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PHYSICAL ACTIVITY OF PRESCHOOL CHILDREN - A FACTOR FOR GENERAL PHYSICAL DEVELOPMENT AND HEALTH

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Physical activity of preschool children - a factor for general physical development and health

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Exercise is a natural need and a major preventive measure to strengthen children's health. Insufficient physical activity adversely affects the normal development of the child's body and healthy lifestyle.

Purpose: to determine the degree of development of motor activity of preschool children, determining the overall physical capacity to stimulate the health potential of the child's body.

Methods. The study was conducted in the kindergarten "Zdravets" Plovdiv in 2018-2020, of 52 children aged 5-6 years, of which boys (46.15%) and girls (53.85%). The quantitative parameters of the physical qualities and physical capacity were studied through tests for diagnostics of the motor activity from the Program "Activity of the child in kindergarten".

Results. Respondents from both groups achieve the same results in the study of the qualities of "speed" and "explosive force" of the lower extremities, which is "satisfactory" assessment. In the case of the "explosive force" of the arms, shoulder girdle and back, in girls the assessment is "poor", and in boys - "satisfactory". The correlation between the values of speed and strength of the lower limbs in boys is ($r = 0.58$); between speed and endurance in boys is ($r = 0.43$), and in girls is ($r = 0.19$). There is a tendency for uneven, non-complex development, and disharmony of motor skills.

Conclusion. In preschool age children need an intense physical regime. It is necessary to develop motor skills and motor qualities, which will provide the necessary level of physical capacity, as a prerequisite for general physical stimulation of children's growth, strengthening the body, mind, and health.

Keywords: physical activity, preschool age, health, physical capacity, sex differences.

Мектеп жасына дейінгі балалардың дене белсенділігі - жалпы физикалық дамуы мен денсаулығының факторы

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Жаттығу - бұл табиғи қажеттілік және балалардың денсаулығын нығайту үшін маңызды алдын-алу шарасы. Дене белсенділігінің жеткіліксіздігі баланың денесінің қалыпты дамуына және салауатты өмір салтына теріс әсер етеді.

Максаты: Мектеп жасына дейінгі балалардың қозғалыс белсенділігінің даму дәрежесін анықтау, баланың денесінің сауықтыру әлеуетін ынталандырудың жалпы физикалық қабілетін анықтау.

Әдістер. Зерттеу 2018-2020 жылдары Пловдив қаласындағы «Здравец» балабақшасында 5-6 жастағы 52 баланың қатысуымен жүргізілді, оның ішінде ұлдар (46,15%) және қыздар (53,85%). Физикалық қасиеттер мен физикалық көрсеткіштердің сандық параметрлері «балабақшадағы баланың белсенділігі» бағдарламасынан қозғалыс белсенділігін диагностикалау үшін тестілеу көмегімен зерттелді.

Нәтижелер. Екі топтың респонденттері төменгі аяқтардың «жылдамдығы» және «жарылыс күші» қасиеттерін зерттеуде бірдей нәтижелерге қол жеткізеді, бұл



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«қанағаттанарлық» бағалау болып табылады. Қыздарда қолдың, иық белдігінің және арқаның «жарылғыш күші» жағдайында бағалау «нашар», ал ұлдарда - «қанағаттанарлық». Ұлдарда төменгі аяқтың жылдамдығы мен күші арасындағы байланыс ($r = 0,58$); ұлдарда жылдамдық пен төзімділік арасында ($r = 0,43$), ал қыздарда ($r = 0,19$). Қозғалыс дағдылары біркелкі емес, қарапайым дамуы және үйлесімсіздігі байқалады.

Қорытынды. Мектепке дейінгі жастағы балаларға қарқынды физикалық режим қажет. Балалардың өсуін жалпы физикалық ынталандырудың, денені, рухты және денсаулықты нығайтудың алғышарты болып табылатын физикалық мүмкіндіктердің қажетті деңгейін қамтамасыз ететін моториканы және қозғалыс сапасын дамыту қажет.

