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## **Analysis of the incidence of disease among the primary school pupils related to the organization of the physical education provided to the medically fragile children**

**Abstract. Purpose:** to research the breadth and type of the diseases among the primary school pupils aiming on the physical education optimization. **Material and Methods:** general data of the incidence of disease among the primary school pupils was revealed in the analysis of the medical documentation for 235 pupils of 1–4 grades at the general secondary school-lyceum in urban village Novofyodorovka. **Results:** it was revealed that the most wide spread health disorders at the primary school pupils are frequent respiratory diseases, functional disorders of locomotor apparatus and visual organs. **Conclusions:** the need of systematical application of the eyes exercises, breathing exercises as well as exercises for prophylaxis and correction of the skeleton deformations has been shown to increase the health-improving character of the physical education lessons at the primary school.

**Keywords:** pupils, physical education, physical activity, physical education class with reduced load, specialized corrective gymnastics.

**Introduction.** Health of all groups and categories of citizens has a resistant tendency to deterioration in connection with the existing social-economic situation in recent years, the decrease in physical activities, stressful influences, negative economic influences and other factors at the present stage of the development of our society. The incidence among the population grows steadily and the tendency of “rejuvenation” of those pathologies which were inherent in people of the senior age categories earlier is accurately traced. It is especially disturbing that the numerous various deviations in a state of health come to light already at a children’s age. For many years the statistics testifies that more than 20% among pupils of the primary schools have violations in a state of health, more than a half of pupils of the secondary and senior schools get 2–3 chronic diseases in the course of training and it is possible to consider almost healthy only the sixth part of all graduates. Violations of the musculoskeletal device (MD), diseases of respiratory and cardiovascular systems, metabolic disorders, a decrease in sight prevail in the structure of the general children’s incidence [2; 3; 7; 17]. The repeated acute respiratory diseases against a decrease in immunity are especially noted. Children, suffering from them under the certain conditions, can remain healthy, and at influence of adverse factors – to be ill with a formation of chronic pathology. Age features of the immune system cause hypersensibility of a children’s organism to negative influences of factors of the environment, and it leads to the growth of number of children, especially a younger school age inclined to the frequent sharp respiratory viral infections (SRVI) which form a group of so-called frequent and long ill children with the reduced resistance of an organism that, naturally, is reflected in an overall picture of incidence among pupils [8].

The process of training imposes big requirements to a state of health, physical development and physical fitness of a child. Meanwhile experts – teachers, psychologists, physicians, note discrepancy of indicators of physical and mental health of children to that level of intellectual and emotional loadings, to the rate of educational process, information volume which are received by modern pupils, and these indicators decrease in the process of transition from a class to a class, and the state of health worsens. Being in school, children move less, sit more, as a result the deficiency of muscular activity, static tension increases. It is proved that physical activity of pupils of the elementary school is reduced twice in comparison with preschool children, and girls in a quantitative sense move less boys, and it makes only 25% of wakefulness time at seniors [11; 13; 16].

The children’s age, for which movements are a vital need, is extremely sensitive to the motive insufficiency leading to violations of both the general activity, and the separate physical functions of an organism. The hypodynamia leads to a perversion of the plastic processes which are followed by the development of an atrophy in tissues and bodies, to decrease in nonspecific resilience and resistance of an organism to influence of negative factors of the environment [19].

Physical activity is especially necessary for the pupils who had any diseases or is frequent and long ill. Quite often, as practice shows, they in general are exempted from classes by physical culture at school and at home. Thus, the compelled rest “switches off” nervous communications of the motive analyzer with the vegetative centers of an organism, limits the motor and visceral relations which are improving the work of internals and systems as a result of muscular contractions that negatively affects as the general condition of a child who is weakened by an illness, and the course of local pathological process. As a result the so-called vicious circle of hypokinesia is traced: the reduced physical activity, on the one hand – a consequence of deviations in a state of health, on the other hand – the factor which is provoking the development of other violations and limiting ability to carry out physical activities by sick children [4; 7].

