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Influence of training mini-basketball in the first year of training at the level of the physical health of children 6–7 years

Abstract. Purpose: to analyze the contemporary state of early specialization in sport, to find out its positive and negative influence on children's organism on the basis of scientific and methodological literature, and also to carry out the control of the level of the health of the children aged 6–7 years old before training and after the first year of playing mini-basketball. **Material and Methods:** the study involved 60 children aged 6–7 years old, 22 – girls and 38 – boys, who were engaged in a section of mini-basketball in Sports Children and Youth Olympic school №5 in Dnipropetrovsk during 2013/2014 used the following research methods: theoretical analysis and compilation of scientific and methodical literature and the Internet, the method of analysis of documentary materials, pedagogical supervision, monitoring physical health of rapid assessment Apanasenko (1992), the method of mathematical statistics. **Results:** there was defined the level of physical health (according to rapid assessment by Apanasenko (1992)) of the children aged 6–7 years old before and after the first year of mini-basketball training. **Conclusion:** the results of our study confirm the experts opinion that nonsufficient level of the physical health of children aged 6–7 years old before going in for sport and insignificant increase in performance after the first year of playing mini-basketball is related not only to the deterioration of environmental and socio-economic conditions of modern society but also to significant deficiencies in the sports training of children of different ages, which no longer meets the requirements of the present time and needs to be improved.

Keywords: early specialization, mini-basketball, control the physical health of children 6–7 years old.

Introduction. Results of researches of foreign scientists from the countries – leaders in sports games, such as: H. M Buceta (Spain), M. Mondoni, (Italy) A. Avakumovic (Serbia), M. Spencer (England), testify that the age of 6-7 years is successful to start sports games [8; 9; 13].

At the same time an early sports specialization and intense trainings accompanying it and vigorous competitive activity are extremely dangerous and such that break objective regularities of the long-term improvement and are factors of the presentation of an organism of a sportsman. Such approach quite often leaves sportsmen of opportunity to reach really good results for a concrete sport in the adequate age zone [2; 11; 12].

The huge number of the scientific data which are saved up in the theory of sport notes that it is necessary to carry out sports training of children and teenagers, taking into account features of the development of a growing organism. These data cover not only an organism in general, but also the development of its separate systems which, anyway, feel influence of physical activities on themselves [1; 2; 4].

The analysis of references and practical experience testifies that the successful solution of tasks of sports training at different stages of long-term training of sportsmen in team sports games as the process of management is impossible without control and obtaining an objective information on results of the means and methods applied thus, about their efficiency [3; 10].

At the same time it is proved that a value of control isn't limited only to ascertaining of the level of preparedness of young sportsmen in the course of training. The control of dynamics of preparedness as a result of physical activities, is the most important part of the system of training of a sportsman at all levels of the training process [1; 2; 6]. The problem of control of physical health gets a special attention in the conditions of early specialization in sports games when the age of the beginning of classes decreases from 8–9 till 6–7 years old [5; 7].

Considering the aforesaid, studying of features of the early specialization in sports games, and also to control of physical health of children of 6-7 years old for the purpose of the creation of more rational technology on the first year of the educational and the training process of children are the actual scientific direction of researches of the present.

Communication of the research with scientific programs, plans, subjects. The work is performed according to the Built plan of the RW in the sphere of physical culture and sport for 2011-2015. The Ministries of Education and Science, youth and sport of Ukraine, by a subject: 2.6 "Theoretic-methodical bases of the improvement of the training process and the competitive activity in the structure of long-term training of sportsmen" No. of the state registration is 0111U001168.

The objective of the research: to analyze a current state of the early specialization in sport, to find its positive and negative influence on an organism of children on the basis of studying of the scientifically-methodical literature, and also to exercise control of the level of physical health of children of 6-7 years old before and after the first year of classes by mini-basketball.