Негізгі сөздер: дене белсенділігі, мектепке дейінгі жас, денсаулық, физикалық өнімділік, жыныстық айырмашылықтар.

Физическая активность детей дошкольного возраста - фактор общего физического развития и здоровья

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Физические упражнения - естественная потребность и серьезная профилактическая мера для укрепления здоровья детей. Недостаточная физическая активность отрицательно сказывается на нормальном развитии детского организма и здоровом образе жизни.

Целью исследования является определение степени развития двигательной активности дошкольников, определение общей физической способности стимулировать оздоровительный потенциал детского организма.

Методы. Исследование проводилось в детском саду «Здравец» г. Пловдив в 2018-2020 гг. С участием 52 детей в возрасте 5-6 лет, из них мальчиков (46,15%) и девочек (53,85%). Количественные параметры физических качеств и физической работоспособности изучались с помощью тестов для диагностики двигательной активности из Программы «Активность ребенка в детском саду».

Результаты. Респонденты из обеих групп достигают одинаковых результатов при изучении качеств «скорость» и «взрывная сила» нижних конечностей, что является оценкой «удовлетворительно». В случае «взрывной силы» рук, плечевого пояса и спины у девочек оценка «плохо», а у мальчиков - «удовлетворительно». Корреляция между значениями скорости и силы нижних конечностей у мальчиков составляет ($r = 0,58$); между скоростью и выносливостью у мальчиков составляет ($r = 0,43$), а у девочек ($r = 0,19$). Наблюдается тенденция к неравномерному, несложному развитию и дисгармонии моторных навыков.

Выводы. В дошкольном возрасте детям необходим интенсивный физический режим. Необходимо развивать моторику и двигательные качества, которые обеспечат необходимый уровень физических возможностей, что является предпосылкой для общей физической стимуляции роста детей, укрепления тела, духа и здоровья.

Ключевые слова: физическая активность, дошкольный возраст, здоровье, физическая работоспособность, половые различия.

Introduction

Providing medical, pedagogical and psycho-social care for children is a huge activity, which is based on an effective and efficient holistic approach aimed at the growth of physically and spiritually healthy children. In this activity a large share belongs to natural physical factors with their rich diversity and very strange biological effect - from physioprophyllaxis, firming and strengthening of the growing organism to the broad prevention organized in kindergartens and schools. The advantages of using physical methods in childhood is their non-invasive nature and minimal side effects when applying scientifically based methods and dosages.

The physical development of children and adolescents is correlated with their motor and nutritional regime, with their constitution, with hardening, with the early detection,

prevention and treatment of acute and chronic diseases that accompany growth [1]. Systematic monitoring, proper exercise and diet contribute to the favourable process of physical, mental and emotional development of children. Of paramount importance are the good organization of preventive and curative measures, including comprehensive health care and general physical stimulation. Insufficient physical activity adversely affects the normal development of the child's body and healthy lifestyle. The psycho-physical development of children largely depends on urbanization, acceleration and forced hypodynamics, weak adaptive reactions, increased sensitivity and reactivity accompanying the modern way of life.

According to Paskaleva R, 2020 the positive effects of movement and physical exercise on the child's body are

multifaceted and numerous. It activates mental processes and eliminates mental fatigue, improves the strength and mobility of nervous processes, activates metabolic processes to complete breakdown and absorption of nutrients without fat deposition, increases the body's metabolic processes and increases its defences, valuable moral and volitional physical qualities of the personality are formed [2].

The general effect of physical exercises on the body is a basic principle in the preparation of healing, rehabilitation and training programs and is of particular importance for the application of the exercise regime in childhood.

By its nature, motor activity can be classified as non-specific therapy. Exercise is one of the internal biological irritants of the central nervous system and can lead to changes throughout the body [3].

Exercise is an activity to improve and maintain physical shape, as well as overall health and well-being. They help strengthen muscles and the cardiovascular system, improve athletic skills, weight loss and functional development. Frequent and regular exercise stimulates the immune system and helps prevent various cardiovascular diseases, diabetes and obesity (Stampfer MJ, 2000; Manson HJ, Stampfer M, Graham C, 2001) [4, 5]. According to the World Health Organization, lack of physical activity contributes to about 17% of cardiovascular disease, diabetes, 10% of obesity and other diseases [6].

