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**STRENGTHENING THE HEALTH STATE OF THE PRIMARY SCHOOL  
PUPILS THROUGH INTELLECTUAL AND MOTOR COMPONENTS**

**Specialty: 533.04. Physical education, sport, kinetotherapy and recreation**

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## INTRODUCTION

**Actuality and the importance of the approached topic.** Education and culture represent the key to the future of Europe, from the individual perspective, the European citizen, who will have access to exemplary life models or behaviours, by promoting policies aimed at the younger generation and learning based on key competences, being acquired throughout their lives and which will ensure a healthy way of life [35].

The concern of the studied topic is of remarkable importance because it corresponds to the present from the horizon of the axiological, formative-educational and social phenomena and presents a subject that is increasingly interested in multi and interdisciplinary research, namely the vectors of intellectual, motor and health development, especially those with an important impact on the quality of life, the particularities of manifesting the behaviour of the modern human being, all of which involve, to a greater or lesser extent, the practice of physical education from the earliest ages [1, 12, 19].

Practicing physical activities throughout the life, based on a controlled program, fortifies the physical and mental health, which has a high intellectual potential that will be seen in the activity of learning and transforming the child's personality, at the prevention of some physical and mental illnesses specific to the modern way of life [14, 20]. In this regard, WHO [36] recommends daily active participation, at least 30 minutes in a physical exercise program, with a medium intensity physical effort for adults, but for children, physical exercises mainly performed in the form of games, during 60 minutes.

The lack of practice of sports activities leads to weight gain, obesity and chronic diseases, cardiovascular diseases and diabetes, which harm the well-being and endanger the quality of life of individuals, which consequently affects the budget of the economy and the financing, distributed to the health sector [15, 21].

In this situation, the public authorities responsible for initiating, planning and conducting sports activities and physical education must undertake to fulfil with greater responsibility, the task of initiator that promotes the strengthening of the state of health, through the capacities of the specialists of the field: schoolmasters, teachers, methodologists, physiotherapists and by implementing prophylactic alternatives, applied according to the particularities of age, gender, level of training, in order to perform the tasks specific to the field of specialists competence [5, 17, 27].

In Romania, one of the principles that manage the pre-university and higher education provides that the learning process that takes place throughout the life will have to initiate and encourage educational programs to strengthen the health, highlighting the active participation in the physical education lesson and in recreational sports practiced during leisure time [3, 6, 26].

Thus, it is stated that it is a guaranteed state right of any person, without discrimination, to participate in educational activities of sporting and recreational character.

Physical education is a form of education, which values moments through the physical development of the body, the development of the intellect, the necessary movement skills over a lifetime. Component of the general education, the physical school education is carried out according to well-established rules, it includes different forms of organization and development, in order to optimize the biological and psychomotor potential of the individual, in order to improve the quality of life.

The fact that the formation of the modern man implies his development from an ethical and aesthetic point of view, from the physical, social, intellectual level, in accordance with the needs of the society and according to the aptitudes of the individuals, these leading to the increase of the standard of living and to the social development. A real support in the didactic activity is represented by a modern orientation of the physical education towards an educational system, in which the family will provide adequate support.

Decades of research have shown that the sport practiced in the form of games in the physical education lesson [29, 30], by primary school pupils, is an important mediator in the field of physical, social, cognitive and linguistic development of pupils. However, the game faces threats from many directions in modern life [9, 23].

Improving the physical and mental development of pupils is by far the most important contribution of pupils sport. Due to its breadth, unparalleled popularity and positive foundation, sport is certainly one of the greatest things that man has ever created. It is also a powerful tool that breaks down all barriers and helps us feel good about ourselves, physically and mentally as well. Sport is beneficial for children: through sports game, children develop physical skills, exercise, make new friends, have fun, learn to be a team member, learn about game fairness, improve self-esteem, etc.

In 2013, the Centres for Control and Disease Prevention published its first report on the mental health of children in the United States and found that between 3 and 17 years, it is the age where attention deficit disorder (ADHD) appears, the most common problem of mental health, which affects 6.8% of children. Other problems include behaviour (3.5% of children), anxiety (3.0%), depression (2.1%) and disorders in the autism spectrum (1.1%) [37].

Due to the fact that an increasing number of specialists [30] recommend the practice of physical exercise by all people, starting from the earliest ages, for the benefit of strengthening the state of health and for improving the motor, intellectual and behavioural indicators and since numerous studies have shown that the implementation of model programs can offer recommendations that benefit the conduct of the physical education lesson, it is necessary to develop and apply a guide for physical education, sports and health. It must start at an early stage, namely for primary school students.

***The motivation and the premises for choosing the topic.*** The Physical Education discipline is the only one of the school disciplines that aims at educating the students for a better way of life, influencing well-being and corresponding to the social needs and ideals generated by them, represented by- self-discipline, self-help fair play, tolerance, friendship, values that are precious goods and should be put into practice as soon as possible. However, the current situation proves that the principle of postponement prevails. It remains at the proposal stage and there are too few actions of the responsible structures in the field of education, health, physical education and sport, which guarantee for a society with a healthy population, a high level of education compared to European standards, a country with excellent results in sports that make the nation visible in the world through its values.

In this regard, for primary pupils, we believe that an eventual Guide intended for them, applied even outside the practice of physical education lessons will contribute more effectively to strengthening the health of children and to a harmonious development from an intellectual, motor and health point of view.

**The purpose of the paper** is to streamline the process of strengthening the health condition of primary cycle pupils by implementing the components of intellectual and motor training.

**The research objectives:**

1. Studying the methodological concepts regarding the optimization of the educational process in physical education in order to strengthen the health condition of the primary pupils;
2. Establishment of the didactic contents necessary in the process of strengthening the health at the physical education lesson in the primary classes based on the sociological survey.
3. Analysis of the level of physical development and motor training of the primary pupils and elaboration of the experimental content focused on intellectual and motor components.
4. Experimental argumentation and effective utilization of intellectual and motor components in the process of improving the health of the primary pupils.

**Research hypothesis:** it is assumed that the formation of the intellectual and motor components of the primary pupils through the diversity of the contents specific to the lessons of physical school education will allow the organization of a healthy way of life, which in turn will have a positive impact on the process of strengthening the health.

**Synthesis of the research methodology and justification of the chosen research methods.**

**Methodology of scientific research.** Contemporary scientific-theoretical conceptions about physical school education, about the formation of the physical culture of the pupil's personality are reserved the priority role as a determining condition.

The school education of physical culture must form a system of valuable orientations of the personality towards a healthy way of life, to ensure the motivational, functional and motor training. This fact will be realized in accordance with the principles, with the general and specific laws, with the methods, which must formatively influence the intellectual, psychosocial, physical, moral-volitional qualities and other personality qualities.

The objectives formulated above were achieved on the basis of a **research method** complex, namely:

1. Analysis, synthesis and generalization of the data of the specialized literature.

The following directions were selected in the study of the theoretical-scientific material and the following objectives were set:

- physical education of the primary pupils and the importance of their motor training in the current conditions;
- the morphological, functional and psychomotor laws of the development of the body of children aged 7-10;
- inter-correlating the functional and motor development of primary school children with the improvement of intellectual and health skills.

2. Examining the working documentation (planning, records, evaluation and totalization) within the existing study programs.

Analysis of the specialized literature and the materials of the working documentation, regarding the problem of the level of training the primary pupils do not stand out properly. In this context were examined physical education lessons at the level of primary education and the modern particularities of their development; the content and the reference objectives of the physical education and sports program at the level of primary education were analysed as well. As a result, it was established that within the existing programs, due consideration is not given to the aspect regarding the strengthening of the health condition of the primary pupils through the intellectual and motor components.

3. Sociological questioning (investigation, discussions).

The questionnaires were completed in a number of 272, which were questioned: 77 teachers, 52 parents and 143 athletes - pupils.

In our case, the survey was materialized by applying a questionnaire with a number of 10 questions, addressed to specialized teachers, parents and pupils (Annex 2).

4. Testing method

In order to study the motor, intellectual and health development, a set of tests were selected, which corresponded to the requirements of assessing the level of primary pupils. The results of the tests represent the state of the general development of the pupils at the beginning and at the end of the year, determined by the investigated subjects, the presence or absence of knowledge, abilities, competences, behaviours, mental processes.

5. Pedagogical observation.

In the scientific approach carried out by us, the observation method consisted in the direct presence of the researcher in the teaching activities, in the experimental and control groups, through

the effective participation in the elaboration, planning, project and conduct of the physical education lessons.

6. The pedagogical experiment.

By conducting the experiment, it was intended to verify the effectiveness of the implementation in the physical and sports education lessons the experimental teaching methodology focused on BMI in order to optimize the instructional-educational process.

