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THE IMPACT OF HEALTH-IMPROVING TECHNOLOGY ON ELEMENTARY SCHOOL CHILDREN

Physical education in the field of education is guided by established educational standards that are approved in accordance with the law. Health is a fundamental aspect of an individual's well-being and greatly influences their overall quality of life. Currently, Ukraine is experiencing a high level of morbidity, particularly among children and adolescents. Specifically, during the schooling years, there is a significant decline in the number of healthy children from the first to the eleventh grade, with a decrease of 3-4 times. The inadequate level of physical fitness among young Ukrainians can be attributed, to a large extent, to the lack of significant incentives for the promotion of sports culture among the younger generation. Consequently, the preservation and enhancement of students' health, the promotion of physical activity, and the development and improvement of fundamental physical attributes become the primary objectives of physical education for elementary school students. These objectives also represent priority areas for the overall development of our society.

The aim is to investigate the impact of the developed technology on physical fitness levels of 8-9-year-old students.

Material: 8- to 9-year-old students took part in the research. Out of the four surveyed classes four homogeneous groups were formed. Experimental groups consisted of 20 boys and 16 girls; control groups consisted of 19 boys, and 17 girls who were classified into the main medical group for health condition.

Results. An increase in the indicators of physical fitness was found in experimental and control groups. But in the experimental groups (boys, girls) - the indicators improved by 46.11%, in the control groups (boys, girls) the indicators improved by 29.76%.

Conclusions. The obtained results testify to the effectiveness of technology developed by us, which consisted of two blocks with the priority use of health-improving exercises, as a new tool for the formation of a healthy lifestyle.

Keywords: technology, health, elementary school, development, physical qualities.

Шуба Л.В, Шуба В.В, Шуба В.О. Вплив оздоровчої технології на дітей початкової школи.

Фізичне виховання в освітній галузі здійснюється за встановленими освітніми стандартами, які затверджуються відповідно до законодавства. Здоров'я є фундаментальним аспектом благополуччя людини і значною мірою впливає на загальну якість життя. Нині в Україні спостерігається високий рі-

вень захворюваності, особливо серед дітей та підлітків. Зокрема протягом шкільних років спостерігається значне зменшення кількості здорових дітей з першого по одинадцятий клас – у 3-4 рази. Недостатній рівень фізичної підготовленості молодих українців значною мірою пояснюється відсутністю вагомих стимулів для формування спортивної культури підростаючого покоління. Отже, збереження і зміцнення здоров'я учнів, розвиток рухової активності, розвиток і вдосконалення основних фізичних якостей стають основними завданнями фізичного виховання учнів початкової школи. Ці завдання також є пріоритетними напрямками для загального розвитку нашого суспільства.

Мета – дослідити вплив розробленої технології на рівень фізичної підготовленості учнів 8-9 років.

Матеріал: у дослідженні взяли участь учні 8-9 років. Із чотирьох обстежених класів було сформовано чотири однорідні групи. Експериментальні групи склали – 20 хлопців та 16 дівчат; контрольні групи склали – 19 хлопців, 17 дівчат, які за станом здоров'я були віднесені до основної медичної групи.

Результати. Був виявлений приріст показників фізичної підготовленості в експериментальних та контрольних групах. Але в експериментальних групах (хлопці, дівчата) – показники покращились на 46,11%, у контрольних групах (хлопці, дівчата) показники покращились на 29,76%.

Висновки. Отримані результати свідчать про ефективність розробленої нами технології, яка складалась із двох блоків з пріоритетним використанням вправ оздоровчої спрямованості, як нового засобу для формування здорового способу життя.

Ключові слова: технологія, здоров'я, початкова школа, розвиток, фізичні якості.