According to Monaccia, 2011, exercise speeds up the heart rate, which stimulates blood circulation, strengthens muscles, stimulates the immune system, improves mental health, contributes to weight normalization, strengthens bones, increases joint and tendon flexibility [7]. Epidemiological studies show (Gleeson M, 2007) that moderate exercise has a beneficial effect on the human immune system, while extreme exertion lowers it [8]. The influence of the movement is multifaceted and can be expressed in different directions, depending on the methodology of application [1]. Physical activity and exercise have a psychotherapeutic effect [9]. They can tone the psycho-emotional state or calm and reduce nervous tension.

All agents that increase the vitality of the body are included in the so-called toning therapies. Vital tone is a condition in which optimal excitability of the cerebral cortex, sufficient functional activity of the brain centres and reticular formation, coherence and appropriateness of vegetative functions (respiration, blood circulation, metabolism, digestion, etc.), appropriate haemostasis and others, are achieved. Marekov M. and G. Karaneshev, 2000 emphasize that in a number of diseases as a result of the pathological process and immobilization a decrease in vitality can occur. The toning effect of movement includes the positive emotions that arise during its implementation [10].

Physical activity is a functional therapy that normalizes and improves the functions - both of individual organs and systems, and of the body as a whole. The general functional effect is expressed mainly by increasing the

physical capacity of the organism and improving its adaptive capabilities to physical effort.

Building an increased adaptability to physical activity and maintaining established motor habits as a result of systematic training can be easily lost if physical activity is stopped (Topuzov I., Bogdanov, 2001). After normalization of the functions, physical exercises can contribute to the further improvement of the organism. In children and adolescents they can have a stimulating and corrective effect on various problems of the musculoskeletal system and nervous system [11].

With its psychotherapeutic, toning, functional, trophic and other effects, movement naturally mobilizes the reserves of the child's body. Modern life is a challenge to every civilized person. We are consumers – our food intake is constantly increasing, we move less and less, and we keep drawing away from the natural rhythm of life [12].

During the preschool years, the foundations of health and physical training of adolescents are laid. Physical education at this age increases the body's resistance to disease, forms an exercising culture and develops motor skills.

During the transition from preschool to school age (Galabova, 2008), the child needs an intensive motor regime. Combining the work for the development of motor skills and motor qualities as an interconnected and conditioned process provides the necessary level of physical capacity of children. With a low degree of development of motor qualities, the process of formation of motor skills becomes difficult, which leads to a decrease in motor activity [13].

The motor-sensory activity of the child has physiological, mental and social-pedagogical significance for its overall development. J.J. Rousseau, for example, emphasizes that education from the age of 2 to 12 should be devoted to the sensory organs, which he considers to be the most important prerequisites for mental development. According to him, a necessary condition for this development is physical education in this period. His thought is well known: "To make a child smart, make him strong and healthy. Let it work, act, run, shout, let it be in constant motion" [14, 19].

Physical activity is the basis of a healthy lifestyle, which means health. This is especially true for children, whose body is in the process of growth and development, the completion of the proportions of the body, the physical and mental maturation. By physical activity, children acquire new, necessary for them motor habits and skills, which are built during the exercises and the earlier they start, the easier it is to master.

According to Ignatova D., 2019 the need of the human body for active motor activity, which in combination with the natural forces of nature and hygiene factors, has a positive impact on the overall development of man. In recent years, there has been a trend towards increasing hypokinesia and hypodynamics in children from preschool age. In the process of building a child's positive attitude

towards exercise, sports and tourism, compliance with personal and public hygiene standards, it is protected from disease and attributes to his or her longevity [15,18]. Physical activity in kindergarten is important for expanding the boundaries of adaptation of the individual to the ever-changing living conditions. It becomes a major factor in the harmonious development of the child and a healthy lifestyle.