7. Mathematical processing of statistical data and graphical presentation.

The indices of the results were processed according to the statistical-mathematical methods selected according to the character of the experimental data and the tasks of the research, by establishing the level of checking the difference between the averages of the experimental and control groups indices.

**Summary of thesis sections.** The *Introduction* argues the actuality of the approached topic and the importance of the researched problem. The purpose and objectives of the research are specified, the novelty, the theoretical importance, the applicative value of the paper and the approval of the research results are highlighted.

In *Chapter 1* of the thesis, "**Theoretical foundation regarding the strengthening of the health condition within the physical education lesson of the primary pupils**", the primary school pupils' objectives and the legalities of forming the pupils' health in modern conditions, the educational ideal of the physical education, general and specific competences are presented. We also highlighted the forms of physical education practiced by the primary pupils.

The analysis of the didactic project documents from the Curricular area of Physical education and sports allowed us to establish the structure of the guide for Physical education, sports and health (primary cycle), as well as the need for its development, respectively the title and the contents of BMI.

*The second chapter* of the thesis "**Methodological determination of strengthening the condition of health by the intellectual and motor components of the primary pupils**" deals with the topics, methods and organization of the scientific research. On the basis of the sociological survey, the didactic contents necessary for the process of health **strengthening** were established at the physical education lesson in primary classes.

*The third chapter* of the thesis "**Experimental argumentation within the physical education lesson of strengthening the health condition through the intellectual and motor components of primary pupils**" includes the characteristic of the health indices of the school age children (the primary cycle), the influence of the components of the motor and intellectual training (theoretical knowledge) on the health indices of the school age pupils, involved in the pedagogical experiment.

In "*General conclusions and recommendations*", the positive influence of the efficiency of BMI components was noted not only on the state of health, but also on improving the quality of life of the primary pupils.

Also, *recommendations* are proposed based on the results of the carried out research. The general conclusions and the made recommendations confirmed the hypothesis and purpose of the research.

## THESIS CONTENT

### 1. THEORETICAL FOUNDATION REGARDING THE STRENGTHENING OF THE HEALTH CONDITION WITHIN THE PHYSICAL EDUCATION LESSON OF THE PRIMARY PUPILS

By actively participating in the school physical education lesson, a major influence is exerted on the intellect and personality, the pupil having the possibility of acquiring knowledge, practical and intellectual skills, as well as acquiring ethical values, which will help to achieve the competence of social integration, strengthening and maintaining his/her health [14, 22].

The motricity at the young school age is overflowing, the motor learning capacity is remarkable, and the possibilities of fixing new movements are reduced. Only systematic repetition integrates and stabilizes the new structure in the pupil's motor repertoire [9, 28].

The development of the organism from the cognitive point of view produces changes in the level of perception, language, learning, reasoning, memory, these being particularities of intellectual development, dependent on emotional and motor development.

Thus, the subject who participates in the physical education lesson reacts by a complex behavior, which includes the motor skills, physical condition, the knowledge and the pleasure to move [23].

The need for movement of primary school children and the readiness for their learning must be exploited in the physical education lesson through attractive motor actions, initially in the form of games, solving multiple didactic tasks in order to train and strengthen motor skills and qualities [2, 4, 8, 16, 18].

The presence of hours of physical education and sport in school is absolutely necessary to stimulate movement among primary pupils and even sports performance. Every pupil has the right to a harmonious education that will give him access to knowledge of nature, helping him to know and understand better the world in which we live, to develop his potential and autonomous thinking, but also to practice movement and sport.

The general objectives of physical education and sport are goals deriving from the educational ideal, from the ideal of physical education, favoring the increase of the level of functional training, the work capacity, the harmonious development of the pupils' body. These objectives are specific to each subsystem of physical education of the young generation and thus we can talk about the objectives of school physical education, objectives that we can group according to the influences they exert on the young generation in the training of general and specific physical education competences.

Noting the complexity of the phenomenon of the specialists in the field: Cristea S., quoted by Cuznețov L., Calaraș C., Ețco C. [13], I strongly support the fact that physical education can no longer be reduced only to the body side and to the borrowed contents from medical education, sports etc. Due to the correlation of the objectives related to the physical and mental development integrated in a natural and socio-cultural environment, especially for the applicants, the aforementioned authors argue that the concept of psychophysical education is rooted. This concept is based on the objectives of moral, intellectual, aesthetic, physical education, etc. and it results in the psychophysical health of the pupil who develops and is formed starting with the family through material means (toys, sports objects, etc.), informational means (mass-media, journals, books, etc.), parents' example or other models.

Thus, at this age, the culture of health is formed in an educational instructional framework and aims to strengthen health, harmonious development and strengthen the body by adapting to the conditions of the natural and social environment.

The specialists in the field consider that health is a complex social concept and phenomenon, not just the absence of the disease [25]. It can be approached as a human value, it represents a beneficial state of the organism that contributes to the assurance of human homeostasis, well-being and balance, by harmonizing all the dimensions listed above. Health has many aspects: emotional, intellectual, physical, social, spiritual, etc. Each of these directions as a whole ensures the life capacity of the individual and together with the factors: environment, genetics, the way of life, determines the human health.

Health education is carried out in the family, school and community level and includes three interconnected directions: the cognitive line, which refers to the accumulation of knowledge necessary for the preservation and fortification of health; the motivational line, which refers to recognizing the need for prevention, the treatment of diseases, the harmonious physical development by observing the rules of sanogenesis and the behavioral-volitional line, which aims at the formation of healthy competences, habits and practices applied in human life.

Starting from the age of childhood, every man develops a lifestyle that is formed through tests based on the models around him. This lifestyle shapes the behavior that refers to the ways in which people think, seek, learn, plan and realize knowledge, make decisions based on information, intuition, feelings, circumstances, imagination and strategies acquired in the education process.

There is at least a perceptual level, a gap between what parents and teachers think is relevant for a child to learn in the context of transformations in contemporary society and what is included in the school curriculum. Beyond this, both parents and teachers feel that some of the information transmitted to grades I - IV is too difficult for their age. This may be disadvantageous for those with learning problems, because the obligation of the teachers to follow a loaded thematic calendar accelerates the pace of teaching in the classroom, and these pupils do not receive the necessary support neither here nor at home, trying to keep up with the others.

School success can be considered an expression of the concordance between the student's abilities and interests, on the one hand, and the school demands addressed to him in the educational process, on the other. However, it is actually of different qualitative levels, in relation to the level or quality of the teaching activity of the teachers, with the global intellectual potential of the pupils and with the effort degree, will and conscience committed by the pupils in the learning activity.

In this regard, it is worth noting the need for physical education to balance the demands of an intellectual, cognitive and psycho-motor and playful nature, a very important aspect for organizing teaching activities with 7-10 year-old pupils [7, 29].

The health status of the pupils is a complex problem that both the pupils themselves and their families and the school are interested, each acting in a convergent manner for the same purpose, with their own means.

From the physiological point of view it is observed that the great functions develop in relation to the physical development and in this way the body can adapt to the physical effort more easily.

*Psychologically*, the development takes place under the strong influence of the complex environment created by entering the school. The passage to the systematic accumulation of knowledge, the acquisition of the general bases of some sciences, contributes to the widening of the mental horizon, the development of thinking and the change of the character of all the psychic processes (memory, perception, attention, etc.).

In the current context, this discipline does not sufficiently capitalize on the training and educational potential of physical exercise and does not apply a national and relevant strategy for the reality in schools (insufficient hours in the common core, outdated, incomplete or non-functional material base, lack of investment in sports infrastructure in most schools, the attitude of pupils and protective parents, uninterested or deprived of solution teachers, excessive "sporting" of physical education hours, "protecting non-performance, comfort and arrogance" by hiding behind the

"tenured" teacher status; excessive politicization and low interest in sport in general, the impossibility of allocating hours with sports content due to lack of funds, outdated / unattractive school competition system, end-of-life extracurricular sports activities, including traditional ones, etc.), statement of fact that should be changed immediately by the central decision-making forums.

Unlike other educational disciplines, in the physical education discipline, the design of the didactic approach is more difficult to achieve, because it depends largely on the evolution of the atmospheric state and the stage of development of the sports base. The teacher must offer viable solutions for adapting the planned topics to be performed outdoors, to an activity carried out indoors and this one customized to the dimensions of the spaces used and the existing material facilities. These particularities of the discipline require, based on the existing realities, to establish an adequate strategy regarding the modalities of achieving the objectives and the programmed contents, eliminating as much as possible the improvisations that may occur due to the above mentioned factors.

One of the most important reference goals that are present in all physical education programs is to maintain and strengthen the health of children. The same objective is present and considered to be the main purpose of the lessons in nature, which will be exploited for the purpose of the organism's hardening, when the conditions are favorable.