Meanwhile only the prolonged and systematic use of the correctly picked up physical exercises according to functionality of a child allows providing his adaptation to loadings and to liquidate or reduce the general and local violations which resulted from a disease.

The improving impact of classes by physical culture with the pupils having deviations in a state of health was proved and evidencely based by many scientists and researchers – physicians, teachers. So, the works of V. K. Velitchenko [7], E. G. Bulich [4] are devoted to the development of the system approach to physical training of children with the weakened health. The substantial party of classes with this contingent of pupils reveals in the works of I. N. Timoshina [17], M. T. Pushkareva [14], techniques of application of special exercises at various pathologies are offered by Y. G. Vasin [6], V. S. Yazlovetsky [19]. The improvement of children of different age means of modern technologies in the course of physical

training and the creation at lessons and classes in physical culture of the health saving environment are the object of studying, development and practical application in the researches of E. P. Aksenova, N. F. Denisenko [1; 10]. However the most part of works on the specified subject is devoted to the problems of adaptive physical training of the pupils with the weakened health carried on medical indications to te special group for classes by physical culture. Unfortunately, it is practically told nothing about the organization and the technique of physical training of children with insignificant deviations in a state of health of functional character, insufficient physical development and weak physical fitness, that are related to the preparatory group in the available to us scientific and methodical literature. As most often as practice shows, pupils of the main and preparatory groups at lessons of physical culture are engaged together, questions of the organization of classes with advantage for all pupils, a selection of adequate methodical receptions and means of physical training taking into account differentiation and an individual approach to the engaged are sharply arised at the teachers leading these lessons extremely. In this regard the problem of organizational and methodical ensuring process of physical training of the pupils which are related to health reasons to the preparatory group is actual and demands the further studying.

**Communication of the research with scientific programs, plans, subjects.** The research is executed according to the Consolidating plan of the RW of Kharkov state academy of physical culture.

**The objective of the research:** to reveal a character of diseases of pupils of the initial classes of the comprehensive school and to define features of the organization of physical training of the children who has certain violations in a state of health.

*Research problems:*

1. To study references and to generalize the data on the level of the general children's incidence.
2. To analyze the medical documentation (school medical records) for the definition of types of the most widespread diseases.
3. To track tendencies of change of a state of health of younger pupils.
4. To consider the set of the means and methodical conditions allowing to conduct successfully lessons of physical training with the children having deviations in a state of health.

**Material and methods of the research:**

1. The theoretical analysis and synthesis of data of special and methodical literature were carried out for the illumination of the general tendencies and conditions of change of a state of health of children in the course of training, and also for the definition of a degree of a study of this problem.

2. The analysis and statistical data processing of the medical documentation were made together with the pediatrician for the purpose of identification of the structure of the most widespread diseases among younger pupils and distribution of children on groups for classes of physical culture. School medical records of 235 pupils of the 1-4th classes of the comprehensive school-lyceum of the urban-type community Novofedorovka are processed in the 2014–2015 academic year.

3. The interview with teachers-form-masters (6 people) and teachers of physical culture (2 persons) who lead these lessons at the elementary school, allowed to reveal the used by them techniques and methods of the work with the weakened children who related to the preparatory medical group.

**Results of the research and their discussion.** Following the results of the medical examination before the beginning of the academic year, the definition by the children's doctor of the group of health and the level of physical development pupils were distributed on groups for classes by physical culture (tab. 1).

*Table 1*

**The distribution of pupils of the elementary school on groups for classes by physical culture in the 2014/2015 academic year**

Classes	Total number of pupils	Main		Preparatory		Special		Dismissal	
		Quantity	%	Quantity	%	Quantity	%	Quantity	%
First	61	49	80,3	12	19,7	–	–	–	–
Second	59	42	71,1	14	23,7	3	5	–	–
Third	60	43	71,7	14	23,3	3	5	–	–
Forth	55	35	63,7	16	29	3	5,5	1	1,8
Total	<b>235</b>	<b>169</b>	<b>72</b>	<b>56</b>	<b>23,8</b>	<b>9</b>	<b>3,8</b>	<b>1</b>	<b>0,4</b>

We see from the data of the table 1 that the greatest number of almost healthy children is in the first classes, the decrease is marked out in their quantity and approximately identical level in a parallel of the 2nd and 3rd classes and the greatest number of children with violations in a state of health is observed in 4 graduation classes of the elementary school. Thus, the accurate tendency to deterioration of a state of health is traced under the influence of the training process.

