PRACE NAUKOWE Akademii im. Jana Długosza w Częstochowie
Kultura Fizyczna 2018, t. XVII, nr 1, s. 69–78

http://dx.doi.org/10.16926/kf.2018.17.04

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Recreational Technologies (Elements of Floorball Sports) for Children of 5 and 6 Years of Age

Abstract

The article focuses on the reorganization of teaching and educational space, which would be based on the principles of innovation, and its integration into European and world educational space. It is ascertained that one of the priority methods for developing national education is to expand additional free opportunities for physical culture and sports classes in the system of educational institutions; to develop a network of free institutions of physical culture and sports for children and young people outside the system of formal education. The efficiency of recreational technologies in the teaching and educational process in educational institutions which improve the quality of sports and recreational activities and ensure their availability and performance has been proved. It is shown that using elements of floorball sports in the physical education preschool system improves the performance of physical development, physical fitness and psycho-emotional sphere of children of 5 and 6 years of age.

Keywords: recreational technologies, elements of floorball sports, health of the children of 5 and 6 years of age.

Introduction

The education system in Ukraine entered a period of fundamental change, characterized by new understanding of its goals, values, quality and awareness

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of the need to move to continuous teaching and educational process with an innovative conceptual approach in the development and use of modern educational technologies. In this regard, one of the main directions of developing the long-term and mobile education system, including physical education, along with increasing the level of its quality, is to ensure accessibility for all groups, increasing creative potential of the teachers, and the main part – to ensure focus of the studies on new educational technologies. It is provided by several state documents: Laws of Ukraine "On Education" [6], "On Preschool Education" [6], Basic Components of Preschool Education [1], [7], "The Strategy of National Patriotic Education of Children and Youth" [8], late preschool children development program "Vpevnenyi start" [15], educational programs "Dytyna v doshkilni roky" [5], preschool children development program "Ya u sviti" [14], partial educational programs: "Pro sebe treba znaty, pro sebe treba dbaty" – a program on the basics of physical health and life safety of the children aged 3–6 [10], "Kazkova fizkultura" – a program of physical education for young and preschool children [2]. Normative legal documents in the system of physical education for maintaining and strengthening health include using games with the sports elements. They highlight the main objectives of teaching children sports elements and recommend games and playing exercises in badminton, basketball, gorodki, table tennis, hockey and football. It emphasizes using active games and special physical exercises in the teaching and educational process for optimal problem solving in teaching preschoolers games with elements and the formation of their ability to perform basic motor actions regarding the technique of the corresponding game [2], [12]. At the current stage of development of the pedagogic science, state programs provide that solving health problems in preschool educational institutions should be closely linked to ensuring psychological well-being of a child, protection and strengthening of not only physical, but also mental and moral health of a preschooler [11].

Thus, the search for ways to improve the teaching and educational process, namely the inclusion of recreational technologies which would not accumulate, but rather contribute to the process of optimization of mental performance, physical activity and active recreation, becomes more urgent [9], [14], [16]. We share the opinion that a special role should be assigned to recreational technologies to preserve and strengthen the health of late preschoolers: using free time efficiently, filling it with the active physical activity with various means of physical training, including emotionally rich means (sports with simplified rules or their game elements, etc.).

Methods

65 children aged 5 and 6 were involved in the study (according to the analysis of medical records all of them belonged to the main group of physical education). The children were divided into the main group (MG) and the comparison

group (CG) with 30 and 35 children respectively. Each group was also divided by age and sex (Table 1).

Table 1. Distribution of the children from MG and CG by age and sex

Age, years	**Number of children**							
	MG (n=30)				CG (n=35)			
	boys		girls		boys		girls	
	abs.	directed, %	abs.	directed, %	abs.	directed, %	abs.	directed, %
5	4	13.333	2	6.667	6	17.142	8	22.856
5.6	7	23.333	4	13.333	7	20	8	22.856
6	5	16.667	8	26.667	2	5.714	4	11.429
6.6	—	—	—	—	—	—	—	—
Overall	16	53.332	14	46.665	15	42.859	20	57.141
Average age, years	5.65±0.38				5.41±0.39			

The most important part of determining ways of the optimal functioning of recreational technologies was to identify educational conditions determining the content of the technologies, ways and forms of their application. The set of leading educational conditions, creation of which in a real teaching and educational process in preschool educational institution is subordinated to improving the organization of recreational classes of late preschool children, was defined. Educational conditions of developing recreational technologies of the preschool educational institutions included: attitudes of parents toward health diagnostics of their children and the need for recreational classes, assessing the initial level of physical development and physical fitness of late preschool children, implementing means of diagnostics of the psycho-emotional sphere of the children.