For a good conduct of the lesson, the teacher must use steps that make the time attractive but at the same time respect the methodological and organizational rules. In the situation where the lesson takes place on the school corridor, it will have to be done on the ground floor and not be in the right of access in the school or in the classes. The surface of the floor should be clean and not damp or dusty to avoid injury of the pupils. The training courses and their disposition are made according to the methodological requirements for the efficiency of the working time.

The content selection will be made by the teacher based on the analysis of the available material resources, priority being the sports games [10, 11], focusing on the work in pairs and in group, in order to favor the integration, help and mutual stimulation.

Children's health is the priority area of public health. From this direction the school will aim to create the optimum conditions for carrying out the teaching-educational process, which will directly contribute to the strengthening of the health and intellectual training, the acquisition of the competences, the skills, the analytical abilities, the lucid spirit and clarity, the inclusion in the social and civic child's life and their supervision. Simultaneously, the creation of optimal conditions for a harmonious development will contribute to the formation of the personality and sensitivity of the children, the intellectual valorization, constituting the principle of the identity of each child. All these elements will shape and strengthen the health of the pupils and will create a safe and stable environment.

## **2. THE METHODOLOGICAL DETERMINATION OF STRENGTHENING THE HEALTH CONDITION BY THE INTELLECTUAL AND MOTOR COMPONENTS OF THE PRIMARY PUPILS**

In chapter 2, the general research methods are described, the formative pedagogical experiment in all its stages is outlined.

The current program in physical education, through its structure, provides the general-orientation framework, but which no longer corresponds to the requirements of the students' theoretical training, without mentioning the succession of the subject, and the existing title no longer corresponds to the imperatives of time.

In addition to strengthening the health and tempering the body, it influences the training and development of hygienic-healthy skills, theoretical knowledge [24], motor skills and abilities, the development of physical qualities as well as the correct behavior.

These specialized knowledge can also be learned outside the physical education lesson: guided, through the homework topics that the teacher formulates and through recommendations regarding watching or participating in certain sports competitions; spontaneously, as a result of practicing and promoting the activity of physical education and sports: TV, on the Internet or electronic material applications.

The aforementioned were preceded by the organization and conduct of the research, which took place in several stages.

*In stage I* (December 2015 - June 2016) included: approval of the research topic, the elaboration of the work plan, the study of the specialized literature on the measures of strengthening the health of primary pupils, the methods and forms of organization of the physical school education, the analysis of instructive - educative programs in physical education for the primary cycle.

*The second stage* (September 2016-June 2017) involved the elaboration of the questionnaire and the sociological survey, the organization of the finding experiment.

*The sociological questionnaire* in the form of an inquiry included 77 teachers in Bucharest and Mogosoaia, as well as 52 parents, 143 students from the High School no. 163 Bucharest, Secondary School no.1 Mogosoaia, Ilfov and Theoretical High School "Marin Preda" Bucharest.

Thus, based on the obtained results, the following were identified:

- parents and pupils of the elementary classes are poorly aware of the didactic contents in physical education, which sometimes contributes negatively to the practice of self-employed exercises outside the hours;

- most teachers (75%), and a good part of parents (62%), believe that by forming theoretical knowledge to students, it will be much more attractive to practice self-exercises by pupils and only 48% of pupils think that the theoretical training is necessary and will positively influence the practice of physical exercises.

- having an adequate training in the field of professional activity, 95% of the teachers fully know the means and methods used in practicing physical exercises in order to strengthen the primary students health. Referring to parents and students, we can mention a low level of knowledge of the didactic contents that contribute to strengthening the health, argued by the low percentage, respectively 44% and 39%.

- regarding the elaboration of the guide of Physical education and sport for the primary classes, those questioned considered it appropriate to elaborate it: teachers - 87%, parents - 74% and pupils - 76%, because they understand very well the contribution of the guide to the learning of the contents taught in primary classes during physical education classes.

- referring to the content of the Guide of physical education for the students of the primary classes, according to the 3 groups of priority respondents it should be included in the guide the motor aspect (teachers - 40%, parents - 39%, pupils - 41%) and the contents that relate about maintaining health (teachers -33%, parents - 38%, pupils - 38%).

- at the same time, it is very important that the content of the Guide for physical education and sports envisaged for the primary pupils also contain different exercise complexes that can be practiced by themselves, or can be applied in different motor activities organized outside the hours of the pupils or even parents. This opinion is argued by 92% of surveyed teachers, 79% - parents and 83% of pupils.

- most of the respondents: teachers - 97%, parents - 83%, pupils - 77%, are of the opinion that physical exercises should be practiced outside the hours as well, which will fill the deficit of motor activity for pupils.

Thus, in the result of the analysis of all participant answers to the sociological questionnaire, the idea of paying special attention to the connection between intellectuality and motricity is

detached, expressed through theoretical and physical training, both during the physical education hours, as well as in the extracurricular or self-curricular activities.

*The finding experiment*, carried out on a sample of more than 600 pupils of the primary classes (300 boys and 300 girls) from the Theoretical High School Marin Preda and Secondary School no. 163 from Bucharest, Secondary School no. 1 Mogosoaia, followed:

- analysis of the health indices of the primary school pupils based on medical records;
- checking the level of general physical development.
- checking the level of general motor training of pupils in the primary cycle;

The growth and development of children is one of the problems of human biology with a great theoretical and practical significance [196]. It can be said that, as the data in this field are more numerous, the new horizons and new aspects of research are opening up, among which the acceleration phenomenon, much debated nowadays, underlining the complexity of the problems.

Anthropometric studies are of particular importance, especially when examining children, as they allow time to identify the child's patterns of development according to age and certain physical requirements [196]. Moreover, the results of anthropometric studies provide an idea not only about the rate of development of body parameters, but also about the germs of certain diseases.

It should be noted, however, that, at the current stage, there is a tendency of weight gain in children. Also, the statistics show that the average values of waist and weight of children today are higher than those of children of the same age 50-60 years ago. And an important role in this regard is played by nutrition and the environment.

Doctors warn that health and body weight are interdependent. The health status can influence, beneficially or not, the body weight. At the same time, any decrease or increase in body weight can influence, for better or worse, the health condition. Increasing the body weight increases the risk of developing health problems, such as: cardiovascular disease, joint disorders, some types of diabetes or cancer. Also, emotional disorders, chronic diseases, malnutrition or growth hormone deficiency may be the cause of a small waist.

Analyzing the obtained BMI values for the children included in the experiment, for each age group – 8,9 and 10 (Table 2.3), we note that the respective index retains the same size for girls, although it tends to be slightly overweight, in comparison with some standards in the literature [50,196]. At 8 year-old, there is a difference of 1.7 cm between the actual and standard BMI sizes. For the ages of 9 and 10 this difference is decreasing, respectively 1.0 cm. and 0.5 cm.

**Table 2.1. Body mass index by gender and age**

Indices	Boys		
	Body mass, kg X ± m	Waist, cm X ± m	BMI (kg / m2) X ± m
8 years	25.96 ± 6.08	125.56 ± 7.20	16.55
9 years	28.65 ± 5.83	133.24 ± 7.63	15.48
10 years	39.14 ± 5.74	138.58 ± 5.78	20.37
Indices	Girls		
	Body mass, kg X ± m	Waist, cm X ± m	BMI (kg / m2) X ± m
8 years	26.28 ± 1.98	124.17 ± 15.14	17.06
9 years	31.67 ± 6.33	135.05 ± 5.88	17.40
10 years	32.88 ± 5.8	138.83 ± 3.92	17.06

Regarding the BMI sizes for boys, we find their unevenness for the ages of 8, 9 and 10 . At the age of 8, BMI values for boys are close to the norm, where the difference between the actual and standard BMI sizes is only 0.13 cm.

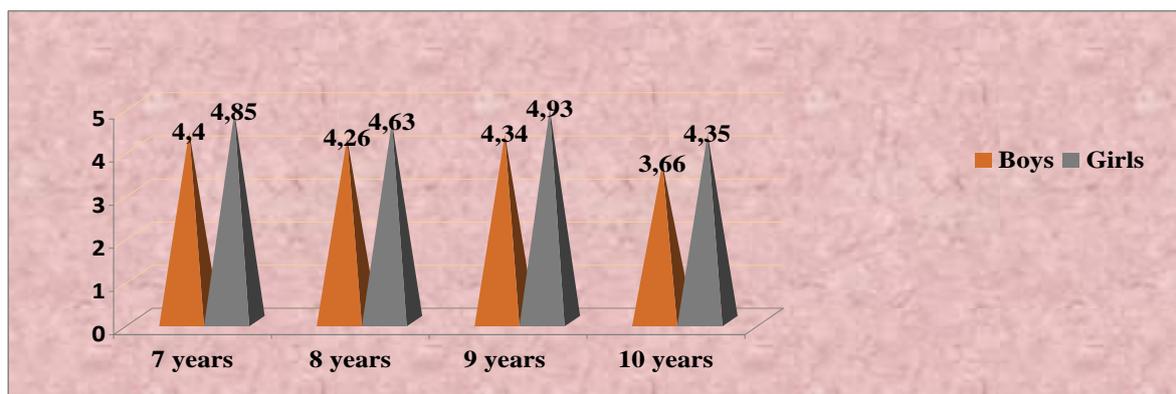
For the 9-year-old, the difference between the actual and standard BMI sizes is 1.62 cm and tends to be slightly underweight. On the other hand, at the age of 10 we already see an essential difference of 3.27 cm, which demonstrates a more pronounced tendency towards overweight.