Diagnoses were united in groups depending on a type of the system of an organism for the analysis of a nosological picture of incidence: diseases of the cardiovascular system, musculoskeletal device, respiratory system, and also disease of internals, diseases of organs of vision, etc.

After processing of results the following sequence of the degree of prevalence of diseases of functional systems of an organism was defined among the studied contingent of pupils: on the first places – diseases of the respiratory system (11%) and organs of vision (10,2%), on the following position – violations of the musculoskeletal device (9,78%), diseases of the cardiovascular system (2,55%) and other systems of an organism (1,7%) finish an overall picture. The obtained data

are reflected in the combined tab. 2.

Table 2  
The specific distribution of diseases among pupils of 1-4 classes

Diseases	The 1st classes, n=61		The 2nd classes, n=59		The 3rd classes, n=60		The 4th classes, n=55		Total, n=235	
	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%
the respiratory system	9	14,75	6	10,17	6	10	5	9	26	11
organs of vision	6	9,8	5	8,47	6	10	7	12,7	24	10,2
the musculoskeletal device	5	8,2	4	6,78	7	11,67	7	12,7	23	9,78
the cardiovascular system	–	–	4	6,78	–	–	2	3,64	6	2,55
other systems of an organism	2	3,3	–	–	–	–	2	3,64	4	1,7

We will note that the increased incidence of younger pupils by the sharp respiratory viral infections (SRVI) is noted on the basis of these medical certificates about the postponed disease, responses of teachers and the school nurse, but the nosological forms of respiratory diseases which are most attracting attention are reflected in this table. So, the existence of an allergic component during an illness which at first graders is shown mainly in the form of household, food allergy, pollen sensitization in the first and fourth classes, and respiratory allergoz, bronchial asthma with manifestations of atopic dermatitis is noted in the fourth classes. The number of diseases in a chronic form increases in the second and third classes: chronic bronchitis, chronic tonsillitis, bronchial asthma, adenoidit.

The far-sighted astigmatism prevails among deviations of functioning of organs of vision in the first and second classes which can lead to the short-sightedness at the initial stage without being literally serious violation, under the adverse external conditions and big loads of eyes at more advanced age. Myopia, an accommodation spasm is more often diagnosed already in the third and fourth classes. One child has a congenital heavy pathology of sight.

Platypodia (plain-valgus deformation of feet) is the most widespread disease of the musculoskeletal device in the first and second classes, violations of a bearing, scolioses also come to light in the third and fourth classes, one child has a serious illness of joints (juvenile rheumatoid arthritis with liberation from classes by physical culture).

Diseases of the cardiovascular system are diagnosed for pupils of the second and fourth classes, from them a half is congenital and acquired heart diseases, a half – neurocircular dystonia on a hypertensive type.

Dyskinesia of biliary tract, nephrite and chronic pyelonephritis are revealed among diseases of internals (a digestive tract and secretory system) at children in the first and fourth classes.

Pupils with heart diseases, bronchial asthma, scolioses (subgroup A), with congenital pathology of sight (MPC) go in for physical culture in the special group. Classes in the preparatory group etc. are recommended to other pupils with violations of health, hiposomia, the low level of physical development on the basis of data of the anamnesis, the survey by experts, the carried-out functional tests, the accounting of a stage of a disease.