Methods of mathematical statistics were used to process experimental data to improve the validity of the findings. Mathematical processing and analysis of the numerical data received during this study were carried out with the methods of mathematical statistics with calculations of: arithmetic mean ($\bar{x}$), standard deviation (S). The differences which did not exceed the 0.05 level of significance with the determined number of degrees of freedom were considered as reliable. Applications Microsoft Excel 2007 and STATISTICA 7.0 were used to process the results.

Results

At the beginning of our educational experiment the anthropometric measurements of the lower extremities of children from MG and CG did not show any statistically trustworthy difference. At the end of the study they differed a little among themselves (Table 2).

Table 2. Results of examining lower extremities of the children aged 5 and 6 (according to Friedland)

Index	MG (n = 30)				CG (n = 35)			
	At the beginning of the research		At the end of the research		At the beginning of the research		At the end of the research	
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S
Foot arches, arbitrary units	Overall							
	28.92	1.91	29.83*	0.69	28.86	1.63	29.17	1.27
	Children aged 5							
	29	1.77	29.94	0.66	28.96	1.97	29.29	1.21
	Children aged 6							
	28.85	2.29	29.69	0.75	28.33	2.23	28.64	1.5

Note * – changes that occurred compared to the initial indexes with $p \leq 0.05$.

Following the dynamics of physical efficiency of late preschool children we received the following results (Table 3).

Table 3. Changes in physical efficiency of late preschool children in the process of educational research

Index	MG (n = 30)				CG (n = 35)			
	At the beginning of the research		At the end of the research		At the beginning of the research		At the end of the research	
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S
Ruffier index, points	2.97	0.99	3.83**	0.87	2.97	0.95	3.69*	0.87

Notes: * – changes that occurred compared to the initial indexes with $p \leq 0.01$; ** – changes that occurred compared to the initial indexes with $p \leq 0.001$.

To determine the physical fitness of children aged 5 and 6 we asked to pass the relevant tests prescribed by the physical education curriculum in the teaching and educational process – running at the distance of 10 m and 20 m (sec), standing broad jump (cm), throwing tennis balls at the distance (m) (Table 4).

Table 4. Dynamics of motor fitness of the children aged 5 and 6

Index	MG (n = 30)				CG (n = 35)			
	At the beginning of the research		At the end of the research		At the beginning of the research		At the end of the research	
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S
10 meters, sec	3.18	0.26	2.81**	0.21	3.23	0.29	2.97**	0.27
20 meters, sec	5.43	0.46	4.8**	0.45	5.46	0.42	5.1**	0.39
Standing broad jump, cm	88.63	6.3	95.63**	7.43	88.9	8.64	93.31*	9.5
Throwing tennis balls at distance, m	6.39	1.42	8.02**	2.05	6.42	1.69	7.38*	2.03

Notes: * – changes that occurred compared to the initial indexes with $p \leq 0.05$; ** – changes that occurred compared to the initial indexes with $p \leq 0.001$.

While assessing endurance ratio as one of the indexes of the functional state of children's body we have obtained results presented in Table 5.

Table 5. Dynamics of functional state of body of the children aged 5 and 6 at the beginning and at the final stage of research

Index	**Value**							
	MG (n = 30)				CG (n = 35)			
	At the beginning of the research		At the end of the research		At the beginning of the research		At the end of the research	
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S
Endurance ratio, arbitrary units	Overall							
	36.95	2.79	34.57**	2.4	37.09	2.43	34.96**	2.28
	Children aged 5 years							
	37.2	3.17	34.7**	2.66	37.19	2.61	35*	2.47
	Children aged 6 years							
	36.58	2.19	34.46*	2.04	36.58	1.28	34.78*	1

Notes: * – changes that occurred compared to the initial indexes with $p \leq 0.05$; ** – changes that occurred compared to the initial indexes with $p \leq 0.001$.