The peculiarities detected in the dynamics of the physical development of the pupils are determined by a more in-depth research on the changes of the indices that reflect the component of the body composition (Table 2.2).

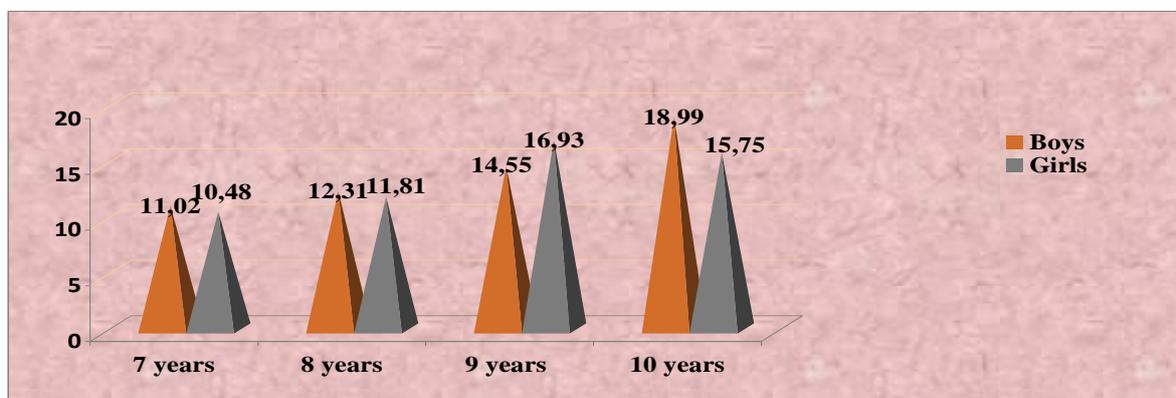
**Table 2.2. Component of the body composition of school age children**

Components	Age / years			
	7 years	8 years	9 years	10 years
	X ± m	X ± m	X ± m	X ± m
<b>Boys</b>				
<b>Bone mass, kg.</b>	4.40 ± 0.44	4.26 ± 0.48	4.34 ± 0.78	3.66 ± 0.34
<b>Muscle mass, kg.</b>	11.02 ± 2.37	12.31 ± 3.78	14.55 ± 3.05	18.99 ± 2.82
<b>Weight of fat tissue, kg.</b>	4.78±1.23	5.26± 2.31	5.24±3.19	7.66±2.61
<b>Girls</b>				
<b>Bone mass, kg.</b>	4.85±3.37	4.63±0.73	4.93±4.60	4.35± 0.64
<b>Muscle mass, kg.</b>	10.84±2.70	11.81±3.73	16.93±6.20	15.75±3.71
<b>Weight of fat tissue, kg.</b>	5.42±4.56	5.66±3.35	7.67±3.04	7.11±2.06

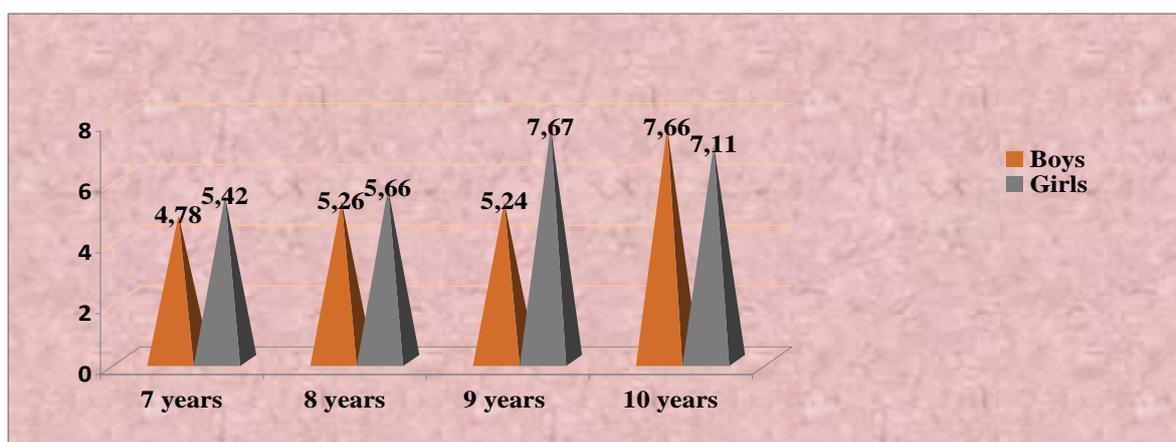
At the same time, analyzing the comparative evolution of the bone mass index between school age boys and girls, we observe that no large deviations were recorded. The difference between the indices obtained for boys and girls separately for ages between 7 and 10, reaches almost equal sizes, ranging between 0.39 kg at 8 year-old and 0.59 kg at 10 year-old respectively (Figure 2.1).



**Fig.2.1 Comparative evolution of the bone mass index between school age boys and girls**



**Fig.2.2 Comparative evolution of the muscle mass index between school age boys and girls**



**Fig.2.3 Comparative evolution of the fat tissue mass index between school age boys and girls**

Regarding the mass of fat tissue, here we observe that at the age of 9 a difference of the recorded average 2.43 kg between girls and boys, thereafter at 10 year- old these indices will be almost equal (Figure 2.3).

Thus, the results of the undertaken researches by us in this chapter regarding the anthropometric physical development of the school age pupils, allowed us to formulate some partial conclusions:

- the basic anthropometric indices for boys are slightly higher than for girls, ignoring the length of the hips circumference;
- the body mass index of school age children reaches standard values with a tendency towards a slight overweight in girls, and a non-uniformity is observed in boys, where at the age of 9 it tends towards a slight underweight, and at the age of 10 we already see an essential difference of 3.27 cm, a fact that shows a more pronounced tendency towards overweight.
- the muscle mass (the muscular component) in the body of the boys but also of the girls of that age, prevails over the bone mass (the bone component) as well as the fat tissue mass (the fat component), being already with some more pronounced changes of the index at the age of 9 in girls, and 10 in boys.

#### **Analysis of the motor training level of primary pupils**

In order to assess the physical development component in pupils aged 7-10, it is necessary to determine the level of physical training. The analysis of the specialized literature has shown us that the control of the physical training of the pupils provides for the inclusion of the control-checking exercises, which are characterized by the level of the basic qualities (speed, strength, force-speed capacity, elasticity and resistance) [31, 32, 33, 34]. In our case, the determination of the level of physical training of the primary pupils was carried out by means of motor tests, provided by the school program, as follows:

- speed capacities (running 30m);
- coordinating capacities (shuttle 3x10 meters);
- force-speed capacities (standing long jump);
- resistance (6-minute running);
- elasticity (bending forward from the sitting position on the floor).

After conducting the tests, indices were registered with the percentage evolutions of the motor qualities with annual averages of the evaluated indices (Tables 2.4 and 2.5).

