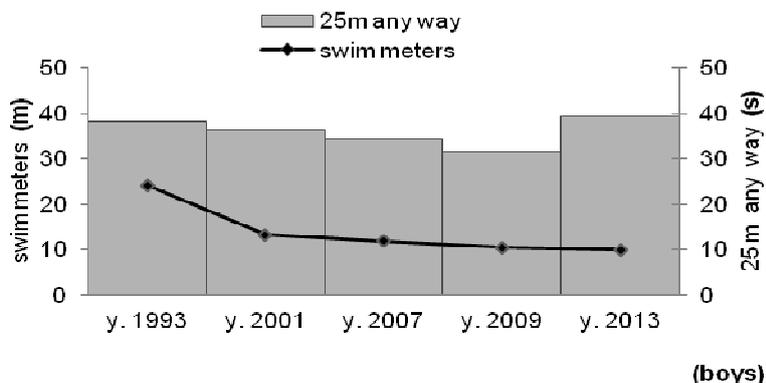


Figure 2

The level of the swimming capability in children of young age in swimming test – 25 m free style in different years of measurement

The next question in the questionnaire was aimed at obtaining information on children's preference in activities during their free time. 49 % of children have chosen sports and 51 % sedentary activity. Children's interest was probably influenced by parents who often decide on their activities. They want their children to spend more leisure time (39.2 %) in art and educational courses (11.8 %) rather than in sports clubs. The negative aspect of our findings is that physical activity is gradually replaced by sedentary activities (fig. 3).

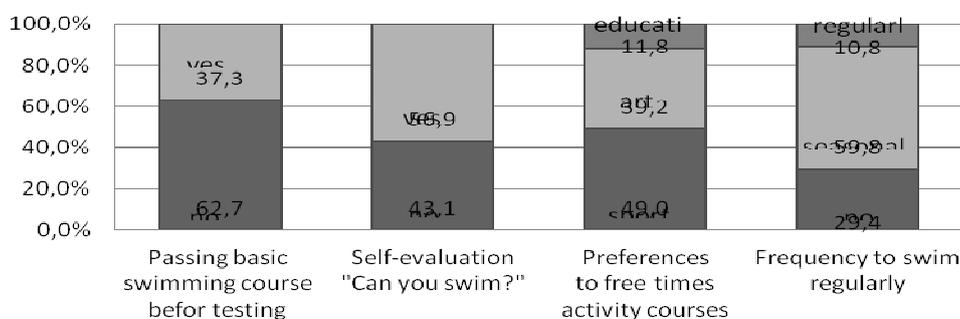


Figure 3

Previous experience with water environment and leisure time activities

When assessing which factors selected from previous pupils experience with water environment and leisure activities could affect swimming activities of school age children we have found out that the influence on the level of the swimming capability is to attend basic swimming course ($\chi^2 = 98.02^{**}$; $p < 0.01$) and frequency to swim regularly ($\chi^2 = 58.30^{**}$; $p < 0.01$). The last indicator did not recognize any statistically significant relationship that could significantly affect the level of swimming ability of the school age children.

Conclusion

Based on years of experience we believe that at present less attention is paid to the swimming lessons at schools than it was in the past. In the past the basic swimming courses were compulsory and supported by the state. Raising the level of the swimming capability was one of the most progressive elements in physical education. Department of Outdoor Sports and Swimming, the Faculty of Physical Education and Sports in Bratislava came up with solution to this negative situation. In year 2013 KEGA project was administered by our department entitled: Innovation of teaching in thematic units "Outdoor activities and seasonal physical activity". The aim of the project was to create a multifunctional model of the educational process in swimming and select outdoor sports available in the area of pre-primary and primary education in Slovakia. The outputs of the project should have been documented in the methodological materials, on DVDs and distributed to schools. Specific methodology should be helpful for teachers in pre-primary and primary training in this field. Commission for the development program of elementary and secondary education decided that project was rejected. The reason was that this program was not suitable for the first degree teachers at primary schools, because they are not qualified enough to teach swimming and skiing, and therefore they cannot teach them. As another reason, the Commission stated that the research team, which consisted of the experienced teaching staff of the Department of Outdoor Sports and Swimming FPES UC, does not have sufficient knowledge in the field of primary education.