We have been actively adjusting child development: contributing to the formation of mental processes, supporting positive personality traits and contributing to the reconstruction of the negative ones [15]. During our educational experiment, a dynamic neuropsychic development of children aged 5 (Figure 1) and 6 (Figure 2) was observed.

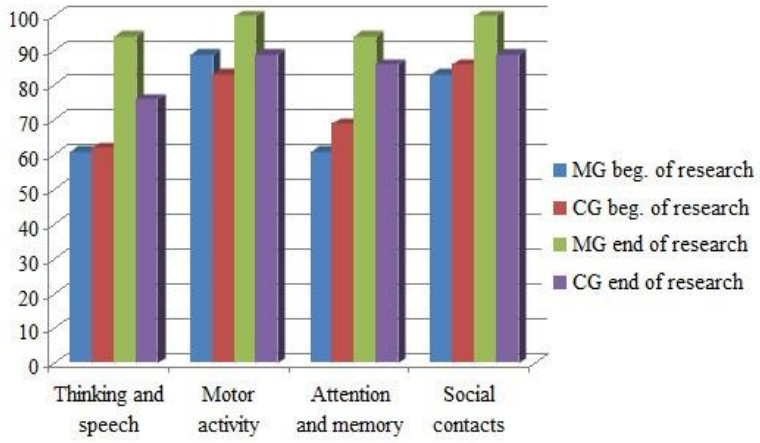

Figure 1. Dynamics of neuropsychic processes of the children aged 5

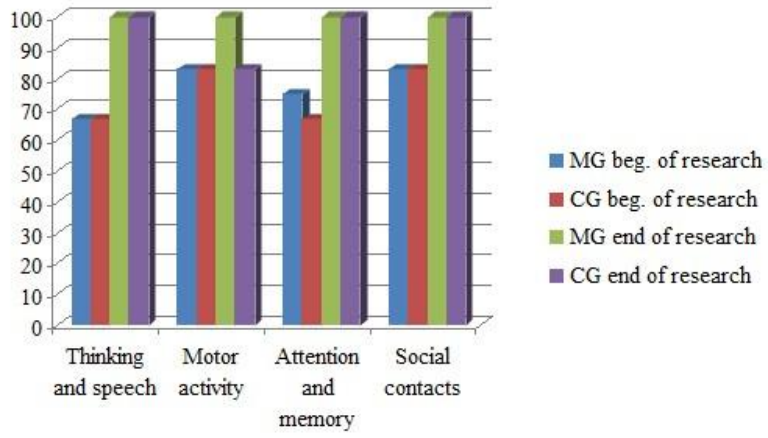

Figure 2. Dynamics of neuropsychic processes of the children aged 6

The "Parovozik" method, based on the Lüscher color test, helped to follow the dynamics of mental processes of each child and each group. It made it possible to define the features of the emotional state of each child (normal or lowered mood, anxiety, fear, satisfactory or poor adaptation to the social environment) and to conclude on determining the positive (PMS) and negative (NMS) mental states [3] (Table 6).

Table 6. Determining anxiety of the late preschool children

Evaluation of results	**MG (n = 30)**				**CG (n = 35)**			
	At the beginning of the research		At the end of the research		At the beginning of the research		At the end of the research	
	Abs. number, people	Directed number, %	Abs. number, people	Directed number, %	Abs. number, people	Directed number, %	Abs. number, people	Directed number, %
Positive mental state	22	74	29	97	28	80	31	89
Negative mental state of low degree	4	13	1	3	3	9	3	9
Negative mental state of average degree	3	10	—	—	3	9	1	2
Negative mental state of high degree	1	3	—	—	1	2	—	—

This test allowed us to assess the overall psychological climate in MG and CG. At the beginning of the educational study it was 47% in MG – the average degree of favorability; and 60% in CG –, also the average degree. At the end of the study it was 93% in MG, and 77% in CG. Both groups had a high degree of favorability of relations among children.