**Table 2.4. Dynamics of the physical training indices of the primary pupils during the year of study (boys, n = 75)**

Nr. ct.	Test	Grades	Initial test X ± m	Final test X ± m	t	P
1.	Running 30m (sec)	I	6.80 ± 0.40	6.30 ± 0.30	1.14	P > 0.05
		II	6.50 ± 0.50	6.10 ± 0.48	0.65	P > 0.05
		III	6.20 ± 0.50	5.60 ± 0.50	0.97	P > 0.05
		IV	6.00 ± 0.40	5.30 ± 0, 33	1.55	P > 0.05
2.	Shuttle running 3x10 m/s	I	10.50 ± 0.60	9.80 ± 0.50	1.01	P > 0.05
		II	10.20 ± 0.60	9.40 ± 0.60	1.08	P > 0.05
		III	9.90 ± 0.80	9.40 ± 0.60	0.57	P > 0.05
		IV	9.20 ± 0.70	8.50 ± 0.68	0.82	P > 0.05
3.	Standing long jump, cm	I	115.10 ± 13.20	140.10 ± 13.00	1.54	P > 0.05
		II	132.40 ± 13, 90	144.50 ± 13.60	0.71	P > 0.05
		III	134.10 ± 18.20	152.70 ± 18.00	0.83	P > 0.05
		IV	154.60 ± 16.20	161.50 ± 16, 00	1.10	P > 0.05
4.	Running 6 min	I	750.10 ± 20.80	781.70 ± 20.0	1.25	P > 0.05
		II	840.20 ± 23.34	874.31 ± 23.00	1.19	P > 0.05
		III	850.10 ± 23.61	887.81 ± 23.20	1.30	P > 0.05
		IV	975.00 ± 27.08	1022.00 ± 27.00	1.40	P > 0.05
5.	Bending forward from the sitting position on the floor, cm	I	3.02 ± 0.5 5	3.30 ± 0.51	0.42	P > 0.05
		II	3.10 ± 0.56	4.10 ± 0.52	1.49	P > 0.05
		III	3.50 ± 0.41	4.15 ± 0.40	1.30	P > 0.05
		IV	4.10 ± 0.39	4.50 ± 0.37	0.85	P > 0.05

Note: n - 75; P - 0.05; 0.01; 0.001.

g - 74 t - 1,993 2,644 3,427 r = 0.464

g - 148 t - 1,975 2,610 3,358

**Table 2.5. Dynamics of the physical training indices of the primary pupils during the year of study (girls, n = 75)**

Nr. ct.	Test	Grades	Initial test X ± m	Final test X ± m	t	P
1.	Running 30m (sec)	I	7.00 ± 0.30	6.50 ± 0.28	1.39	P > 0.05
		II	7.10 ± 0.50	6.30 ± 0.50	1.29	P > 0.05
		III	6.50 ± 0.53	6.00 ± 0.50	0.78	P > 0.05
		IV	6.10 ± 0.40	5.60 ± 0, 36	1.06	P > 0.05
2.	Shuttle running 3x10 m/s	I	11.10 ± 0.60	10.40 ± 0.55	0.98	P > 0.05
		II	10.90 ± 0.60	10.30 ± 0.57	0.93	P > 0.05
		III	10.30 ± 0.62	9.50 ± 0.58	1.08	P > 0.05
		IV	9.20 ± 0.62	8.70 ± 0.60	0.61	P > 0.05
3.	Standing long jump ,cm	I	110,10 ± 13,06	130,70 ± 13,00	1.27	P > 0.05
		II	127,20 ± 13,33	139,40 ± 13,20	0.74	P > 0.05
		III	134,50 ± 12,77	146,10 ± 12,60	0.73	P > 0.05
		IV	138,70 ± 14,50	152,40 ± 14,30	0.77	P > 0.05
4.	Running 6 min	I	640.80 ± 17.75	664.37 ± 17.30	1.08	P > 0.05
		II	653.30 ± 17, 75	679.86 ± 17.60	1.21	P > 0.05
		III	705.10 ± 19.59	729.96 ± 19.64	1.02	P > 0.05
		IV	850.80 ± 23.63,	875, 96 ± 23.20	0.87	P > 0.05
5.	Bending forward from the sitting position on the floor, cm	I	6, 51 ± 0.49	7.40 ± 0.44	1.53	P > 0.05
		II	7.40 ± 0.61	8.12 ± 0.58	0.97	P > 0.05
		III	7.60 ± 0, 57	8.32 ± 0.50	1.09	P > 0.05
		IV	7.80 ± 0.57	8.37 ± 0.53	0.84	P > 0.05

Note: n - 75; P - 0.05; 0.01; 0.001.

g - 74 t - 1,993 2,644 3,427 r = 0,464

g - 148 t - 1,975 2,610 3,358

Therefore, based on the analysis of the indices obtained at the tests carried out at the beginning and the end of the year, we conclude the following:

1. Comparing the results obtained with the standards provided by the school programs in physical education (Annex 4), we can mention that the level of motor training both for boys and girls, is satisfactory, reflecting the minimum of the stipulated requirements.

2. The non-uniformity of the dynamics of the values obtained for each index tested, in our opinion is argued by the insufficient contribution of the contents applied to the physical education for the primary classes.

This fact is confirmed by the results between the averages obtained in the 2 tests, initial and final, where they are insignificant in all cases, and by the opinions of the specialists in the field [33], who confirm that at the young school age the motor qualities develop in- homogeneously and not at the same time. Based on the determination of the periodization of the development of the motor qualities, the increases of the training indices as well as the group averages were evaluated during the tests. The existence of the so-called critical and or sensitive periods allows at certain age stages to accumulate important or significant increases. Thus, for the boys from the grades I-II, the physical education lessons will be more effective in the content where there are exercises that develop speed, but in the grades III - IV the physical qualities develop very well: general resistance, elasticity and balance.

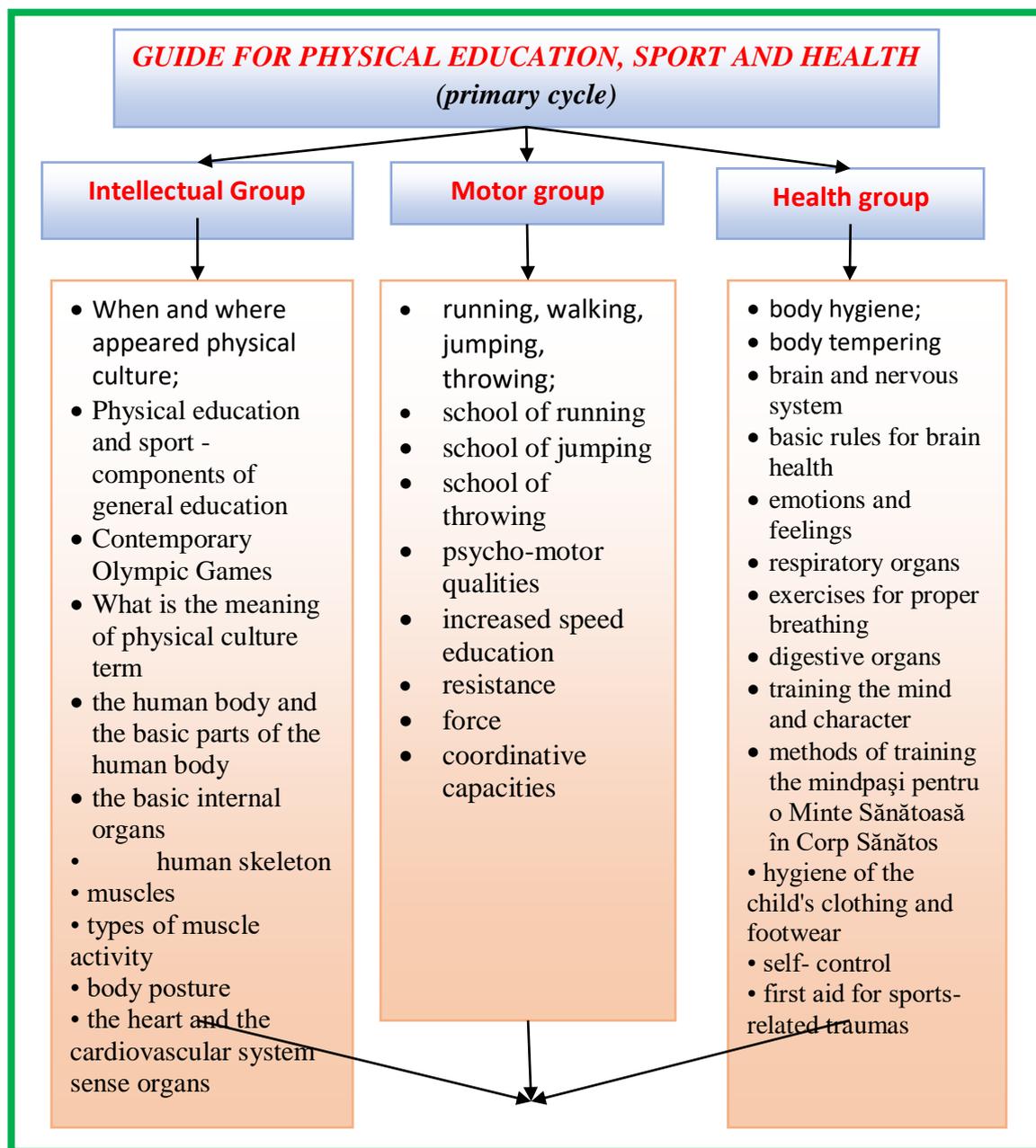
At present, the advanced objectives can be achieved to a much greater extent, if in the educational process in physical education, even in the primary classes, the information technologies will be used, which is reflected in various forms of organization of physical school education. The summation of the specific contributions of the physical education discipline to the achievement of the key competences for compulsory education in Europe has led to the restructuring of the discipline model.

