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## The harmonious development of a child of preschool age in the innovative health technologies usage

**Abstract.** The article deals with non-traditional health approaches to the use of fitballs for the harmonious development of preschool age children in the physical education process. The author studied physical and mental health of preschool children; the efficacy of fitball gymnastics impact on the level of preschool children physical abilities; modern investigative techniques are being used and the analysis of the experimental results are done; the effective influence of fitball gymnastics on the harmonious development of the preschool age child in the use of innovative health technology is proved; the possibility of innovative technologies introduction for kindergarten teaching practice improvement is discussed; the findings were tested in the educational process of Zhytomyr pre-schools.

**Keywords:** bearing, fitball, fitball gymnastics, physical abilities, pre-school children.

**Introductory remarks.** Due to the recent significant children health care decline, the current state of physical culture development in Ukraine is characterized by the constant search for effective ways to meet the challenges of strengthening and preserving it. The official statistics and numerous studies indicate that nearly 90 % of children have different health deviations today, more than a half of which are with the musculoskeletal system (A. A. Potapchuk, S. V. Matveyev, M. D. Didur, 2007; L. A. Scheplyahina, 2006; I. A. Viner, 2010, etc.) [1, 3].

Basic physical abilities serve as an important component of the health state, which 20–40% of preschool children lack (V. N. Shebeko, N. N. Ermak, V. V. Shishkina, 2000). This indicator determines the child's efficiency and plays an important role in the full and harmonious development of the individual, as well as in achieving high resistance to social and environmental conditions and in increasing the organism's adaptive properties [4, 7]. Achieving harmonious development of the high school child physical abilities is due to the need for ensuring the smooth functioning of the child's body and preparing for school in a great intellectual, high static loads and motor activity deficits during the school day.

Low levels of physical qualities of older preschoolers is the result of poor health, and little interest for traditional physical education. Therefore, the foreground task facing physical education, is to find effective ways and means of complex effects on physical development, health promotion, motivational-emotional sphere that affects the development of children's sustained interest in exercise.

One of the most effective means to solve the number of problems described above is fitball gymnastics – is a kind of recreational gymnastics using large gymnastic balls (fitball).

The positive health effects of the exercises done with fitball are confirmed by the experience of specialized correctional and rehabilitation medical centers in Europe and Russia. They allow you to solve various problems in the complex including motional, vestibular, visual, auditory, tactile analyzers at work. Thus, they cause a positive effect on physical and psycho-emotional state, increasing the child's involvement (T. S. Ovchinnikova, A. A. Potapchuk, 2003, I. V. Tikhomirov, 2004; T. V. Levchenkova, O. U. Sverchkova, 2005) [2, 3, 5, 8]. However, there is no complex research aimed at examining the effectiveness of fitball gymnastics' influence on the development of physical abilities, rehabilitation and improvement of mental and emotional engagement.

**The purpose of the article** is to determine the effectiveness of fitball gymnastics exercise influence on the development of infant's physical abilities.

*Research objectives:*

1. To study the psycho-pedagogical and systematical aspects of fitball gymnastics as the innovative type of physical culture for preschool children.
2. To investigate the features of the emotional sphere of preschool children participating in the experiments with fitball.
3. To experimentally verify the fitball gymnastics complex influence on the development of infant's physical abilities.

**Reference source and research methods.** *Research methods:* analysis and synthesis of scientific and technical literature, regulations, programs and training documentation, surveys, educational supervision, teacher testing, pedagogical experiment, the methods of mathematical statistics.

The study was being conducted during the 2012–2013 school year on the basis of Zhytomyr Child Development Center № 69. With the help of stating experiment the physical and mental health, the level of physical ability of pre-school children were studied. In the research process, we determined the high-speed capabilities (30 m run), flexibility (tilting forward from a sitting position), agility (4x9 m shuttle run) and speed – catching quality (long jump off, jump up). During the testing process, we examined boys and girls studying at the Zhytomyr Child Development Center № 69, who are included in the health care group. 68 children (30 boys and 38 girls) were tested in total. The investigation was done in coherence with the accepted methodology.

Different techniques and methods of fitball gymnastics were tested during the specified period. Classes with the usage of the fitball were conducted 3–4 times a week in an entertaining way, the elements of various sports were also included. The results of the research are introduced in the educational process of the Zhytomyr Child Development



Center № 69.

**Results of the investigation.** We conducted a study of the effect that fitball gymnastics produce on the infant's emotional state and discovered the relationship between changes in emotional state of preschoolers and fitball gymnastics techniques used.