Despite their decision, we believe that one of the most important moments in teaching swimming lessons at schools is the children's natural high psychomotor adaptability in water environment. Later it will be harder to substitute it when the children get older. Improvement of swimming abilities and technique of different styles among common population form an inseparable part of an increase of the feeling of safety in water environment it means swimming in their free time without problems.

Nowadays these misconception by anonymous opponents slow down our attempts to improve conditions for movement activities of our youth and for realization the basic swimming and ski courses at primary schools. We believe that these courses should be supported by the Ministry of Education, Science, Research and Sport of the Slovak Republic or National Insurance, as it was in the past. Only increased interest in state institutions on youth physical activity may be the positive change, and so could stop the decline in motor performance or the swimming capabilities of our youth. Amendment to the Guidelines on the organization of the Ministry of Education to hold the swimming and ski lessons at primary schools and in particular the financial resources given by the state could change the situation and help in eliminating swimming illiteracy, as well as contribute effectively to create positive relationships for children to do sports.

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RESUMÉ

**ÚROVEŇ PLAVECKEJ SPÔSOBILOSTI DETÍ
MLADŠIEHO ŠKOLSKÉHO VEKU**

doc. PaedDr. Ľubomíra Benčuriková, PhD.

V príspevku predkladáme výsledky výskumu, ktorého cieľom bolo aktualizovať úroveň plaveckej spôsobilosti detí mladšieho školského veku ($n = 235$). Použili sme plavecký test 25 m ľubovoľným spôsobom, ktorý sa bežne používa v praxi a zodpovedá veku žiakov. Výsledky potvrdili stanovenú hypotézu. Aktuálna úroveň plaveckej spôsobilosti stagnuje, resp. klesá. Domnievame sa, že tento negatívny stav zapríčinil nielen životný štýl našej mladšej populácie, ktorý je ovplyvnený rozvojom informačných technológií, ale aj skutočnosťou, že v súčasnosti sa kurzom základného plávania na 1. stupni ZŠ venuje oveľa menšia pozornosť ako v minulosti.

INTERNATIONAL SCIENTIFIC CONFERENCE 2014

Sports, Physical Activity & Health



Organiser:

Faculty of Physical Education and Sports, Comenius University in Bratislava
Slovak Scientific Society for Physical Education and Sport

Under the patronage of:

Ministry of Education, Science, Research and Sport of the Slovak Republic, Slovak Olympic Committee

Objectives:

Objectives for hosting SPAH conference are to provide a forum for presentation of the latest scientific research findings and trends in sports training, health related sports activities and physical activity of healthy and socially disadvantaged groups.

Key note and invited speakers:

Prof. Zsolt Radák, Semmelweis University, Hungary
Wolfgang Baumann, TAFISA Secretary General, Germany
Dr. Darina Sedláková, MPH, WHO Country Office in the Slovak Republic
Prof. Václav Bunc, Charles University, Czech Republic
Prof. Dušan Hamar, MD., Comenius University, Slovakia
Dr. Dana Masaryková, FIEP, Slovakia

Section structure of SPAH Conference:

1. New trends in sports training
2. Health oriented sports activities
3. Physical activity of healthy and socially disadvantaged groups
4. Poster presentations
5. Oral and poster presentations in Slovak language

Preliminary programme:

11th September, 2014: registration, opening ceremony, key note speakers, raut
12th September, 2014: invited speakers, oral and poster presentations
13th September, 2014: invited speakers, oral and poster presentations, closing ceremony & banquet

Conference fee:

- before 30th June, 2014: 150 €
(teachers of the Faculty and the members of the Slovak Scientific Society for Physical Education and Sport): 80 €
- after 30 June, 2014: 200 €
- Students: 60 €
- Accompanying person: 100 €

Conference fee includes:

- 1x First-Author paper, 1x Co-Author paper
- Attendance to the conference
- Conference material with final program, book of abstracts, proceedings book (CD format), certificate of attendance
- Coffee breaks
- Opening and closing ceremony, gala dinner