Thus, through an experimental program, based on intellectual and motor training to ensure a high level of health, we considered that we will make an essential contribution to the achievement of the objectives related to the continuity of the physical exercises, both during physical education hours and outside them as well, learning time (accommodation), running speed, lower error rate, persistence over time (stability), subjective gratification.

In this context, the content of the experimental program will be realized on the basis of the Guide to Physical Education for the primary pupils (present and in the electronic version) the contents of which include the differentiation of the study material on the intellectual (theoretical), physical components and the strengthening of the students' health. (Figure 2.4).

The contents of the proposed syllabus for the primary school system aims to ensure the development of bio-psycho-motor skills and the capacity of the pupils to act upon them in order to permanently maintain the optimal state of health, to ensure a harmonious physical development and to manifest a motor capacity favorable to the present and future professional and social insertion.

Thus, we can mention that the algorithmization of the provisions directed towards the harmonization of the physical and intellectual development of the primary pupils, foresees the variation of the effort dynamics of the means of study regarding the groups, focused on the intellectual, motor and health components, within the instructive-educative process of physical education and sport.



**Fig. 2.4. Content of the Physical Education Guide**

This hourly breadth implies that for all primary classes, two hours of physical education per week are compulsory, and the third is included in the schedule of each class, depending on the concrete conditions for effective practice of the physical exercises under the guidance of teachers, parents or individual practice based on the contents set out in the Guide of Physical Education in order to achieve the main objective - to maintain a high level of health.

Thus, the use of the teaching technology in the process of knowledge training allows us to make it clear that the stimulation of the knowledge activity in students is realized at a higher level through the contents that include theoretical aspects, practical and methodological indications, didactic integration, individual study, continuous evaluation and summative evaluation.

The guide focused on the specific components represents a well-determined sequence of stages that must be completed in order to improve the results obtained by the pupils in the primary cycle in the physical education and sports lessons.

### **3. THE EXPERIMENTAL ARGUMENTATION OF STRENGTHENING THE STATE OF HEALTH BY THE INTELLECTUAL AND MOTOR COMPONENTS OF THE PRIMARY PUPILS**

The experiment carried out during the school year based on the elaborated program, showed through the obtained results that in the experimental group, where the contents of the Guide of Physical Education were applied, related to the level of possibilities of pupils included in the experiment, significant progress has been made.

In order to diagnose the intellectual development of the primary pupils, in the specialized literature the test of intellectual development for the pupils of the second and fourth grades was used, as well as the test of pre-adolescents development grades III-IV.

In the pedagogical experiment organized by us with the pupils of the primary classes, some of these opinions were applied to determine the level of the intellectual development of the students of the primary classes. The topics of the intellectual group test (IGT), being adapted to the requirements and contents of the physical education of the school, were selected to assess the level of theoretical training (Table 3.1), necessary in the integral formation of the competences specific to the physical education. In order to solve the tasks in each test / topic, a maximum number of 10 points was assigned regarding the assessment of the correct answers.

As a result of the analysis of the obtained answers, it is necessary to mention the homogeneity of the groups included in the experiment, because for each separate case (Table 3.1), the differences between the 2 averages of the marks obtained at the initial assessment are insignificant, at the threshold where  $P > 0.05$ .

This increase in the marks average in the experimental classes once again demonstrates the effectiveness of the pupils' use of the Guide of Physical Education, which can be further studied in the electronic version, both on its own and with parents, or under the guidance of teachers.

However, during the school year, positive changes were established in the theoretical training of the students of the experimental classes, compared to those of the control groups, which was influenced independently by the study of the contents of the Guide of physical education, with parents or under guidance of teachers.

Referring to the general and multilateral physical training, we can mention that it is a process oriented towards the development and education of the motor qualities, realized through exercises of selective and global processing of the body segments and of the great functions of the organism.

Applying in practice the developed model BMI, the evolution of the motor parameters of the pupils included in the pedagogical experiment (Tables 3.2; 3.3), at the level of both groups was of particular interest. The samples used are often found in the specialized literature and applied in the practice of the research field.

In order to carry out the analysis of the motor parameters, a group of 5 tests was used, respectively one for speed - speed running 30 meters with starting point; movement coordination - shuttle run 3x10m; resistance - running for 6 minutes; force evaluation - standing long jump; suppleness - bending forward from sitting on the floor.

Analysis of the motor indices, recorded after testing the subjects from the 2 groups included in the pedagogical experiment, girls and boys, allowed us to make some findings regarding the value distribution or homogeneity of the results, making valuable comparisons between the control group and the experiment group.

**Table 3.1. Evolutionary indices of the theoretical training level of IV th grade pupils during a year of study (n = 50)**

Nr. ct.	Tests	Groups	Statistical characteristics			
			Initial indices $X \pm m$	Final indices $X \pm m$	t	P
1	Topic 1. Appearance of physical culture (describe). (max. 10 pt.)	E	4.56 ± 0.41	6.48 ± 0.38	4.08	< 0.001
		M	4.40 ± 0.40	5.01 ± 0.40	1.27	> 0.05
		t	0.28	2, 67	-	-
		P	> 0.05	< 0.05	-	-
2	Topic 2. a) Structure of the human body. b) Functional systems (max. 10 points)	E	6.75 ± 0.61	8.98 ± 0.58	3.14	< 0.01
		M	6.66 ± 0.60	7.23 ± 0.59	0.80	> 0.05
		t	0, 10	2.51	-	-
		P	> 0.05	< 0.05	-	-
3	Topic 3. Applicative exercises (list 4-5 exercises) (max. 10 points)	E	6.35 ± 0.43	7.96 ± 0, 40	3.22	< 0.01
		M	6.25 ± 0.42	6.75 ± 0.41	1.00	> 0.05
		t	0.17	2.12	-	-
		P	> 0.05	< 0.05	-	-
4	Topic 4. Hygiene rules in motor activities (indicate basic hygiene rules) (max. 10 points)	E	6.23 ± 0.44	7.84 ± 0.40	3.02	<0.01
		M	6.08 ± 0, 44	6.63 ± 0.42	1.08	> 0.05
		t	0.24	2.09	-	-
		P	> 0.05	< 0.05	-	-
5	Topic 5. Exercises for developing motor qualities (indicate 3 exercises ) a) Strength b) Speed c) Mobility d) Resistance e) Skill (max. 10 points)	E	5.55 ± 0.46	7.26 ± 0.44	3.17	<0.01
		M	5.30 ± 0.47	5, 92 ± 0.46	1.11	> 0.05
		t	0.38	2.09	-	-
		P	> 0.05	< 0.05	-	-
6	Topic 6. Body tempering (describe 4-5 body tempering procedures) (max. 10 pct.)	E	6.83 ± 0.48	8.37 ± 0.45	2.75	<0.01
		M	6.52 ± 0.47	7.07 ± 0.46	0.98	> 0.05
		t	0.46	2.03	-	-
		P	> 0, 05	< 0.05	-	-
7	Topic 7. List some measures / activities for a healthy lifestyle (4-5 examples) (max. 10 pt.)	E	6.58 ± 0.48	8.34 ± 0.45	3.14	<0.01
		M	6.30 ± 0.49	6.96 ± 0.47	1.16	> 0.05
		t	0.41	2.12	-	-
		P	> 0.05	< 0.05	-	-

Note: n - 50; P - 0.05; 0.01; 0.001.

g - 49 t - 2,010 2,680 3,500 r = 0.558

g - 98 t - 1,985 2,627 3,306

The values obtained from the application of the initial and final tests, both for girls and boys, from the control and experimental groups show a degree of homogeneity of the results in all the measurements made.

The significance test has no significant values for any of the indices measured at the initial tests, which confirms that there are no statistical differences between the groups included in the pedagogical experiment. The final tests already indicate some significant changes of the indices in the experimental classes, which demonstrate the effectiveness of the use of the knowledge in the pupils' practice of the contents of the Guide of physical education.