Material and methods of the research. 60 children of 6-7 years old, 22 girls and 38 boys took part in the research who were engaged in a section on mini-basketball in sports school No. 5 of Dnepropetrovsk during 2013/2014. In the research such methods of the research were used: the theoretical analysis and synthesis of data of scientifically methodical literature and Internet, the method of the analysis of documentary materials, pedagogical supervision, control of physical health by the express-assessment of Apanasenko (1992), the method of mathematical statistics.

Results of the research and their discussion. In sports practice the experts treat a stage of the early specialization in differently. Some of them (K. Smirnov, I. Y. Lutfullin) consider that the stage of the early sports specialization negatively influences the harmonious physical development of a child [11; 12]. Recently the doubt began to arise at many experts which is connected with an unreasonably early choice of a "narrow" sports specialization. Even more often children are met who didn't reach a full age formation in sport.

Today experts claim that the key to the sports progress should be looked for in the early sports specialization. And in this regard mini-basketball represents unlimited opportunities. For example, about 20 million players are engaged in

basketball in the USA. And in such countries as Brazil, Italy, France are engaged only in sections of mini-basketball on 10 thousand teams of children from 6 till 12 years old. There are sections of mini-basketball in Italy, England, Spain where children are brought at the age of 6–7 years. The first 3 years coaches give different games and relays with a ball, absolutely simple tasks got used to put to a ball. Ettor Messina considers that absolutely small children can already be acquainted with ball handling elements (to roll it, to throw, to catch, to run with a ball in hands). It is an ideal way of attraction to basketball [14]. It means, that not the main basketball skills as a basic element of training, and supplying and simplification of exercise in the form of movements, transfers, drivings of a ball, hits in a goal and another. And from 8–9 years old it is possible to find more time for a technique: dribbling, catching of a ball, balance, to add movements with a ball gradually. But it is obligatory to leave enough time to put simply played, adding some rules [13].

340 boys and 243 girls are engaged in mini-basketball in Dnepropetrovsk, thus their quantity is less from 6–7 years old (only 118), than in 9–10 years old (by results of 2011-2012), 93 and 62 children are by results of 2012-2013 and 2013-2014 according to it. It testifies that the popularity of mini-basketball is much less in Ukraine, than in other leading basketball countries. The carried out by us questioning with coaches gave the chance to find out that the process of training of children of 6-7 years old is in a chaotic state. Each coach himself chooses a sequence and a measure of loading and in most cases simply adapts the program of preparation for children of 9 years old. Such approach leads to considerable problems, both in a state of health of children, and in an extent of mastering technical abilities of a game [5].

The consideration and the analysis of training programs on physical culture for general educational institutions of Russia and Ukraine concerning the age of the beginning of classes by basketball and sequence of techniques showed that basketball is entered into the program of general education educational institutions already from the first class in Russia, basketball start studying from the 5th class at school in Ukraine, and a set in children's sports schools according to the program – from 9 years old, and according to a current trend in early specialization – from 6–7 years old. It is led to the disruption of the communication “a school – CYSS” [5].

The early specialization in basketball also demands an account of physical, functionality of children and a condition of their physical development because the influence of early attraction to trainings is already proved more harmful. For example, the American scientist – doctor Difiori highly appreciates advantages of sport in general, but he warns that the external pressure upon a child, who compels it to train and compete in one sport at early age, can do more harm, than advantage. A social isolation, a lack of independence, a sensitive relation, an emotional burning out and injuries are possible negative consequences. Experts note that a premature specialization in certain sports can be followed by excess physical activities on an organism of a young sportsman [12].

At the same time, as experts note, except excess physical activities, an organism of a young sportsman is influenced negatively by a premature specialization to the chosen sport. It is revealed that the incorrectly constructed educational and the training process provokes injuries and doesn't allow developing harmoniously to a child. I. A. Kurachenkov revealed that the sharpest influence of a monotonous asymmetric loading is observed on a backbone and the copular and muscular device of basketball players that is confirmed by researches: the curvature of a backbone of the 1-2nd degree is revealed in 7,6%, the violation of a bearing in the frontal plane in 7,2%. Such consequences arise as a result the technique of training of young sportsmen is constructed without anatomic-physiological features of an organism which grows, that is, there was the early specialization in basketball to a big monotonous asymmetric physical activity on a backbone and the copular and muscular device that assisted the development of scoliosis in the end result. Therefore it is extremely necessary in the educational and training process with children to introduce exercises of the correcting character [12].