<http://www.spah2014.eu/>

RELATIONSHIP BETWEEN ACHIEVEMENT MOTIVATION AND EFFICIENCY OF FEMALE BASKETBALL PLAYERS

Veronika Korbačková, Helena Medeková,
Tomáš Gregor, Lubor Tománek

Comenius University in Bratislava, Faculty of Physical Education and Sport

Summary: The main aim of this study was to find the relationship between achievement motivation and the efficiency of the game performance. For this purpose we examined 82 female junior basketball players at age 16.8 ± 0.6 by standardized psychological questionnaire – Achievement motivation questionnaire and the objective way of evaluating the game performance – efficiency. We used Spearman's correlation for evaluating the relationship between achievement motive, debilitating anxiety, facilitating anxiety and efficiency. The results of the research confirmed that players with the higher level of achievement motive had also higher level of efficiency $r = 0.292$. The results also confirmed that players with higher level of facilitating anxiety had achieved higher efficiency $r = 0.432$. Players with lower level of debilitating anxiety had also achieved higher efficiency $r = 0.238$.

Key words: achievement motivation, facilitating anxiety, debilitating anxiety, basketball, efficiency

Introduction

The two most important needs of athletes are the need of entertainment and the need of being useful (Martens, 2004). The entertainment satisfies the need of stimulation and excitement. Being useful satisfies the need of feeling capable and successful. Sport psychologist Gurský (2005) describes motivation as a process of managing, maintaining and energizing behaviour. Achievement motivation is a specific type of motivation. It is described as a need of performance with the primary merit of recognition, appreciation and the need to "be somebody". In the achievement motivation two basic needs are manifested. The first is the hope of success and the second is the fear of failure.

Weinberg and Gould (2007) submit that optimally motivated athlete has a high degree of hope of success and low degree of fear of failure. Conversely inadequate motivated athlete has a low degree of hope of success and high degree of fear of failure. In general, it exists an opinion, that more motivated athlete will achieve better performance in a given sport field. Results of the researches by Hošek et al. (1973), Hrabala et al. (1984), Duda (1992), Šerešová (2010), Korbačková (2011) already confirmed this opinion.

Achievement motive is one of the determining factors of the performance (Pardel et al., 1984). The tendency is to excel in task-situations, both in the eyes of another person and in the eyes of oneself. It is a kind of desire or tendency to make the things as better and as

faster as possible and stand out above the rest. It consists of the four aspects: aspect of performance behaviour, aspect of aspiration level, aspect of persistence at work and aspect of time orientation in the future.

The dominant aspect of achieving a high performance in basketball is the aspiration level. It is the ability of an athlete to estimate the optimal level of future performance, based on previous performance (Gregor, 2013). It is affected by previous successes and failures. The more regular and intensive the mental states are the more success is accompanied with them; the aspiration level is more stabilized and can positively impact his/her performance. The more regular and intensive the mental states are they are more accompanied by success, the aspiration level is more stabilized what can have positive impact on his/her performance. On the contrary, when the athlete fails, its inner conflict can be experienced intensively. This can act as disincentive to further performance of an athlete. The next factor which affects achievement motivation is anxiety. Anxiety is a kind of emotion, which is often connected with a term fear in the sport. The difference between anxiety and fear is that anxiety arises because of unrealistic threats and fear arises because of the real threats. There are two kinds of anxiety – debilitating and facilitating anxiety. Debilitating anxiety can cause dysfunction of athletes in task situations which are stressful or lack a clear structure. On the other hand, facilitating anxiety is manifested with a state of slight tension and it mobilizes athlete for a better performance (Gregor, 1995). The results of researches confirm that athletes have a higher level of facilitating anxiety than non-athletes (Lokša et al., 1983; Gregor, 1994).

To achieve a success in the team sports, it is not important only to motivate individuals but the whole team. Basketball is a team sport, where interaction of five players is aimed at winning over the opponents, with an effort of a whole team. Players of team sports are expected to be cooperative, compatible and that they will be able to contribute to achieve common goals (Cox, 1994). Each player will be gradually specialized in one of the players' functions and therefore are the demands on their physical and mental performance also different (Trninić, 2000).