**Table 3.2. Evolutionary indices of the motor training of the fourth grade pupils (girls) during one year of study (n = 25)**

№ ct	Tests	Groups and Statistical characteristics	Statistical characteristics			
			Initial indices X±m	Final indices X±m	t	P
1	Running 30 m / s	E	6.06 ± 0.15	5.61 ± 0.10	3.21	< 0.01
		M	6.10 ± 0.15	5.94 ± 0.13	1.07	> 0.05
		t	0.19	2.06	-	-
		P	> 0.05	> 0.05	-	-
2	Shuttle run 3x10 m, s	E	9.10 ± 0.23	8.40 ± 0.20	3.04	< 0.01
		M	9.27 ± 0.22	9.03 ± 0.22	1.00	> 0.05
		t	0.53	2.10	-	-
		P	> 0.05	<0.05	-	-
3	Standing Long jump , cm	E	139.12 ± 3.15	151.05 ± 3.10	3.52	< 0.01
		M	138.00 ± 3.13	142.03 ± 3.12	1.19	> 0.05
		t	0.25	2.05	-	-
		P	> 0.05	<0.05	-	-
4	Running 6 min, m	E	897.77 ± 24.68	993.10 ± 24.10	3.61	<0.01
		M	24.70	920.06 ± 24.40	1.13>	0.05
		t	0.22	2.13	-	-
		P>	0.05	<0.05	-	-
5	Bending forward from sitting on the floor, cm	E	11.90 ± 0.53	14.01± 0.47	3.91	<0.001
		M	11.60 ± 0.52	12.41 ± 0.50	1.47	> 0.05
		t	0.40	2.32	-	-
		P	> 0.05	<0.05	-	-

Note: n - 25; P - 0.05; 0.01; 0.001.

g - 24 t - 2.064 2.797 3.745 r = 0.826

g- 48 t - 2.011 2.682 3.505

In our opinion, these changes are due to the efficient application of the contents of the Guide of Physical Education in the experimental classes, where the pupils had the opportunity to know something more about the practice of free-standing exercises, about practicing exercises to develop certain motor qualities, being guided by both teachers and parents.

In order to maintain and improve the health status of the population, in order to facilitate the adoption of risk-free behaviors for health and to empower the authorities to develop health-friendly public policies, it is necessary to carry out health promotion activities through educational and social communication activities aimed at promoting conditions, lifestyle, behaviors and healthy environments.

Statistical data showing values outside the normal limits on the indices of the health status of the population, especially of the young population, can highlight worrying increases in the rate of morbidity, sedentary lifestyle and obesity, in particular, constituting themselves as factors favoring the appearance of different physical and mental disorders.

In our research on health indices, scientific-methodological guidelines developed by the ecology and epidemiology laboratory of the Russian Medical Academy were used.

In order to determine the health level of the pupils and to detect the characteristics of the illnesses, the medical records of the pupils from the 1st and 4th grades of the Secondary School no. 163 from Bucharest, Secondary School no 1 Mogosoaia, Theoretical High School Marin Preda, Bucharest were analyzed.

**Table 3.3. Evolutionary indices of the motor training of the fourth grade pupils (boys) during a year of study (n = 25)**

№ ct	Tests	Groups and statistical characteristics	Statistical characteristics			
			Initial indices X±m	Final indices X±m	t	P
1	Running 30 m / s	E	5.98 ± 0.16	5.44 ± 0.11	3.60	< 0.01
		M	6.00 ± 0.15	5.82 ± 0, 14	1.12	> 0.05
		t	0.09	2.11	-	-
		P	> 0.05	< 0.05	-	-
2	Shuttle run 3x10 m, s	E	9.16 ± 0.23	8.37 ± 0.18	2.92	< 0.01
		M	9.20 ± 0.22	8.95 ± 0.21	1.09	> 0.05
		t	0.12	2.07	-	-
		P	> 0.05	< 0.05	-	-
3	Standing long Jump, cm	E	154.00 ± 4.32	172.84 ± 4.22	4.07	< 0.001
		M	154.61 ± 4.30	160.18 ± 4.27	1.20	> 0.05
		t	0.10	2.11	-	-
		P	> 0.05	< 0.05	-	-
4	Running for 6 min, m	E	1030.00 ± 28.41	1146.73±28.30	3.80	<0.001
		M	1023.00 ± 28.42	1064.55± 28.40	1.35	> 0.05
		t	0.17	2.05	-	-
		P	> 0.05	<0.05	-	-
5	Bending forward from sitting on the floor, cm	E	6.90 ± 0.28	8.15 ± 0.25	4.31	<0.001
		M	6.80 ± 0.27	7.36 ± 0.26	1.55	> 0.05
		t	0.25	2.50	-	-
		P	> 0.05	<0.05	-	-

Note: n - 25; P - 0.05; 0.01; 0.001.

g - 24 t - 2,064 2,797 3,745 r = 0.826

g - 48 t - 2,011 2,682 3,505

The research analyzed the records registered in the medical office of the schools regarding the influenza diseases and the acute respiratory infections of the primary pupils, the characteristic regarding the number of patients but also the changes that have taken place at different stages of incipient study.

Some of the characteristic indices for the manifestation of the resistance of the pupils body to the unfavorable factors of the external environment, represent the diseases of the respiratory organs that occupy the first place in the general number of the diseases and it is formed, as we mentioned, from the diseases of acute respiratory infections (ARI) and the influenza.

**Table 3.4. Morbidity of the pupils grades I - IV**

Nr. ct.	Grades	2016-2017		2017-2018	
		Morbidity (number of cases per 100 children)	Health index (%)	Morbidity (number of cases per 100 children)	Health index (%)
1.	I	43	57%	44	56%
2.	II	38	62%	36	54%
3.	III	34	66%	34	56%
4.	IV	28	72%	16	84%
	Average	35.75	64.25%	32.5	67.5

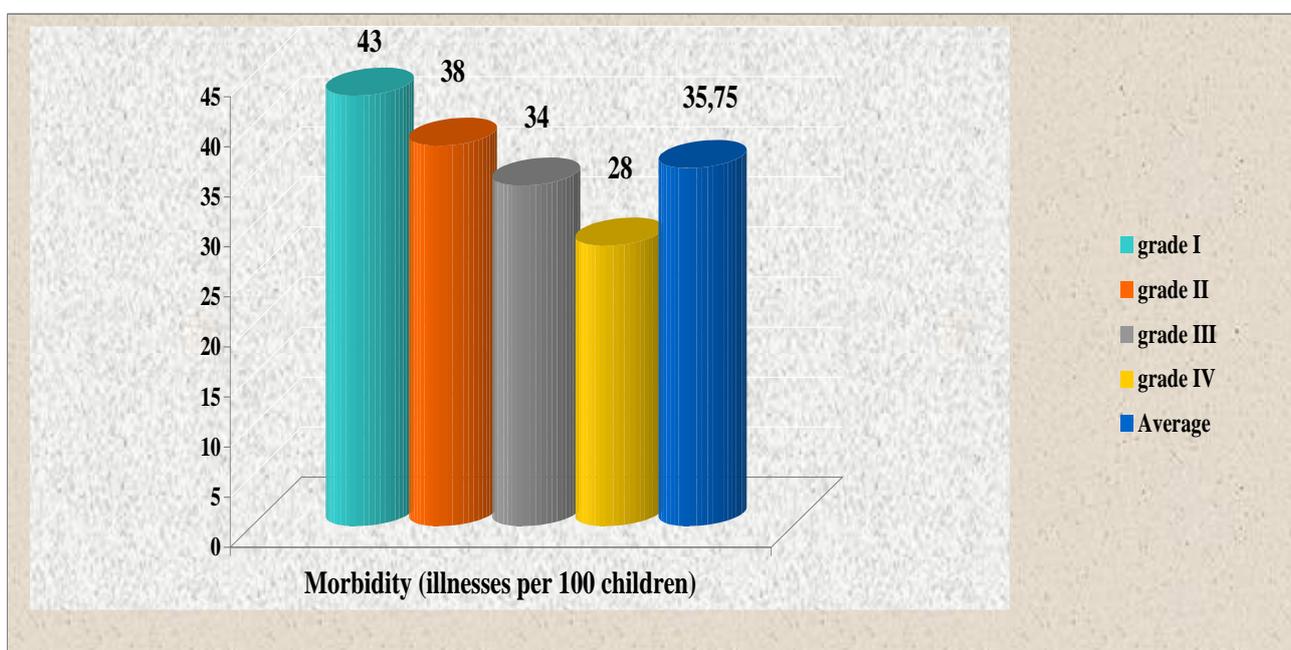
Based on the above, we conclude that the morbidity index (Table 3.4) was determined by the number of cases of influenza and ARI during the group researches ( $I = \text{number of cases} / \text{number of children under medical observation} \times 100\%$ , where p - morbidity index per 100 children).

Morbidity as a statistical expression of the pathology of the pupil group in a given period constitutes an important index of the state of health and of the hygienic level regarding the living conditions, and at the same time a criterion of the effectiveness of the medical-healthy activity.

In the research of morbidity in the primary cycle pupils enrolled in the research process at the end of the school year 2016-2017, based on the analysis of the medical records (Figure 3.1), a non-essential decrease in the number of pupils' illness cases was detected.