The last researches of domestic scientists (N. V. Moskalenko [6]) testify to that fact that there was a rather unsatisfactory situation concerning a condition of physical fitness and physical health of children of the younger school age in Ukraine.

In the course of the fixed experiment the level of physical health of children of 6-7 years old was defined by mini-basketball before and after the first year of classes. Children, who study in the first classes, were attracted to a sports section. It is known that some children get to the first classes at six years old, and some to seven years old. Therefore in spite of the fact that they were engaged in the group mixed on age, we exercised control and the level of physical health is analyzed by the express-assessment of Apanasenko (1992) separately at children of 6 and 7 years old because there are rather big transformations happen and a scale of estimation by levels considerably differs in an organism of a child in a year.

Results of the conducted research with children of 6 years old are presented in tab. 1.

Table 1

Indicators of physical health of boys and girls of 6 years old by the express-assessment of Apanasenko (1992)

Tests	6 years old (n=30)						
	Sex	Before			After		
		$\bar{X}\pm S$	Level	V (%)	$\bar{X}\pm S$	Level	V (%)
The index of Robinson, s.u.	G (n=11)	94,45±11,63	BA	12,31	91,32±8,00	BA	8,77
	B (n=19)	96,9±12,5	L	12,90	94,34±6,69	BA	7,09
The vital index, ml·kg ⁻¹	G (n=11)	53,36±10,35	A	19,39	56,59±8,03	A	14,18
	B (n=19)	55,06±9,47	BA	17,19	55,84±6,47	BA	11,58
The index of Ruffier, s.u.	G (n=11)	14,15±2,65	BA	18,78	12,18±1,95	BA	16,04
	B (n=19)	12,72±3,22	BA	25,29	11,64±2,1	BA	18,07
The index of Kettle, s.u.	G (n=11)	194,78±24,91	L	12,79	205,5±20,6	BA	10,02
	B (n=19)	196,98±20,32	BA	10,31	203,95±21,89	BA	10,73
The Power index, %	G (n=11)	27,7±5,17	L	18,67	27,87±4,91	L	17,63
	B (n=19)	31,69±1,15	L	15,45	31,58±1,02	L	13,74

Note. $V\leq 10\%$ – small, $V\leq 20\%$ – average, $V\leq 20\%$ – big; L – low, BA – below an average, A – average, AA – above an average, H – high.

The analysis of results of the index of Robinson at girls of 6 years old testifies that the best result is 72 and 74,88 s.u. before and after the experiment, and the worst is 110 and 100,8 s.u. respectively. After the experiment the result averaged 91,32±8 s.u. also answered the level below an average. Boys have the best and the worst result – 78 and the 116th s.u. respectively before the experiment, that is on average (96,9±12,5) this indicator is at the low level estimation scales. After the experiment the average result improved on 2,56 s.u. also makes – 94,34±6,69 s.u. that answers to the level below an average.

Results of the vital index at girls of 6 years old answer the average level before the experiment and make 53,36±10,35 ml·kg⁻¹, after carrying out the experiment it is noted the improvement on 3,23 ml·kg⁻¹, but the general indicator, as well as before the experiment, answers the average level. This indicator almost didn't improve at boys (before and after the experiment made – 55,06±9,47 ml·kg⁻¹, but 55,84±6,47 ml·kg⁻¹ respectively also had the level below an average).

The average value by the index of Ruffier made 14,15±2,65 s.u. and 12,18±1,95 s.u. at girls of 6 years old before and after the experiment respectively that answers the level below an average in both cases. Indicators by the index of Ruffier make – 12,72±3,22 s.u. at boys of 6 years old before the experiment and after the experiment – 11,64±2,1 s.u. that answers the level below an average in both cases. It is revealed that the improvement of results by the index of Ruffier on average made 1,97 s.u. at 6-year-old girls in a year, and at boys – 1,08 s.u.