Game performance in the team sports has its own specifics, which are given by the variable conditions of the game and especially by the active play of opponents. Although the game performance is perceived as one unit, we try to distinguish the difference between an individual and collective level of performance. The term individual game performance means a summary of game skills and abilities, which depends on bioenergetics, biomechanical and psychological determinants of an individual (Dobry, 1988; Argaj, 1995; Süß 2006). Game performance of the team is in a close relation with an individual game performance but it cannot be taken as equivalent to the sum of individual performances. Süß (2006) determines individual performance as an open system consisting of individual performances and their relationships. It is obvious that psychological determinants play an important role in the game performance. Achievement motivation plays dominant role among these psychological determinants.

Aim

The aim of this study was to clarify the relationship between achievement motivation and game productivity of female basketball players. We assumed that the players, who reached higher level of achievement motive, will achieve higher efficiency. Furthermore,

we assumed that players with higher level of facilitating anxiety and with lower level of debilitating anxiety will also achieve higher efficiency.

Methods

Examined group consisted of junior basketball female players $n = 82$. We chose players of the 8 best teams, playing nationwide junior league in the season 2010/2011 at age 16.8 ± 0.6 years. Achievement motivation was examined by standardized psychological questionnaire by Pardel et al. (1984) entitled "Achievement motivation questionnaire". It contains 52 items, which consist of 3 scales. 24 items deal with achievement motive, 17 items deal with debilitating anxiety and 10 items deal with facilitating anxiety.

To evaluate the game performance in an objective manner the most common indicator for basketball is the efficiency. Efficiency was evaluated by Mannley's method (1989) modified by Tománek (2003). Value of the player's efficiency depends on the number of attempts vs. made points (field goals, three-point field goals and free throws), steals, and assists, blocks, turnovers, and personal fouls per time played.

When processing the examined data, we used the basic statistical characteristics. To evaluate the relationship between achievement motive, debilitating anxiety, facilitating anxiety and efficiency we used Spearman's correlation (R).

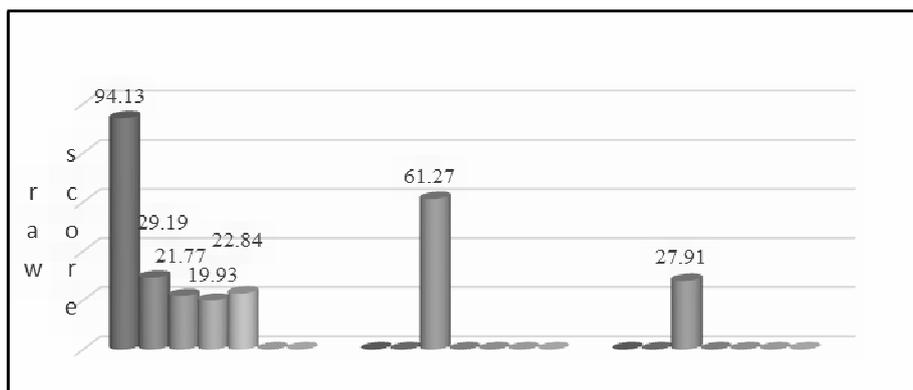
Results and discussion

We interpret our results according the 3 scales, which are measured by Achievement motivation questionnaire. The first one is achievement motive which consists of four aspects: aspect of performance behaviour, aspect of aspiration level, aspect of persistence at work and aspect of time orientation in the future. Fig. 1 indicates the average values of achievement motive and its four aspects.

In the scale of achievement motive the maximum value was 144. The arithmetic mean achieved the value 94.13 what is in comparison with population an average value of achievement motive. Variation range of particular characteristics and other statistical characteristics are shown in the Table 1.

The highest level at female basketball players was reached in the aspect of aspiration level (on average, players have reached 72 % of the maximum possible score). These findings correspond to the results of research of Vaněk et al. (1974), Gregor (1994), Šerešová (2010). In the scale of achievement motive was confirmed statistically significant ($p < 0.05$) relationship between efficiency of players and the achievement motive $r = 0.292$ (Table 2). Obtained results confirmed that players with higher level of achievement motive achieved higher efficiency.