The aim of the study is to determine the degree of development of motor activity of preschool children, determining the overall physical capacity to stimulate the health potential of the child's body.

Methods

The study was carried out in kindergarten "Zdravets" in Plovdiv in 2018-2020, of 52 children aged 5-6 years, of which boys (46.15%) and girls (53.85%). The quantitative parameters of the physical qualities and physical capacity were studied by tests for diagnostics of the motor activity from the Program Activity of the child in the kindergarten, which establish the individual achievements of the children, when studying the individual motor qualities in quantitative dimensions and verbal assessment. The tests for measuring the indicators of physical capacity have the task to establish the exact quantitative result, i.e. the result that can be achieved in an exercise. The research uses diagnostic and mathematical-statistical methods

for establishing, evaluating and analyzing the results of children's achievements: tests for diagnostics of motor activity; variation analysis; correlation analysis and graphical methods.

Results

In recent years, a number of program systems in preschool education have been developed. Each control and reporting system is a standard that has a dynamic character and changes in accordance with social conditions and needs, as well as with the development of physical culture (Galabova, 2008). The teacher has the opportunity to select the tests to establish the level of physical capacity of children. Leading factors in the selection are: the conditions in the kindergarten, the possibility for easy, fast and operative assessment, as well as the comparability of the results in terms of age, differentiated by sex - boys, girls. We present the criteria, indicators, tasks and points that underlie the study, according to the program for physical activity in preschool children and Ordinance No. 5 of 3rd June 2016 on preschool education [16] (Table 1).

Verbal scores are transformed into numerical and the maximum number of points for each test is 4, "poor" is 1 point, "satisfactory" - 2 points, "good" - 3 points and "excellent" - 4 points. The summarized test results according to the program for physical activity in preschool children are presented in (Figure 1).

Table1. Criteria, indicators, tasks and research points

Criteria	Indicators	Task	Points
1. Measurement of motor quality «speed»	1.1. Running 40 m	Test 1	4
2. Measurement of motor quality «force»	2.1. Long jump from a place	Test 2	4
	2.2. Throwing a solid ball	Test 3	4
	2.3. Throwing a small ball	Test 4	4
3. Measurement of motor quality «endurance»	3.1. Rising to a sitting position from lying position	Test 5	4
	3.2. Maximum number of squats	Test 6	4
Total number of points:			24

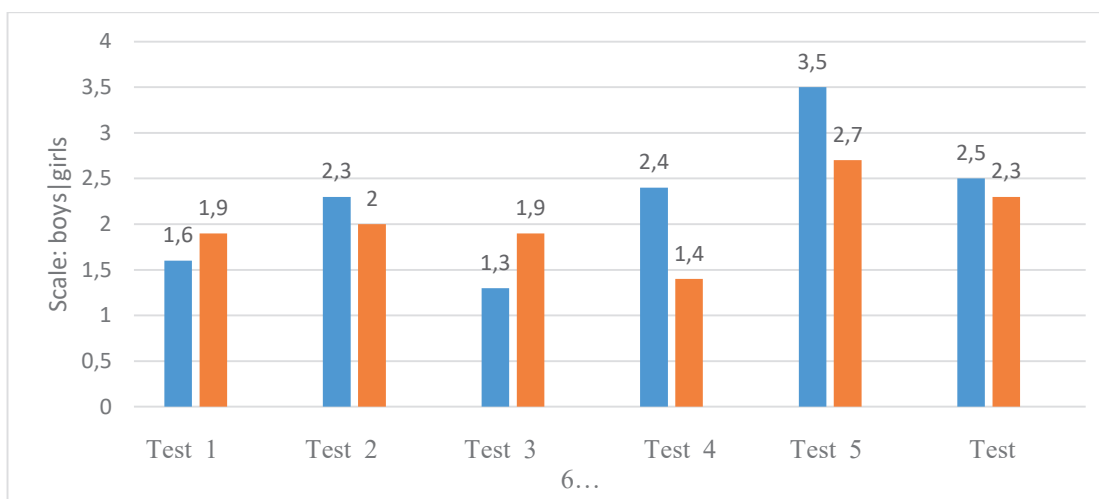


Figure 1. Summary results of motor skills tests

We apply a variation analysis of the results of the study of the motor qualities of boys and girls, implemented with the software Data Analysis-Descriptive Statistics (Table 2).