The index of Kettle – is the size that allows estimating the degree of compliance of body weight of a person of his growth and by that is collateral to estimate the index of Kettle, whether weight is insufficient, superfluous or normal. By the results of the stating experiment at girls of 6 years old the average value by the index of Kettle by the beginning of classes by mini-basketball made – 194,78±24,91 s.u. that answered the low level, and on the termination of the first year of classes – 205,5±20,6 s.u. After the experiment the result improved on 10,72 s.u. and also increased up to one level below than an average. The uniformity of indicators in the group became the best because the coefficient of a variation changed from 12,79% till 10,02%.

The indicator of the index of Kettle made 196,98±20,32 at boys of 6 years old before the experiment, and after – 203,95±21,89 that answered to the level below an average. As a result of carrying out the experiment the average value by the index of Kettle improved on 6,97 s.u. The calculated variation coefficient after the experiment testifies that girls have fluctuations of results of measurements small as the coefficient of a variation makes 5,18%. As a result of the experiment the size of coefficient of a variation remained almost invariable. It testifies that indicators remained all the same low.

The average value of the Power index made 27,7±5,17% at girls of 6 years old before the experiment and after a year of classes – 27,87±4,91%. The gain makes 0,17% after the experiment. Boys have results of the Power index 31,69±1,15% before the experiment and after the experiment 31,58±1,02% answered the low level.

Indicators of physical health of boys and girls of 7 years old by the express-assessment of Apanasenko are presented in tab. 2.

Table 2
Indicator of physical health of boys and girls of 7 years old by the express-assessment of Apanasenko (1992)

Tests	7 years old (n=30)						
	Before				After		
	Sex	$\bar{X}\pm S$	Level	V (%)	$\bar{X}\pm S$	Level	V (%)
The index of Robinson, s.u.	G (n=12)	95,01±15,67	BA	16,49	94,33±10,86	BA	11,51
	B (n=18)	99,83±12,06	L	12,08	95,46±8,88	BA	9,30
The vital index, ml·kg ⁻¹	G (n=12)	56,34±10,93	A	19,4	58,74±10,63	A	18,1
	B (n=18)	58,88±7,98	A	13,55	58,69±7,59	A	12,94
The index of Ruffier, s.u.	G (n=12)	13,53±3,18	BA	23,47	12,23±2,167	BA	17,72
	B (n=18)	12,74±3,07	BA	24,07	11,22±1,98	BA	17,65
The index of Kettle, s.u.	G (n=12)	191,84± 21,98	L	11,46	201,44±21,71	BA	10,78
	B (n=18)	197,28±22,75	BA	11,53	202,67±18,82	BA	9,29
The Power index, %	G (n=12)	30,64±4,38	L	14,28	30,33±4,02	L	13,25
	B (n=18)	31,72±4,59	L	14,46	31,92±3,97	L	12,44

Note. $V\leq 10\%$ – small, $V\leq 20\%$ – average, $V\leq 20\%$ – big; L – low, BA – below an average, A – average, AA – above an average, H – high.

By the results of inspection of the index of Robinson the best indicator made – 59,4 s.u. before the experiment in 7-year-old girls, and the worst – the 116 s.u. Average values before the experiment – 95,01±15,67 s.u., and after 94,33±10,86 s.u. that answered below average before and after the experiment. The average indicator made 99,83±12,06 s.u. at boys before carrying out the experiment, and after the experiment this result improved on 4,36 s.u., but all the same the result answered to the level below an average. Indicators of boys and girls after the experiment became more uniform to what the coefficient of a variation of 9,3% and 11,51% testifies respectively.

Indicators of the vital index have good results at girls and boys before and after the experiment. To what the data testify which are presented in tab. 2. Indicators improved (on 2,4 ml a little ml·kg⁻¹) at girls, but significantly didn't change the level and have an average indicator after the experiment – 58,74±10,63 ml·kg⁻¹. Also indicators answered the average level at boys, but the data almost didn't change and answered before and after the experiment – 58,88±7,98 ml·kg⁻¹ and 58,69±7,59 ml·kg⁻¹ respectively.