The next statistically significant relationship $r = 0.392$ was between aspect of aspiration level and aspect of persistence at work ($p < 0.05$). On the basis of logical analysis we do not consider persistence at work as a crucial aspect of the efficiency at the particular basketball match, but persistence at work can be determining factor especially in the preparations for performance, what can have positive impact on long-term performance of players.



Note: AM – achievement motive, PB – aspect of performance behaviour, AS – aspect of aspiration level, PW – aspect of persistence at work, TOF – aspect of time orientation in the future, DA – debilitating anxiety, FA – facilitating anxiety

Figure 1

The average values of achievement motive and its four aspects

Table 1

Basic statistical characteristics of achievement motivation and efficiency of players

	<i>AM</i>	<i>PB</i>	<i>AS</i>	<i>PW</i>	<i>TOF</i>	<i>DA</i>	<i>FA</i>	<i>E</i>
<i>arithmetic mean</i>	94.13	29.12	21.7	19.93	22.84	61.27	27.91	3.339
<i>standard deviation</i>	16.18	7.520	4.114	3.906	5.614	15.11	8.434	2.452
<i>median</i>	94.5	28.0	22.0	20.0	23.0	62.5	27.0	3.4
<i>min.</i>	58	2	12	11	10	16	10	-1.61
<i>max.</i>	135	46	30	30	36	90	46	8.44
<i>variation range</i>	77	44	18	19	26	74	36	10.05

Note: AM – achievement motive, PB – aspect of performance behaviour, AS – aspect of aspiration level, PW – aspect of persistence at work, TOF – aspect of time orientation in the future, DA – debilitating anxiety, FA – facilitating anxiety, E – efficiency

Table 2

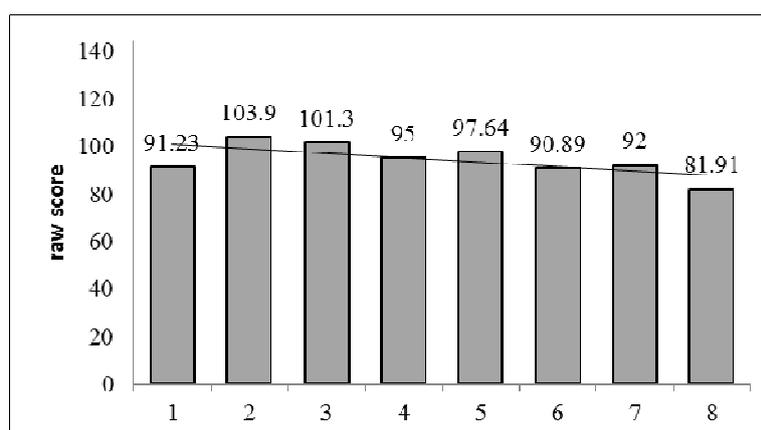
The correlation matrix of relationships between achievement motive (and its four aspects), debilitating anxiety, facilitating anxiety and efficiency

	<i>AM</i>	<i>VS</i>	<i>AŠ</i>	<i>VP</i>	<i>ČOB</i>	<i>AB</i>	<i>AP</i>	<i>HP</i>
<i>MV</i>	1							
<i>VS</i>	0.816**	1						
<i>AŠ</i>	0.778**	0.649**	1					
<i>VP</i>	0.865**	0.699**	0.624**	1				
<i>ČOB</i>	0.639**	0.214	0.324	0.405**	1			
<i>AB</i>	-0.125	-0.241*	-0.246*	-0.133	0.129	1		
<i>AP</i>	0.352**	0.269*	0.261*	0.304**	0.243*	-0.095	1	
<i>HP</i>	0.432**	0.389**	0.392**	0.392**	0.176	-0.238*	0.292**	1

Critical values: ** $p < 0.01$ ($r = 0.283$); * $p < 0.05$ ($r = 0.217$)

Note: AM – achievement motive, PB – aspect of performance behaviour, AS – aspect of aspiration level, PW – aspect of persistence at work, TOF – aspect of time orientation in the future, DA – debilitating anxiety, FA – facilitating anxiety, E – efficiency

Fig. 2 indicates the average values of achievement motive of the players in their teams listed from the first to last in the final ranking.