Many teachers-form-masters conduct lessons of physical culture in initial classes independently, thus pupils of the main and preparatory groups are engaged together. It creates additional difficulties for a teacher when determining the structure and the content of classes, the selection of optimum means and methods, demands along with all-developing of the differentiated application of special exercises, strict regulation and monitoring loading for each pupil weakened by an illness. But we allocated types of violations in a state of health of children who are characteristic for a considerable part of pupils (violation of MSS, organs of vision, respiratory system) and the corresponding special exercises having not only a correctional, but also all-improving and preventive orientation, undoubtedly, useful to all engaged without exception.

Respiratory diseases, both sharp infectious, and chronic and allergic, occupy one of the leading places in the structure of children's incidence. It is connected with anatomo-physiological features of an organism of a child. Requirements of an organism are provided with more strained activity because of distinctions in terms anatomic (by 8–12 years old) and functional (by 14–16 years old) maturities of the respiratory system of children. Thus adaptable mechanisms of the respiratory system are characterized by instability, and reserves – insufficiency that causes the increased vulnerability of respiratory organs of a child to influences of adverse factors [15].

In this regard it is necessary to use respiratory gymnastics and to train children in the correct breath (through a nose) for the prevention of diseases of the respiratory system, the development and strengthening of respiratory muscles, the increase in mobility of a thorax and a diaphragm, the improvement of blood supply and drainage function of bronchial tubes and lungs on classes by physical culture. The application of breathing exercises against all-developing in the ratio 1:2 at the initial stage, further 1:3, 1:4 is on the cornerstone of a technique of carrying out classes [4; 14].

Training in respiratory gymnastics is begun with static breath without a performance of physical exercises in a prone

position, the left hand is on the lower part of a stomach, the right is on a breast approximately on an elbow loss (the chest, belly, mixed breath; slowed down, equal, with the slowed-down exhalation, with pronunciation of sounds on an exhalation, with a push-similar exhalation etc.). Then the dynamic breathing exercises connect which are directed on the approval of breath and movements of the head, body and extremities join. The rule is the cornerstone when performing of the dynamic respiratory and all-developing exercises: an extension of a trunk, earlier bent feet, a cultivation of hands in the parties, raising up them and for the head etc., and an exhalation – turns and bending of a trunk, feet, inclinations, knee-bends, lowering of the head, hands is followed by a breath. The breath is taken in a starting position, the exhalation – at the moment of the greatest effort when performing acyclic exercises (jumps, throwings, ball throws, etc.).

A combination of breathing exercises and exercises to subjects and mini-exercise machines (gymnastic balls, sticks, a hoop, rubber rings, children's dumbbells, expanders) is promoted by the increase of an emotional saturation of classes. The first act as the means allowing to diversify of the carried-out movements, to make them less tiresome, the second – as means of easy burdening and resistance. The emotional component when performing respiratory gymnastics in the work with younger pupils is also brought by imitating exercises, as with a performance of physical movements ("Mowers", "Woodcutter", "Trees grow", etc.), and with pronouncing sounds on a long exhalation ("Engine", "Pipe", "Crow", "Snake", "Mosquito", etc.).

It is expedient to include breathing exercises before a performance of a complex of the all-developing exercises in the structure of a lesson, it is obligatory – after run, intensive walking for reduction of functional tension of an organism of a child in the middle of it, and also in the final part (in a complex with exercises on relaxation of muscles) is for restoration of the shifts of a functional state caused by physical activities of the main part [10; 15].

The prevalence of violations of sight at pupils is caused, first of all, by a overfatigue of eyes as a result of long static loads of all organism in the course of study, and also at non-compliance with hygiene of reading and the letter, a work at the computer (insufficient lighting, isn't maintained necessary distance from eyes to a textbook/book/screen, etc.). The transferring of infectious diseases, frequent at the age of 6–10 years old, the defective food poor in vitamins are influenced negatively a sight. Therefore the inclusion in the maintenance of lessons of physical culture of elements of gymnastics for eyes will bring an undoubted benefit to all children. For example, it is recommended to offer children of exercise for strengthening of eye muscles before learning and performance of the main movements, especially before ball throws, a throwing of sacks or balls on range.