The boys' average score is 2.25. The value with the highest absolute frequency (Mode) is 2.3. It is equal to the Median - the value that is in the middle of the order of variation. The standard error is quite minimal - 0.11. The deviation from the values of the arithmetic mean is 1.4 units. The dispersion is 0.16; and the standard deviation is 0.39, which shows the diverse capabilities of the boys.

The average number of points for the girls is 2.05. The value with the highest absolute frequency (Mode) is 2. It is equal to the Median - the value that is in the middle of the variation order. The standard error is quite minimal - 0.13. The deviation from the values of the arithmetic mean is 1.5 units. The dispersion is 0.24; and the standard deviation is 0.49, which shows the diverse capabilities of the girls. From the values of the standard deviations in both boys and girls it can be concluded that it is necessary to work more to develop motor skills by exercise and active physical games.

Respondents from both groups achieved the same results in the study of the qualities "speed" and "explosive force" of the lower extremities - "satisfactory" assessment - 42% for boys and 64% for girls. In the case of the "explosive force" of the arms, shoulder girdle and back, in girls the assessment is "poor", in boys "satisfactory". The correlation between the values of speed and strength of the lower limbs in boys is ($r = 0.58$); between speed and endurance in boys is ($r = 0.43$) and in girls is ($r = 0.19$). There is a tendency for uneven, non-complex development and disharmony of motor qualities.

The summarized results show that boys have better developed motor qualities than girls, which is a natural result of the ontogenetic development of both sexes and the specifics related to this development for this age. There is a tendency for uneven and non-complex development of motor qualities in both boys and girls. Very good results were achieved in the tests related to the motor qualities of the lower limbs and the abdominal muscles and poor

results related to the motor qualities of the upper limbs. A significant disharmony in the development of motor qualities was revealed. On the one hand, this trend is related to and determined by the peculiarities of the ontogenetic development of children at this age, and on the other hand, to weaker and inconsistent work for the complex development of all motor skills.

The performed diagnosis established the motor qualities of the children - individually and as a group, and the analysis of the obtained results is used to identify specific measures aimed primarily at additional, individual and differentiated work with children, in order to stimulate and increase their interest in active motor activity.

Conclusion

During the first five or seven years of a person's life, the foundations of his health, longevity and overall motor training are laid. That is why it is extremely important to contribute to the physical development correctly at this age, which will allow the body of the small child to gain strength and to fully achieve its full development in the future.

Knowledge of the laws of physical development at this age and their effective use is a priority in the work of physical education in kindergarten. Well-organized physical education helps to form a proper physique, to prevent diseases, to improve the activity of internal organs and systems in the child's body.

Decreased physical activity, reduced physical capacity, neuropsychiatric disorders, hypertension, obesity, stress, aggression and irrational eating are some of the global problems of the century. Unfortunately, they affect children from an early age [15,17,19].

The increased attention to the problems related to the physical development of children from the preschool period is explained by the fact that their age is sensitive both to the development of basic physical qualities and to their physical capacity in general. This age allows purposeful influence on the genetic conditionality of physical qualities by applying appropriate methods and means for their stimulation and development. Only in this way can there be an optimal stimulating effect on physical

Table 2. Results of the study of motor skills

Variation analysis	Boys	Girls
Arithmetic mean	2,25	2,05
Standard error	0,113818	0,13039
Median	2,3	2
Mode	2,3	2
Standard deviation	0,394277	0,487875
Sample dispersion	0,155455	0,238022
Range - the difference between the largest and smallest value	1,4	1,5
Minimum value	1,6	1,5
Maximum value	3	3
Sum of values	27	28,8
Number of observations	12	14

development, motor skills, and physical capacity. Missed opportunities in preschool can hardly be compensated in the following periods of adolescent development.

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