**Figure 2**

The average values of achievement motive of the players in particular teams

Fig. 3 indicates the average values of debilitating anxiety of the players in their teams listed from the first to last in the final ranking. Average value of all players was 61.27 (Table 1). According to this research it is an important indicator to show how these values

vary between players achieving better performance from those that achieved weaker performance in the matches. Among the 10 most efficient players the average value of debilitating anxiety was 51.7 and within the 10 least efficient players the average value was 70.2. It was confirmed statistical significance of our assumption ($p < 0.01$), that the players reaching higher efficiency had achieved lower values of debilitating anxiety $r = 0.238$.

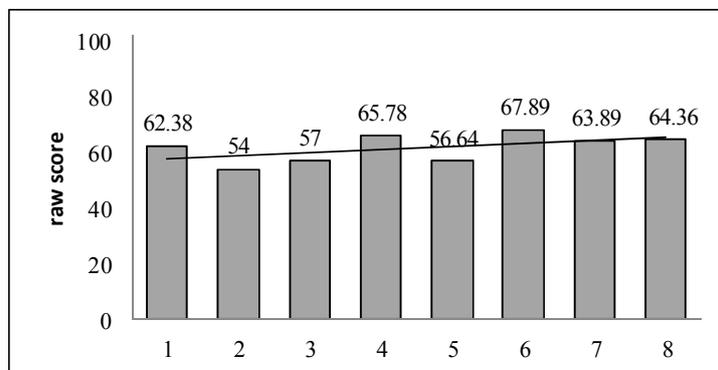


Figure 3

The average values of debilitating anxiety of the players in particular teams

Fig. 4 shows the results of average values of facilitating anxiety. Average value of all players was 27.91 (Table 1). It was confirmed statistical significance ($p < 0.01$) that the players reaching higher efficiency had achieved higher values of facilitating anxiety $r = 0.432$.

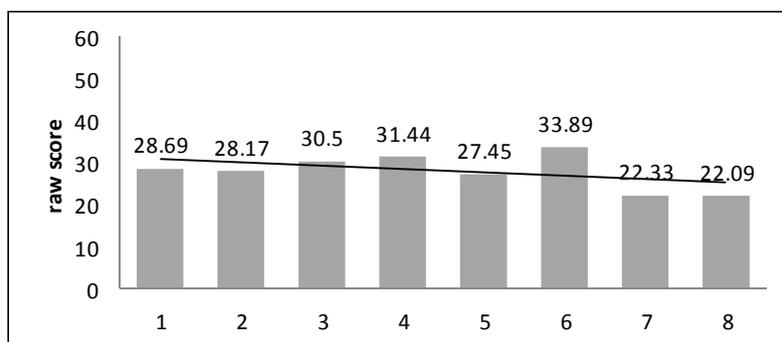


Figure 4

The average values of facilitating anxiety of the players in particular teams

Based on our results we can conclude that higher level of achievement motive and higher level of facilitating anxiety was characteristic for female players with higher efficiency. Level of debilitating anxiety was higher among players with lower efficiency.

We are aware of the limited validity of our results considering the range and age structure of the examined basketball female players. It is also important to mention that the assessment of achievement motivation was monitored within three months and game efficiency was evaluated during the period of seven months. Moreover, it is necessary to take into account some variability of achievement motivation because of the age of the young players. We do not exclude the possibility that their achievement motivation will be different within a year. Despite all of these facts we consider our findings beneficial for basketball coaches, especially the coaches of chosen teams.

Conclusion

Exploring the achievement motivation and understanding its level of individual players and the team as a whole, can contribute to improve the efficiency of the basketball players.

The results of the research confirmed that players with the higher level of achievement motive had also higher level of efficiency ($p < 0.05$). The results also confirmed that players with higher level of facilitating anxiety had higher efficiency ($p < 0.05$). Players with lower level of debilitating anxiety had also higher efficiency ($p < 0.01$).