Topicality of the issue and literature review. In today's society, we are witnessing a decline in the overall health and life expectancy of the population. Numerous studies have shown that only approximately 10 percent of young people possess a satisfactory level of physical fitness and health. This decrease in health has led to a reduction in life expectancy by 7-9 years, thereby negatively impacting the productivity and potential of society. As part of the curriculum in educational institutions, "Physical Education" is taught as an independent subject. Its primary objective is to promote and enhance the preservation of health, develop fundamental physical attributes and motor skills, and foster the physical preparedness of students [A. Aghyppo, S. Tkachov, O. Orlenko, 2016; J.R. Best, 2010; D. Kirk, 2010].

Health-improving technologies serve as a means to implement activities aimed at achieving and maintaining physical development while reducing the incidence of diseases through physical education and health enhancement. These technologies encompass fundamental principles for the application of knowledge and skills, as well as the organization of specific actions required for the implementation of physical culture and recreational activities. During physical exercise, there is a deliberate impact on the various natural attributes of the body, which are considered as the physical qualities of an individual. Through recreational physical exercises and other methods of physical education, it becomes possible to enhance the functional state of the body within a specific range. This leads to progressive adaptation changes, promoting overall well-being and improved health [N.A. Khan, C.H. Hillman, 2014; L. Lopes, R. Santos, B. Pereira, V. Lopes, 2013; Б.М. Шиян, 2007; J.B. Toner, A.B. Claire, 2021]. By influencing the physical qualities of individuals under specific conditions, a significant change in the level and direction of their development can be achieved. This is manifested through the progression of specific motor abilities such as power and speed, leading to an overall improvement in efficiency and health. Furthermore, it contributes to the enhancement of body composition, positively impacting the development of memory, thinking, and attention in children [J.J. Fisher, L.A. Reilly, C. Kelly, A. Montgomery, J.Y. Williamson, 2005; F. Fuaddi, T. Tomoliyus, P. Sukoco, S. Nopembri, 2020]. The improvement of physical qualities also extends to motor preparedness and physical readiness for daily life, enabling individuals to expand and diversify their physical abilities. Through targeted physical education and health-enhancing activities, individuals can experience positive transformations in their physical attributes, ultimately leading to a higher level of performance and a more versatile range of physical capabilities [F. Fuaddi, T. Tomoliyus, P. Sukoco, S. Nopembri, 2020; A. Gaetano, 2016; T. Kuffner, 2013; J. Shepherd, M. Antoniadis, 2010].

In fundamental works by Yu. Pavlova, M. Schmidt, F. Egger, V. Benzing, K. Jäger, A. Conzelmann, C. Roebbers, C. Pesce, and L. Shuba, an integration of cognitive and motor activity in the system of educating and upbringing schoolchildren is established [Ю. Павлова, 2016; M. Schmidt, F. Egger, V. Benzing, K. Jäger, A. Conzelmann, C. Roebbers, C. Pesce, 2017; L. Shuba, V. Shuba,

2020; L.V. Shuba, 2016]. Meanwhile, T. Krutsevich, M. Reiman, L. Sergienko, J. Winnick, and X. Short used systematization of research to determine the level of physical development, physical fitness and functional state of children and athletes aged from 6 to 21 years [T. Krutsevich, 1999; M. Reiman, R.C. Manske, 2008; L. Sergienko, 2001; J. Winnick, X. Short, 2014]. B. Shiyan, A. Tsios, I. Bakiko, and V. Dmitruk considered the ways of forming the national system of physical education of schoolchildren on the basis of studying the current state of physical education at school [Б.М. Шиян, 2007; А.В. Цьось, І.В. Бакіко, В.С. Дмитрук, 2009], whereas R. Apache, J. Best, A. Van der Niet, E. Hartman, J. Smith, and C. Visscher identified varieties of motor activity and its influence on the development of motor qualities [R. Apache, 2005; J. Best, 2010; J.B. Toner, A.B. Claire, 2021; A. Van der Niet, Hartman, J. Smith, C. Visscher, 2014]. In addition, J. Rink, J. Shepherd and M. Antoniadis researched the influence of common forms, methods and principles on the development of motor skills and skills that contribute to increasing the level of motor activity among primary school students [J.E. Rink, 2009; J. Shepherd, M. Antoniadis, 2010]. These studies reflect the main aspects of the influence of various ways of using physical education for the harmonious development of a young person.