Analyzing the data which are obtained by the index of Ruffier girls of 7 years old have (13,53±3,18 s.u. before the

experiment and after the experiment ($12,23 \pm 2,17$ s.u.) it is possible to draw a conclusion that indicators answer the level below an average. After carrying out the experiment the result improved on 1,3 s.u. Boys have also indicators before and after the experiment answered to the level below an average. The best indicator made 6,4 s.u. after the experiment, and the worst – 13,6 s.u.

The distribution of boys and girls of 6-7 years old on indicators of physical health (by the express-assessment of Apanasenko) before and after the first year of classes by mini-basketball is presented in tab. 3.

Table 3

The distribution of boys and girls of 6-7 years old on indicators of physical health (by the express-assessment of Apanasenko) before and after the first year of classes by mini-basketball, %

Level	6 years old				7 years old			
	Boys (n=19)		Girls (n=11)		Boys (n=18)		Girls (n=12)	
	Before	After	Before	After	Before	After	Before	After
Low	73,64	84,16	100	72,72	72,22	77,78	91,63	83,33
Below an average	26,3	15,78	0	27,28	27,78	16,66	8,37	8,33
Average	0	0	0	0	0	0	0	8,33
Above an average	0	0	0	0	0	5,56	0	0
High	0	0	0	0	0	0	0	0

It is revealed as a result of the analysis of indicators of physical health after carrying out the noting experiment that the level didn't improve at boys of 6 years old, and, on the contrary, lowered to what the increase to percent of children with the low level at 10,52% testifies and the corresponding reduction by 10,52% of boys with the level below an average. Results of physical health insignificantly increased at girls of 6 years old. 27,28% of the investigated moved from the low level to the level below an average.

The increase to percent of children with the low level at 5,56% at seven-year-old boys and the decrease to percent of children with the level below an average on 11,12% are noted. Also there were boys with the level above an average – 5,56%. The percent of the investigated with the average level of health increased by 8,33% at girls of 7 years old. Despite the lack of considerable improvement of the general assessment of level of physical health, the improvement by separate indexes, such as is revealed: the vital index, the index of Robinson, the index of Kettle and the index of Ruffier. The found data testify to a slow adaptation of functional systems of children of 6-7 years to physical activities within the first year of classes by mini-basketball and to the general mainly low level of physical health at the investigated.

Conclusions. The analysis of the scientifically-methodical literature testifies to a not unanimous opinion of experts of rather early specialization in sport. At the same time the real analysis of groups of CYSS testified that sections of mini-basketball exist and annually about 100 children are attracted to them in the big cities of Ukraine. The research of standardly documentary materials for CYSS on basketball found an absence of the training program on mini-basketball for children of 6-7 years old in Ukraine.

The received by us results of the research confirm the opinion of experts that the insufficient level of physical health and physical fitness of children of 6-7 years old is connected not only with the deterioration of ecological and social-economic living conditions of the modern society, but also with essential shortcomings of the system of physical training and sport of children of different age which doesn't meet the modern requirements anymore and needs the improvement.

Considering the level of physical health which is found by us during the research, scientific researches of the last decade, the example of the leading basketball countries, the current world trends of the development of mini-basketball, there is a need of the development of technology of the educational and training process taking into account age features of children of 6-7 years old; the correcting exercises for the prevention of violations of the development of a backbone and the copular and muscular device; the psychology and pedagogical principles aimed at the development of motivation in a child to classes by physical culture and sport; theoretical preparation concerning knowledge of a healthy lifestyle and positive influence of classes by basketball; sensitive periods of the development of physical qualities.

Prospects of the subsequent researches consist in the development and scientific justification of modern technology of the educational and training process on the first year of a study, taking into account indicators of the level of physical health, physical development and physical fitness of children of 6-7 years old.

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