Universal exercises are movements by eyes (opened and closed) in various directions at a motionless position of a head, tracking the object moving on a wide amplitude – a ball, a tag, blinking at different speed, alternation of screwing up eyes and broad opening of eyes, regard in a window of very remote subject with the translation of a view of a hand, tracing by eyes of a path trajectory of the movement of a bird, etc., a light massage of eyelids from a nose to an external corner of an eye. The exercises are carried out in starting positions lying, standing, and standing near wall bars. A rest blindly follows after each executed exercise. A similar work is resulted by training and massage of a crystalline lens, muscles of eyes become stronger, and their blood supply improves. It is expedient to carry out such ophthalmologic gymnastics in a class at lessons of a general education cycle where a long concentration of a look on a performance of any action and a considerable load of eyes takes place [1; 10; 12].

Platypodia often meets because of a decrease in force of muscles of feet, trunks, excess body weight among violations of the musculoskeletal device at children at younger school age (especially weakened). Thus the longitudinal arch of foot becomes straight and fixes it in the taken-away situation. As a result the sharply basic function of feet decreases, the provision of a pelvis and a backbone changes that conducts to postural defects. Therefore often platypodia accompanies violations of a bearing therefore the efficiency of scheduled and correctional maintenance on a correction of deformations of a skeleton assumes complex impact of the all-developing and special corrective exercises directed on strengthening of both the muscular device of foot and a shin, and trunk muscles, mainly a back and the abdominal tension providing a natural "muscular corset" [5].

It is necessary to include the exercises for strengthening muscles of feet in all types of physical activity of children. Different types of them are most often used at lessons of physical culture in the introductory part where run and walking are carried out, – for example, a step of polka or a side gallop (run by added steps), walking on outer side of foot, on tiptoe, on heels, with the turned-in and raised toes, in a semi-squat, with high lifting of knees, etc. Such exercises on a place, as a hatting on socks of feet together and alternately, rifts from a heel on a sock and from a sock on a heel, semi-knee-bends and knee-bends on tiptoe and on all foot, roundabouts foot etc carry out the function of the corrective. About 5 exercises are selected on one lesson, each of which is carried out on time till 1 minute. Exercises in a starting position sitting (on a floor, on a chair, on a gymnastic bench) and lying, as a rule, use rather restrictedly that reduces the improving value of correctional and scheduled maintenance since the principle of unloading when influence of a body weight on the foot arch is excluded, creates conditions for impact on certain muscular groups of the lower extremities [1; 10].

It is useful to diversify a corrective complex with exercises in balance blindly, on one foot (on a floor, on a gymnastic bench) with balancing, with walking on the line on an inclined bench, with overcoming of small obstacles, with subjects on the head. We will especially note exercises which surely have to be carried out without sports shoes for the achievement of a therapeutic effect: rifts of tennis balls by feet, a gymnastic stick, capture by toes of the small subjects which are spread out on a floor, walking on a massage rug, small pebble, etc. It is really to include them in an individual order in a gymnastics complex for homeworks as an option, as their performance is connected with difficulties of the organization of necessary conditions in the conditions of a gym [6; 17].

The great attention is given to education of a correct posture and prevention of deformations of a backbone during a performance at lessons of physical culture of complexes of physical exercises for pupils of the elementary school. The bearing at children has an unstable character, muscles of a stomach and a back are still insufficiently developed, a backbone flexible and pliable to influences of environment at younger school age. The wrong long sitting behind a school

desk, walking having stooped, continuous carrying weights in one hand promotes the formation of the vicious conditioned-reflex communications fixing the wrong position of a body, the new dynamic stereotype is formed, skill of a correct posture is lost. However a backbone of a child is pliable also to positive influence therefore it is important to demand at each lesson of physical culture from the all-developing exercises which are engaged saving of the correct provision of a body when performing, previously having accepted a correct posture at a wall (a nape, shovels, buttocks and heels have to concern a support). Visual self-checking (trainings in front of the mirror), mutually control engaged one after another, tactile feelings in points of a contact of parts of a body at a wall are used for the development of the musculoarticulate feeling which is the cornerstone of formation of skill of a correct posture.