Due to the fact that examined female junior basketball players do not have a sport psychologist in their preparations, and we do not have any evidence of the Slovak players, we cannot compare our data with them. Available are the studies of national teams, where the coaches are usually aware of the need of sport psychologist. Achievement motivation within the national teams is relatively high especially during the period, when the players are in the selection. It is really important to be in touch with the trends in sport psychology focusing on basketball. Consequently it is very important to apply obtained knowledge into practice. According to our findings, the aspiration level seems to be one of the determining aspects of achievement motivation; therefore we recommend its deeper analysis.

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RESUMÉ

SÚVISLOSTI MEDZI VÝKONOVOU MOTIVÁCIOU A HERNOU PRODUKTIVITOU BASKETBALISTIEK

Veronika Korbačková, Helena Medeková, Tomáš Gregor, Lubor Tománek

Cieľom príspevku bolo objasniť závislosť medzi výkonovou motiváciou a hernou produktivitou. Na splnenie tohto cieľa sme skúmali 82 basketbalových hráčok vo veku $16,8 \pm 0,6$ pomocou štandardizovaného dotazníka – Dotazník motivácie výkonu. Hernú výkonnosť hráčok sme zisťovali pomocou objektívneho spôsobu hodnotenia hernej výkonnosti – hernou produktivitou. Na zistenie závislosti medzi motívom výkonu, anxiozitou brzdiacou výkon, anxiozitou podporujúcou výkon a hernou produktivitou sme použili Spearmanovu poradovú koreláciu. Výsledky výskumu potvrdili signifikantne významný vzťah motívu výkonu a hernej produktivity $r = 0,292$. Výsledky taktiež potvrdili signifikantný vzťah medzi anxiozitou podporujúcou výkon $r = 0,432$ a anxiozitou brzdiacou výkon $r = 0,238$. Hráčky dosahujúce vyššiu hodnotu anxiozity podporujúcej výkon a nižšiu hodnotu anxiozity brzdiacej výkon dosahovali vyššiu hernú produktivitu.

PERCEPTION OF AESTHETIC ASPECTS OF HUMAN BODY IN THE CONTEXT OF MOTIVES AND PHYSICAL ACTIVITY IN ADOLESCENTS

PERCEPCIA ESTETICKÝCH ASPEKTOV ĽUDSKÉHO TELA V SÚVISLOSTI S MOTÍVMI A ÚROVŇOU ŠPORTOVEJ AKTIVITY V OBDOBÍ ADOLESCENCIE

Petra Pačesová

Our thesis looks at the physical self-perception and motivation structure of adolescents in terms of gender and the amount of sporting activities. The objective of this work is to find out the differences in the self-perception of adolescents expressed by the level of satisfaction with their physical appearance, views on possible ways of coping with body weight gain in relation to gender and the amount of sporting activities, and point out the dominance of motives in adolescents' structure of motives for doing sports with a focus on the motive of body shaping in relation to gender and the amount of sporting activities.

For the purpose of data collection, we used a non-standardised questionnaire. Our research sample consisted of 487 adolescents at an average age of 17,4 years. All respondents were divided into three groups. The group of persons doing sports consisted of respondents who besides the compulsory physical education and sports at school were engaged in sporting activities for two and more hours per week. The group of persons doing no sports consisted of respondents who besides the compulsory physical education and sports at school did not do any sports at all. Third group consisted respondents who were engaged on sporting activities sporadically and occasionally.

Our findings show that respondents engaged in sporting activities have a higher level of self-perception than respondents doing no sports. The analysis results show that the differences between the level of satisfaction with physical appearance in the group of boys in terms of the amount of sporting activities are statistically significant ($p < 0.01$). The results clearly show that girls doing sports view their body more positively than girls doing no sports, and this difference is statistically significant ($p < 0.01$).

Based on the results, we can say that girls have generally lower rates of self-perception than boys. Most of boys (67 %) are "partially satisfied and partially unsatisfied" with their own physical appearance, most of girls answered "rather dissatisfied" (68 %). It is important to accent that girls doing sports are "partially satisfied and partially unsatisfied" with their own physical appearance and boys doing sports answered "rather satisfied".