Therefore, in connection with the foregoing, we note that our research topic is relevant and timely.

The **aim of the study** is to investigate the impact of the developed technology on physical fitness levels of 8-9-year-old students.

Presentation of the main study material. 8- to 9-year-old students took part in the research. Out of the four surveyed classes four homogeneous groups were formed. Experimental groups consisted of 20 boys and 16 girls; control groups consisted of 19 boys, and 17 girls who were classified into the main medical group for health condition.

Students of the control groups were engaged in the program proposed by the state, which provided for the development of only those physical qualities that are necessary for the successful assimilation of techniques of motor activity. Students of experimental groups were engaged in the developed technology.

The technology included three components that complement each other and thus have a comprehensive impact on the student:

1. In the theoretical aspect, various topics were covered to promote an understanding of a healthy lifestyle and the effects of physical exercise on the body. These topics were explored in lessons such as "Physical Culture and Healthy Lifestyle," "Health Systems of Physical Education," "Forms of Work in Physical Education Classes to Enhance Children's Health," "Methods of Enhancing the Efficiency of Elementary School Students' Lifestyles," "Physical Culture as an Integral Component of a Healthy Lifestyle," and more. Theoretical directions aimed to provide knowledge and insight into the importance of physical culture in maintaining a healthy lifestyle.

2. The practical aspect involved the implementation of general developmental exercises using various equipment and the application of health-improving techniques during training. These exercises included both general developmental exercises without equipment and exercises using specific equipment such as gymnastic sticks, cubes, large balls, and ropes. The selected exercises were designed to be simple and easy to learn, providing a consistent impact on the child's body. To ensure that physical education classes have a positive impact on students, several methodological rules were followed. These rules included gradually increasing the intensity and duration of physical activity, incorporating a variety of equipment, and maintaining a systematic approach to the classes. These guidelines aimed to optimize the effectiveness of physical education sessions and create a positive and engaging learning environment for the students.

3. Recreational active games are designed to develop physical qualities both individually and in a comprehensive manner. These games provide an engaging and enjoyable way for individuals to enhance their physical attributes. Through these activities, participants have the opportunity to improve their strength, endurance, coordination, agility, and other physical qualities. The games are structured to promote active participation, competition, teamwork, and skill development, all while providing a recreational and enjoyable experience [T. Kuffner, 2013; J. Shepherd, M. Antoniadis, 2010; J.B. Toner, A.B. Claire, 2021].

Our proposed lesson was conducted according to a generally accepted scheme, which consisted of three parts.

The preparatory part of the lesson serves an official function as it establishes the necessary conditions for the main educational activities. Its duration typically accounts for 7-10% of the total class time. During this phase, students engage in warm-up exercises, stretching, and other activities that prepare their bodies and minds for the upcoming physical education session. The purpose of the preparatory part is to ensure that students are physically and mentally prepared for the main activities of the lesson and to minimize the risk of injuries.

The main part of the lesson constitutes 80-85% of the total class time. During this phase, the focus is on developing and enhancing physical qualities, which are essential components of the overall learning process. Additionally, creating an optimal emotional state among students is a key indicator of positive teacher-student relationships in physical education classes. The effectiveness of the teacher-student interaction depends on various factors, including the student's emotional mood, their overall well-being at school, the level of comfort during exercises, their perception of the teacher, and their motivation to actively participate in the class. Ensuring a positive emotional experience for students plays a crucial role in fostering a productive learning environment.

The concluding part of the lesson comprises approximately 5-6% of the total class duration. Its purpose is to organize the completion of the educational process and prepare the body for future activities by maintaining an optimal working state. This section concludes with a low-intensity game aimed at reducing the body's excitability and gradually returning it to a normal state. The game chosen for this phase is one that elicits positive emotions such as joy and pleasure, regardless of the outcome (such as winning or losing). Activities in this part may include light jogging, relaxing walking, attention-focused exercises and games, dance exercises with slow-paced music, relaxation exercises with or without objects, and breathing gymnastics. The goal is to promote relaxation, mental and physical rejuvenation, and a sense of calmness among the students.