Exercises for muscles of a back and an abdominal tension promote strengthening of a muscular corset, and visa on a crossbeam or wall bars provide extension of a backbone in the most natural conditions by gravity [4; 5; 9].

It is necessary to consider pedagogical and medical recommendations, to apply the individual and differentiated approach at selection and use of means and methods of physical culture, dispensing and regulation of load of an organism because on one occupation children with various physical fitness, unequal level of physical development and a state of health go in for physical culture, the teacher in their relation. Such general functional features for all children of younger school age as the slowed-down development of the cardiovascular and respiratory systems, weak shipping of a lack of oxygen, the slowed-down restoration after a performance of exercises of rather high intensity, a small economization of functions during physical activity cause need of observance when carrying out lessons of physical culture of such requirements, as monitoring procedure behind activity of the cardiovascular and respiratory systems (pulsometriya), lengthening of a preparatory stage and warm-up, obligatory use of exercises on breath and relaxation of muscles, careful increase in power of a physical activity, lengthening of time of rest after performance of loading. The general weakening of an organism after an illness and its reduced functionality raises a question of performance of the listed conditions even more sharply [17; 18].

It is necessary to use various additional forms and means of physical culture for the increase of efficiency of physical training of children with the weakened health. The daily morning exercises are obligatory in a day regimen which complexes contain a basic set of the all-developing exercises for all children plus individually picked up special exercises depending on violations in a state of health of the specific child. Carrying out sports pauses is obligatory at general education lessons at a change of types of work (for example, upon transition from reading to the letter) and in house conditions between preparation of lessons or other classes. The complex of sports pauses has to include 4–5 exercises, the simple and available, not overexciting and not overstraining children which are directed mainly on straightening and extension of a trunk, improvement of mobility of a humeral belt, relaxation and strengthening of muscles of a back and neck. Each exercise is carried out 3–4 times, at the end it is recommended to execute 2–3 exercises of gymnastics for eyes. The sports pause at home can become a form of performance of homework for physical culture and contain an individual set of exercises which performance is controlled by parents at the elementary school.

An improving impact of physical exercises considerably amplifies in combination with influence of natural factors. For this purpose it is necessary to carry out a systematic aeration of classes and a gym, to give classes by physical culture in the facilitated clothes according to weather, temperature norms of the hall and motor density of a lesson, to use widely outdoor games, walks, sport elements in the fresh air which allow to carry out in parallel with physical activity air and solar bathtubs [1; 4; 18].

**Conclusions.** Thus, it is possible to draw conclusions on the basis of the conducted research, that:

1. Systematic classes by physical culture with the children who had various diseases are the most important means of strengthening of their health, compensation and restoration of the functions lost as a result of an illness, completions of the compelled deficiency of movements by means of the dosed physical activities and the correct organization of all motive mode.

2. It is necessary to use more widely exercises for the prevention and correction of platypodia and violations of a bearing, breathing exercises and gymnastics for eyes due to the increased incidence of younger pupils of respiratory diseases, prevalence of the functional (acquired) violations of the musculoskeletal device and organs of vision on classes of physical culture.

3. Using of additional forms and means of physical training in a day regimen allows satisfying more fully daily need of pupils for the movements, and for a complex with natural factors – to increase improving influence of physical exercises on a state of health of the weakened children.

**Prospects of further researches.** It is planned to conduct the further researches in the direction of studying of dynamics of incidence of pupils of the primary and secondary schools for the purpose of detection of regularities of a change of a state of health in the course of training.