On the question "What would like to change on your own body?" majority of girls answered that they would like to reduce their weight. Most of boys responded they would like

to gain their muscle mass (64 %). The differences in motivation structure between genders were statistically significant ($p < 0.01$). The motivation structure of girls doing sporting activities is dominated by the motive of body shaping, whereas the motive of competition victory prevail in boys. In the sample of boys sporting on the minimal level, is the strongest motive of enrichment their own inner world. Respondents' answers to the question as to how they would cope with body weight gain show that persons doing sports would cope with body weight gain by an increase in the amount of sporting activities.

Our research also shows that almost half of the boys doing sports cope with body weight gain by doing a sporting activity. Our research showed that only minimum of boys doing no sports start to do sporting activities in case of body weight gain. According to their answers, more than half of the boys doing no sports do not deal with this issue at all. More than one third of the boys opted for one of the inappropriate eating practices. Differences in the way of coping with body weight gain between boys who do and do not do any sports were statistically significant ($p < 0.01$). Also the results of our research showed that the difference in this question between girls who do and do not do any sports was statistically significant ($p < 0.01$). Almost half of the girls doing sports cope with body weight gain by an increase in the amount of sporting activities. It is remarkable that none of the girls doing no sports starts to do sporting activities in case of body weight gain.

Supervisor: Prof. PhDr. Josef Oborný, PhD.

**INFLUENCE OF EXERCISE PROGRAMMES
IN THE SAME INTERACTION STYLE OF TEACHER
ON CHANGES IN SOMATIC, FUNCTIONAL
AND MOTOR PARAMETERS OF FEMALE STUDENTS**

**VPLYV POHYBOVÝCH PROGRAMOV V INTERAKČNOM ŠTÝLE
UČITELKY NA ZMENY SOMATICKÝCH, FUNKČNÝCH
A MOTORICKÝCH UKAZOVATEĽOV ŠTUDENTIEK**

Lucia Ortutayová

The aim of the study was to widen the knowledge about influence of exercise programmes (with using steps, fit balls, expanders) in the same interaction style of teacher on changes in somatic, functional and motor parameters of female students of University of Economics in Bratislava during one semester of physical education classes.

The experimental period was 12 weeks, during which the students completed 24 sessions (60-minutes). In all three experimental groups there were 101 students of 1st – 3rd year of University of Economics in Bratislava. The students had not carried out any regular physical activity and during the experiment they did not change their eating habits. The main criterion for the selection of subjects to individual groups was similar somatic parameters in initial testing. To obtain dates we used selected somatometric methods, Ruffier test, reduced battery Eurofit and Questionnaire of lifestyle, Questionnaire on Teacher Interaction. We used basic statistical characteristics, parametric t-test for dependent and independent choices, Chi-square for processing and analysis dates.

The exercise programme using steps scored the most significantly reduction in somatic parameters, specifically in body weight (input 60.47 kg – output 59.47 kg), body mass index (input 21.11 – output 20.76), waist (input 74.20 cm – output 72.86 cm), hips (input 96.34 cm – output 95.11 cm), waist to hip ratio (input 0.770 – output 0.766), sum of 10 skin folds (input 198.3 mm – output 190.1 mm) and subcutaneous fat percentage (input 20.06 % – output 19.47 %). Also the same programme scored improvement in the development of endurance skills (shuttle run test = input 35.09 distances – output 36.97 distances) and the trainability of cardiovascular system (Ruffier's test = input 13.27 – output 10.73)). The exercise programme using expanders achieved the most significantly improvement in the development of strength abilities, specifically in pull up hold for time (input 18.50 s – output 21.87 s) and standing long jump test (input 163.2 cm – output 166.1 cm).

The teacher found itself in a positive sectors (leadership – 3.287/4, helping/friendly – 3.176/4, understanding – 2.823/4, student responsibility/freedom – 2.947/4) resulting in

satisfaction of female students with course of exercise programmes and interests of female students to participate in exercise programmes in the next semester.

Supervisor: *Assoc. prof. PaedDr. Janka Peráčková, PhD.*

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