The study used standard tests [Т.Ю. Круцевич, 1999; М.Р. Reiman, R.C. Manske, 2008; Л.П. Сергиенко, 2001; J. Winnick, X. Short, 2014]:

1. Angled position (cm) – testing of flexibility. The test result is a mark on the perpendicular marking in centimetres, to which the participant reached with his or her fingertips in the best of two attempts.

2. Floor dip (quantity of repetition) – testing of strength ability. The test result is the number of error-free flexion and extension of the arms in one attempt.

3. Ten Eights (Kopylov test) (seconds) – testing of coordination ability. The test participant acquires the starting position of the body tilt forward, holding the ball in one hand. With the command "Start" as quickly as possible, the ball makes an imaginary eight between legs at the knee level. At the same time the ball is transferred from hand to hand. Time of execution of ten "Eight", registered up to 0,1 seconds.

4. Do sit-ups for 1 minute (quantity of repetition) – strength testing. The test result is the number of lifts from the supine position to the sitting position for 1 minute.

5. Middle split (cm) – flexibility testing. The test result is a mark on the perpendicular marking in centimeters, to which the participant reached with his or her fingertips in the best of two attempts.

6. Upward jump off both feet (cm) – testing of speed-strength abilities.

At the beginning and at the end of the study, all students performed norms that allowed determining their level of physical fitness development. The testing was carried out at the beginning and at the end of school year. Statistical analysis of data was carried out using the SPSS Statistics program.

Motor assessments are employed as a means to examine the physical aptitude of children, with a focus on specific motor attributes and their evaluative standards. By employing designated exercise-based tests, it becomes possible to gauge the performance level of individual bodily systems, the outcomes of which are directly influenced by physical activity. When incorporating appropriate exercises within health and fitness classes, it becomes feasible to stimulate specific systems, consequently enhancing their functional capacity and overall health status.

Considering that the experiment with the same contingent, we note that the testing was measured at the beginning (September) and at the end of the academic year (May). Table 1 shows indicators of students' physical fitness throughout this experiment. Analysing the data

for the 2022-2023 academic year, we denote that at the beginning of the study, the indicators of physical fitness in all groups had a distribution at the level of average, below average, and several children were at a low level. This indicates a lack of development of the physical qualities of all students, regardless of gender. At the end of the academic year, the level of physical fitness has somewhat shifted. In experimental groups (boys, girls), the level moved to higher than average and average levels of physical fitness. In the controlled groups (boys, girls), the highest percentage of children was at an average level.

Table 1

Change in the condition of students' physical preparedness during the study

year	sex	group	month	High		Above average		Average		Below average		Low	
				Amount of students	%	Amount of students	%	Amount of students	%	Amount of students	%	Amount of students	%
2022-2023 s.y.	Boys	EG (n = 20)	09	1	5	2	10	11	55	5	25	1	5
			05	3	15	6	30	9	45	2	10	-	-
		KG (n = 19)	09	1	5.2	1	5.2	12	63.2	4	21.2	1	5.2
			05	1	5.2	3	15.8	12	63.2	3	15.8	-	-
	Girls	EG (n = 16)	09	-	-	2	12.5	9	56.25	4	25	1	6.25
			05	1	6.25	6	37.5	7	43.25	2	12.5	-	-
		KG (n = 17)	09	-	-	1	5.9	11	64.7	4	23.5	1	5.9
			05	-	-	3	17.6	11	64.6	3	17.6	-	-

Based on the findings of the investigation, it can be concluded that the varying progress in the development of physical attributes indicates that the implementation of the experimental approach in enhancing fundamental physical qualities has resulted in more pronounced advancements in the child's physical abilities.