It should be noted that the use of fitball gymnastics provided to children under the school age with different types of character gave them the opportunity to open up new energies, raise vitality, regulate violent emotional processes, train harmonious allocation of energy costs, feel the power of the body, become enduring. Exercises and outdoor games using fitball had a positive impact on the development of mental processes such as perception, reasoning, attention, imagination, memory.

While observing teaching techniques, we found out that children perceived fitball gymnastics as a game that brings positive emotions and desire to take part in. Children gladly participated in relay races on large balls, reproduced the movements of fairytale characters, repeated dance steps elements.

Implementing fitball gymnastics we help infants to develop proper movement patterns and motivation to obtain the life skills and abilities, to increase self-confidence, to learn successfully and to overcome difficulties and so on.

Pedagogical process at the Zhytomyr Child Development Center № 69 is aimed at health promotion, comprehensive physical development and child's optimal motion activity.

We conducted the teaching survey to analyze the quality of the classes with fitball usage and to determine the preschoolers' level of physical ability.

We determined the indicators of physical abilities of preschoolers at the beginning and at the end of the pedagogical experiment. Test results, processed by methods of mathematical statistics [6], are shown in the Table 1.

Table 1

Indicators of physical abilities of preschool children

Physical ability	Performance $X \pm \sigma$			
	Boys, n=30		Girls, n=38	
	Before the experiment	After the experiment	Before the experiment	After the experiment
Speed, s	7,1±0,18	6,5±0,11	8,0±0,11	7,0±0,14
Agility, s	14,5±0,09	13,6±0,12	14,5±0,14	13,7±0,21
Elasticity, cm	3,6±0,05	5,4±0,28	6,4±0,02	10±0,14
Power-speed qualities (long jump off), cm	105±1,82	111±1,97	99±1,86	103±2,74
Power-speed qualities (jump up), cm	20±0,52	22±0,76	18,6±0,96	19,4±1,05

As can be seen from the Table 1, the boys of preschool age speed ability indicator decreased by 0.6 s ( $p < 0,01$ ) after the experiment. The level of power-speed indicators improved at the end of the pedagogical experiment: in the case of long jump off the increase is 6 cm ( $p < 0,05$ ), for example, jump up by 2 cm ( $p < 0,01$ ). The agility index in the studied boys age category decreased by 0.9 s, but not absolute ( $p < 0,1$ ). Flexibility of boys-preschoolers increased by 1.8 cm ( $p < 0,001$ ).

Almost similar situation is seen with the girls-preschoolers. Thus, the results of 30m distance sprinting from the high start decreased by 1.0 sec. The power-speed quality indicators of girls also increased after an educational experiment. So, the long jump off indicators increased by 4.0 cm, and jump up – by 0.8 cm. The girls' agility skill indicators decreased from the baseline data. The difference is 0.8 s, but the infant girls flexibility increased by 3.6 cm and has an excellent fit assessment with the regulatory scales for kindergarten.

As a result, it was investigated that a comprehensive fitball gymnastics exercises impact on the development of physical abilities of preschoolers is due to such factors as fitball qualities (shape, color, size, elasticity), multi – usage (like object, backing, weighting, massager, barriers, guide, trainer), musical accompaniment and deliberately chosen means (gymnastics, dancing, care, health and corrective exercises, etc.). It is necessary to admit, that fitball classes caused great psychoemotional satisfaction for children who participated in the experiment.

In addition, fitball gymnastics develops child's musculoskeletal system, respiratory system, improves blood circulation, cardiovascular system and internal organs.

**Conclusion.** Analysis and synthesis of the literature data showed that one of the effective means of health improvement and maintenance, betterment of preschoolers' physical abilities indicators and increasing interest in physical training is fitball gymnastics that influences the physical and psycho-emotional condition.

Fitball gymnastics is an innovative method of physical training improvement that involves the use of large colorful balls – fitballs for therapeutic and preventive effects on musculoskeletal, respiratory, cardiovascular and nervous system of a child.

The growth of the physical abilities parameters was observed both in boys and in girls after the pilot study.

In conclusion, the results and their analysis provide a basis for assertion that the right pace, good posture, adjust-

able psycho-emotional state and formed physical abilities that are necessary for the harmonious development of the child are due to tonic and sanitary pursuits of using fitball with preschool children.

**The perspective for further research** is to study the combined effect of innovative technologies on the health indicators of younger pupils physical fitness.

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