#### References:

1. Aksonova O. P. *Nauka buti zdorovim. Programa formuvannya fizichnoi kulturi uchniv pochatkovoї shkoli [Science be healthy. The program of formation of physical training of primary school pupils]*, Zaporizhzhya, 2005, 63 p. (ukr)
2. Belousova I. M., Bukov Yu. A. *Slobozans'kij nauk. -sport. visn. [Slobozhanskyi science and sport bulletin]*, Kharkiv, 2013, vol. 1, p. 60–63. (rus)
3. Bilova V. M. *Fizichne vikhovannya v shkoli [Physical education in school]*, 2007, vol. 1, p. 32–35. (ukr)
4. Bulich E. G. *Fizicheskoye vospitaniye v spetsialnykh meditsinskikh gruppakh [Physical education in special medical groups]*, Moscow, 1986, 255 p. (rus)
5. Bystryukov V. A. *Reabilitatsiya detey s osobennostyami psikhofizicheskogo razvitiya: sovremennost i perspektivy [Rehabilitation of children with special needs: Present and Prospects]*, Simferopol, 2005, p. 40–45. (rus)
6. Vasin Yu. G. *Fizicheskiye uprazhneniya – osnova profilaktiki ozhireniya u detey [Exercise - the basis of prevention]*

of obesity in children], Kyiv, 1989, 100 p. (rus)

7. Velitchenko V. K. *Fizicheskaya kultura dlya oslablennykh detey [Physical education for impaired children]*, Moscow, 2000, 168 p. (rus)

8. Gaydey V. R., Mikhaylova A. M., Lavryukova S. Ya. *Trudy Krymskogo gosudarstvennogo meditsinskogo universiteta im. S. I. Georgiyevskogo. Problemy, dostizheniya i perspektivy razvitiya mediko-biologicheskikh nauk i prakticheskogo zdravookhraneniya [Proceedings of the Crimean State Medical University. SI Georgievsky. Problems, achievements and prospects of development of the life sciences and health care practice]*, vol. 138, iss. 1, 2002, p. 62–64. (ukr)

9. Gusev V. *Fizichne vikhovannya v shkoli [Physical education in school]*, 2008, vol. 1, p. 34–39. (ukr)

10. Denisenko N. F., Aksonova O. P. *Cherez rukh – do zdorov'ya ditey [Through of the movement - to the health of children]*, Zaporizhzhya, 2006, 122 p. (ukr)

11. Matveyev A. P. *Mizhnarodni chitannya pam'yati profesora Bogdana Shiyana [International Reading memory of professor Bohdan Shiyana]*, Drohobich, 2014, p. 20–26. (ukr)

12. Nosay O. L., Koval L. M. *Fizichne vikhovannya v shkolakh Ukraini [Physical education in schools in Ukraine]*, 2010, vol. 6 (18), p. 19–28. (ukr)

13. Popov S. V. *Valeologiya v shkole i doma (o fizicheskom blagopoluchii shkolnikov) [Valeology in school and at home (physical well-being of the pupils)]*, SPb., 1997, 256 p. (rus)

14. Pushkareva M. G. *Zanyatiya ozdorovitelnoy fizicheskoy kulturoy s uchashchimisya, otnesennymi k spetsialnoy meditsinskoy gruppe [Employment by improving physical training with students in the special medical group]*, Pavlodar, 2006, 35 p. (rus)

15. *Spravochnik po detskoj lechebnoy fizkulture [Handbook of child physical therapy]*, Lviv, 1983, 360 p. (rus)

16. Tverdokhlib M. M., Dyachenko Yu. L. *Slobozans'kij nauk.-sport. visn. [Slobozhanskyi science and sport bulletin]*, Kharkiv, 2009, vol. 3, p. 15–17. (ukr)

17. Timoshina I. N. *Fizkulturnoye ozdorovleniye uchashchikhsya spetsialnykh meditsinskikh grupp obshcheobrazovatelnykh uchrezhdeniy [Improvement of physical culture of students of special medical groups of educational institutions]*, Moscow, 2006, 138 p. (rus)

18. Khrushchev S. V. *Vrachebnyy kontrol za fizicheskim vospitaniyem shkolnikov [Medical control of the physical education students]*, Moscow, 1980, 224 p. (rus)

19. Yazlovetskiy V. S. *Fizicheskoye vospitaniye detey i podrostkov s oslablennym zdorovyem [Physical education of children and adolescents with impaired health]*, Kyiv, 1991, 232 p. (rus)

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