Therefore, the experimental methodology holds merit and proves its efficacy in promoting physical development.

Conclusion. The identified problem pertaining to the subject under investigation led to the formulation and development of an experimental approach for teaching motor skills and abilities to elementary school students during physical education lessons. It has been observed that the highest number of school absences due to illness occur during the second semester of the academic year. This phenomenon can be attributed to a weakened immune system, resulting in an increased susceptibility to viral and respiratory ailments.

The qualitative assessment of the level of physical fitness demonstrated that the implementation of the experimental approach resulted in achieving the highest values across various indicators of physical condition. The potential for targeted development of motor skills and

abilities among elementary school students, taking into account their individual physical development and fitness level, is justified. This approach is grounded on the experimental health-improving technology utilized in our study and its outcomes.

The future research prospects are focused on examining schoolchildren with various health adaptations to physical exertion in the context of mobile games. Additionally, there is a need to further investigate the personality-oriented approach to physical education for elementary school students, with an emphasis on enhancing memory, thinking, attention, physical qualities, motor skills, and overall health improvement.

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THE IMPACT OF HEALTH-IMPROVING TECHNOLOGY ON ELEMENTARY SCHOOL CHILDREN

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The well-being of a child reflects their ability to withstand challenging and harmful factors, and their stability is determined by achieving a balance in key physiological functions during their development. According to the Ministry of Health of Ukraine, approximately 90 percent of children exhibit various health deviations, with over 59 percent experiencing poor physical condition. The health of children can be viewed as a dynamic and functional state, serving as an indicator of their everyday effectiveness. Furthermore, it

can provide insights into their lifestyle choices and personal interests. Physical education in the field of education is guided by established educational standards that are approved in accordance with the law. These standards aim to provide scientifically-based guidelines for physical activity for children and young people, taking into account their health status and level of physical development. Health is a fundamental aspect of an individual's well-being and greatly influences their overall quality of life. Currently, Ukraine is experiencing a high level of morbidity, particularly among children and adolescents. Specifically, during the schooling years, there is a significant decline in the number of healthy children from the first to the eleventh grade, with a decrease of 3-4 times. The inadequate level of physical fitness among young Ukrainians can be attributed, to a large extent, to the lack of significant incentives for the promotion of sports culture among the younger generation. Consequently, the preservation and enhancement of students' health, the promotion of physical activity, and the development and improvement of fundamental physical attributes become the primary objectives of physical education for elementary school students. These objectives also represent priority areas for the overall development of our society. To achieve these goals, physical education sessions for elementary school students should address health improvement, pedagogical aspects, and educational objectives in a comprehensive manner. Only through a holistic approach can we effectively exert a multifaceted influence on the development and growth of elementary school students.

The aim is to investigate the impact of the developed technology on physical fitness levels of 8-9-year-old students.

Material: 8- to 9-year-old students took part in the research. Out of the four surveyed classes four homogeneous groups were formed. Experimental groups consisted of 20 boys and 16 girls; control groups consisted of 19 boys, and 17 girls who were classified into the main medical group for health condition.

Results. The process of physical education should be organized in a rational manner, aiming for the comprehensive and balanced development of motor qualities. Achieving high levels of physical fitness serves as a functional basis for expanding the repertoire of motor skills and abilities, while significantly enhancing the functional capacity of the body's systems. Motor tests are widely used as a common and accessible method of pedagogical assessment. The subjects' physical preparedness was evaluated through pedagogical testing, which assessed their level of basic motor qualities, including flexibility, strength, endurance, speed, and speed-strength abilities. An increase in the indicators of physical fitness was found in experimental and control groups. But in the experimental groups (boys, girls) - the indicators improved by 46.11%, in the control groups (boys, girls) the indicators improved by 29.76%.

Conclusions. The obtained results testify about the effectiveness of technology developed by us, which consisted of two blocks with the priority use of health-improving exercises, as a new tool for the formation of a healthy lifestyle.

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