Discussion

Application of the technology developed by us with elements of recreational floorball sports contributed to more pronounced positive dynamics of physical and mental performance of children aged 5 and 6 in MG that had statistically significant differences compared with those of children in CG.

At the beginning of our educational experiment the anthropometric measurements of the lower extremities of children in MG and CG showed no difference. Foot index by Friedland is 28.89 ±1.75 arbitrary units (number of children with indicators which correspond to the age norm is 38 – 58.46%). At the end of the study there were differences between the indexes of both groups. There were no children with high foot arch in MG or CG. There are 2 children with a moderately high arch (7%) in the CG, 2 – in the MG (6%), respectively; 25 (83%) with normal arch in the CG, and 24 (69%) in the MG; 3 (10%) with moderately flat arch in the CG, and 7 (20%) in the MG; there were no children with flat arch in the MG, and only 1 (2.5%) in the CG; none with distinct flat feet in the MG, and 1 (2.5%) in the CG. Thus, at the end of the school year the measurements of children's foot arch in the MG showed better results than in the CG.

Regarding physical efficiency, the indexes at the beginning in both groups were the same. The Ruffier test was 2.97 ±0.96 points (the number of children with high efficiency was 2 children (3.08%), with good – 19 children (29.23%), average – 23 children (35.38%), low – 17 children (26.15%), bad – 4 children (6.15%). At the end of the study the number of children with high indexes of efficiency amounted to: 7 children (23%) in the MG, 3 children (9%) in the CG, respectively; in the MG, good efficiency was detected in 13 children (43%), in the CG – 22 children (63%), respectively; average efficiency in the MG was 8 (27%), in the CG – 8 (23%); low efficiency in the MG – 2 (7%), in the CG – none; bad efficiency in the MG – none, in the CG – 2 children (5%). Thus, the indexes of physical efficiency in the MG are better than in the CG. We can say that the effective training impact of the program on the body of late preschool children was effective.

The results of physical fitness at the beginning of the educational experiment were homogeneous: running at the distance of 10 m – 3.21 ±0.27 sec (the number of children with a high index – 8 (12.3%), average – 39 (60.01%), low – 18 (27.69%). At the end the results with high indexes of running the distance of 10 m in the MG was 18 (60%), in the CG – 19 (55%), average in the MG – 9 (30%), in the CG – 12 (34%), low in the MG – 3 (10%), in the CG – 4 (11%). Running at a distance of 20 m – 3.21 ±0.27 sec (the number of children with high indexes was 10 – 15.38%, average 44 – 67.69%, low 11 – 16.92%). At the end, there were 19 children (63%) with high indexes in the MG, 14 (40%) in the CG, average in the MG – 11 (37%), in the CG – 21 (60%), low – none in both groups. Standing broad jumping – 88.77 ±7.59 cm (the number of children with

high indexes was 25 (38.46%), average – 40 (61.54%), low – none). At the end there were 20 children (64%) in the MG with high indexes of standing broad jumping, and 19 (54%) in the CG; average in the MG – 10 (33%), and 16 (46%) in the CG; and none with low in both groups of children. Standing throwing at distance – 6.41 ±1.56 (the number of children with high indexes was 10 children (15.38%), average – 48 (73.84%), and lower – 7 (10.77%). At the end there were 7 children (23%) in the MG with high indexes, and 8 (23%) in the CG; 21 (70%) average in the MG, and 8 (23%) in the CG; 2 (7%) low in the MG, and 3 (8%) in the CG. Thus, the final results were the best in the MG which confirms the effectiveness of our program concerning recreational effects on the physical fitness of children aged 5 and 6.

Endurance ratio showed that there were no children with indexes which corresponded to the age norm at the beginning and at the end of our experimental work. However, the dynamics of the indexes took place: at the beginning in the MG it was 36.95 ±2.79, at the end – 34.57 ±2.4; in the the CG at the beginning it was – 37.09 ±2.43, at the end – 34.96 ±2.28. Thus, the indexes of the endurance ratio in the MG were better, compared to the CG. It indicates the effectiveness of the recreational technologies with the elements of floorball sports.

At the beginning of our study of the neuropsychic processes in both groups were the same. The research showed that 41 children (63.07%) had a sufficient level of thinking and speech, 55 (84.61%) – motor activity, 44 (67.69%) – attention and memory, 55 (61%) – social contacts. At the end of the educational study among children aged 5, 17 (94%) had sufficient level of thinking and speech in the MG and – 22 (76%) in the CG, respectively; sufficient level of motor development in the MG – 18 (100%), in the CG – 25 (86%); sufficient level of attention and memory in the MG – 17 (94%), in the CG – 25 (86%); sufficient level of social contacts in the MG – 18 (100%), in the CG – 26 (89%). At the end of the study among children aged 6, 12 (100%) had sufficient level of thinking and speech in the MG and 6 (100%) in the CG; sufficient level of motor development in the MG – 12 (100%), in the CG – 5 (83%); sufficient level of attention and memory in the MG – 12 (100%), in the CG – 6 (100%); sufficient level of social contacts in the MG – 12 (100%), 6 (100%) in the CG. The obtained data on psycho-emotional sphere of children in both groups showed that among the 5-year-olds most preschoolers in the MG had sufficient level of neuropsychic processes, contrary to the CG. Results among the 6-year-olds were almost identical.

Determining the initial level of anxiety showed: 50 children (76.92%) had a positive mental state. At the end of the educational study 29 children (97%) had positive mental state (PMS) in the MG, 31 (89%) – in the CG, respectively; 1 (3%) had negative mental state of low degree (NMS ld) in the MG, 3 (9%) – in the CG; none of the children had a negative mental state of average degree (NMS ad) in the MG, 1 (2%) in CG; there was nobody with a negative mental state of high degree (NMS hd) in both groups. Thus, the level of anxiety in the MG was less than in the CG.

Conclusion

In our opinion, arranging club activities with the elements of floorball sports recreates the unique gaming space of childhood, contributes to the amplification of children's development. Even a sufficiently difficult sports and play activity for preschooler's turns into a fascinating pastime after adding the fantasy. The content of physical education club classes includes elements of floorball sports of overall development aimed at forming the basic movements and comprehensive development of motor skills. A significant part during the classes involves special physical exercises with balls and sticks. Each of them thoroughly practices playing exercises which provide formation of the basic techniques of playing floorball. At the same time, emotional and physical load is clearly regulated according to the age and health of the child. Playing exercises on such physical education classes are performed in different variations, including individually: some children dribble in motion, others kick it away while standing still; in pairs: mastering more complex motor actions, such as passing and catching the ball; in the team: which team will kick the ball into the goal quicker.

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Techniki rekreacyjne (element unihokeja) dla dzieci w wieku 5 i 6 lat

Streszczenie

Artykuł dotyczy głównie reorganizacji nauczania i przestrzeni edukacyjnej, w oparciu o innowacyjne zasady, oraz integracji z europejską i światową przestrzenią edukacyjną. Ustalono, że jedną z priorytetowych metod rozwoju edukacji narodowej jest poszerzenie dodatkowych, bezpłatnych możliwości korzystania z kultury fizycznej i zajęć sportowych w systemie placówek edukacyjnych; rozbudowa sieci bezpłatnych placówek kultury fizycznej i sportu dla dzieci i młodzieży niezależnych od systemu edukacji formalnej. Uznano efektywność technik rekreacyjnych w procesie nauczania i wychowania stosowanego w placówkach edukacyjnych, które poprawiają jakość aktywności sportowej i rekreacyjnej i zapewniają ich dostępność. Wykazano, że zastosowanie elementów unihokeja w wychowaniu fizycznym na poziomie przedszkolnym stymuluje poprawny rozwój fizyczny, sprawność fizyczną i sferę psychoemocjonalną dzieci w wieku 5 i 6 lat.

Słowa kluczowe: techniki rekreacyjne, elementy unihokeja, zdrowie dzieci w wieku 5 i 6 lat.