Therefore, if in the grade I the morbidity per 100 children constituted 43%, in the grade II 38%, and then in the grades III and IV respectively it decreased to 34% and 28%. The average obtained in the number of illnesses per 100 children in the school year 2016-2017 was 35.75% for pupils' grades I-IV.

This fact, in our vision can be explained by adapting the pupils to the school regime and the learning conditions during the school year.



**Fig. 3.1. Morbidity status statistics in children**

The same situation is observed in the result of the analysis of the medical records at the end of the school year 2017-2018. However, if the number of illnesses per 100 students falls non-essentially in grades I, from 44 cases to 33 cases for grades III, then for grades IV this decrease becomes more pronounced, with only 17 cases being detected .

In our opinion, this decrease of the number of illness cases of the pupils from fourth grades, is the result of the more intensive exercise of the physical exercises through different forms, due to the information and the knowledge accumulated by studying the Guide of physical education and sport. The pupils had the opportunity to study and learn more about the healthy way of life, about the influence of motor activity on the harmonious physical development of the body, various complexes of physical exercises and how to practice them outside of free-standing physical education hours, or together with the parents. In this context, was formed knowledge in the field of anatomy, hygiene, physical culture and other subjects, knowledge that reflects the right combination of study and rest and the development of the correct posture.

Pupils and parents are aware that the most important index of health is the physical development - a set of morphological and functional properties of the organism, which characterize its maturation process. During the school period of the primary cycle it is necessary to observe:

Regarding our study, from the analysis of the health indices of the school age pupils corresponding to the primary cycle, an analogous dynamics is observed in the correlation of the health indices with those of the physical training of the primary pupils (Table 3.5).

**Table 3.5. The Health indices of the pupils grades IV according to their level of physical training**

Level of physical training	Number of subjects (n = 50)		Health indices	
	Number	%	no. cases of illness in children	Health index%
High	18	36.0	1	94.5%
Medium	27	54.0	3	88.9%
Low	5	10.0	4	20.0%

As we can see, pupils with higher physical education indices have a higher level of health. Thus, in students with a high level of motor training (18), we observe only one case of illness, which tells us about a very high level of health, and constitutes 94.5%. For pupils with average level of motor training (27), the health index reaches 88.9%, where we have 3 cases of illnesses. In students with a low level of motor development, which represents 10% of the pupils, and the health index is lower, respectively we already have 4 cases of illnesses.

Therefore, based on these results, we can say that the health index is directly proportional to the indices of the motor training level.

From these considerations it is necessary to mention that the high level of health is influenced to some extent by a concrete volume of theoretical knowledge, which forms the intellectual component of the pupil. Only the full knowledge of the specific contents of the physical education, the healthy way of life, the hygienic rules and the way of practicing the physical exercises, can essentially influence the maintenance of a high level of health. Thus, the knowledge obtained as a result of studying the contents included in the Guide of physical education for the pupils of the fourth experimental classes, constituted a true support in strengthening the students' health.

**Table 3.6. Health indices of the primary pupils depending on the intellectual level (Average of the marks per year)**

Assessment level	Marks average	Number of subjects	Health indices	
			Morbidity (number of cases per 100 children)	Health index (%)
High	8, 3—10.0	17	2	88.3%
Medium	6.3—8.2	27	3	88.9%
Low	4.6—6.2	6	3	50.0%

As a result of analyzing the correlation between the health index and the intellectual one (Table 3.6), which constituted the average of the marks recorded during a year of study, we also

found in this case a direct link between these indices. Thus, the higher the level of intellectual evaluation is (theoretical knowledge), the more higher the health index 88.9% becomes, and the morbidity rate respectively only 2 cases, which demonstrates the traditional scheme of correlation of health components with the intellectual one.

Thus we can mention that the research carried out with the pupils included in the primary cycle has confirmed the traditional scheme of correlation of the components of physical development with health indices, or the children with high level of motor training have a greater stability against the adverse factors of the environment , manifesting with a lower disease. In these children, a higher level of the intellectual performance index is observed.

## **GENERAL CONCLUSIONS AND RECOMMENDATIONS**

The results of the achieved theoretical and applied research allow us to formulate the following conclusions:

1. The analysis of the data from the specialized literature on the health aspects of the primary pupils has shown us that until now no research has been scientifically undertaken based on the physical condition, of maintaining the health condition of the pupils through different forms of physical education.

2. The analysis of the health condition of the primary pupils based on the medical record has allowed us to find that special attention must be paid to the school physical education , in particular to the curricular analytical design of the contents included in the education program, with a concrete reflection of the efficient motor activities in maintaining the state of health, a healthy way of life.

3. The results of the sociological research carried out on a sample of 272 subjects (77 teachers, 52 parents and 143 students of grades III-IV) showed us that most of them (teachers - 87%, parents - 74%, pupils - 76 %), emphasized the need to develop a Guide for Physical Education and Sports for the primary pupils.

According to the respondents, the contents of the guide are to be presented in 3 groups (BMI): intellectual (theoretical knowledge - 21-27%), motor (motor skills -39-41%) and health (healthy lifestyle 33-38% ).

At the same time, the idea was formulated about the necessity of introducing the Guide for physical education and sports, which becomes a central moment and opens a curricular approach that ensures the continuous development of the entire learning-consolidation-evaluation system (differentiated evaluation of each subject studied in the newly developed guide and can positively influence the development of the creative potential of pupils.

4. The analysis of the achieved results based on testing pupils within the experiment in primary school, grades I-IV, tells us about insufficient teaching content contribution in physical education on their motor development , which is argued by a low level compared to the norms provided by the existing school curricula.

At the same time, the achieved values of the body mass index (BMI) for the children included in the experiment (8, 9 and 10 year-old), keep the same size for girls, although it tends to be slightly overweight compared to some standards in the literature. At the age of 8, there is a difference of 1.7 cm between the actual and standard BMI sizes. For the ages of 9 and 10 this difference is decreasing, respectively 1.0 cm and 0.5 cm.

Regarding BMI sizes for boys, we find their unevenness for ages 8, 9 and 10 . At the age of 8, BMI values for boys are close to the norm, where the difference between the actual and standard BMI sizes is only 0.13 cm.

For the 9-year-old, the difference between the actual and standard BMI sizes is 1.62 cm and tends to be slightly underweight. On the other hand, at the age of 10 we already see an essential difference of 3.27 cm, which demonstrates a more pronounced tendency towards overweight.

5. The realization of the project for the Guide of Physical Education and Sport for pupils grade IV has essentially influenced the average of the obtained marks, which reflects the increase of the level of specific knowledge required in the process of strengthening the health state. This is observed by increasing the average by 2.23 p. in the experimental group as compared to 0.57 p. in the control group regarding the knowledge of the structure of the human body, an important fact in selecting exercises for each body part, of the body's systems.

The knowledge of the exercise complexes for the development of different motor qualities reached an average of  $7.26 \pm 0.44$  in the experimental group compared to  $5.92 \pm 0.44$  in the control group.

The measures of tempering the body, of a healthy way of life are also better known by the pupils from experimental groups, where averages of  $8.37 \pm 0.45$  and  $8.34 \pm 0.45$  have been achieved, significantly increasing during the school year, compared to  $7.07 \pm 0.46$  and  $6.96 \pm 0.47$  for the control groups, where the increase did not reach significant values.

6. The variety of practical contents included in the Guide of Physical Education and Sports, the possibility of pupils to study alone or with parents, the knowledge of the exercise complexes for the development of certain muscle groups had a positive contribution in the dynamics of the motor training indices in all the cases for the pupils of the experimental groups as well, both in girls and boys. An essential increase, where the difference between the 2 values reaches the significance threshold of  $P < 0.01$ , was achieved in the indices: running 30 m., shuttle running 3x10m for boys and running 30 m., shuttle running 3x10m, standing long jump, running for 6 min. for girls. In other cases, the dynamics of the indices achieved in girls and boys reached the significance threshold of  $P < 0.001$ .

For the control groups, these changes in the dynamics of the motor training indices in all cases were insignificant.

7. The study carried out on the primary pupils has confirmed the traditional scheme of correlation of the physical development components with health indices, or the children with high level of motor training have a greater stability against the adverse factors of the environment, which is manifested with a lower illness. In these children, a higher level of the intellectual performance index is observed, expressed by theoretical knowledge at a higher level, which accumulated with the average level constitutes a percentage of 88.5%.

8. It has been shown that the diversification of the contents specific to the lessons of physical education by implementing in the primary education pupils the Guide of Physical education, sports and health, focused on BMI, allows the organization of a healthy way of life, which in turn will have a positive impact on the process of strengthening the health.

**The obtained results that contribute to the solution of the important scientific problem** in the thesis consist in scientifically and methodologically substantiating the formation of the intellectual and motor components based on the introduction of the Guide of physical education, sports and health, which contributed to the process of strengthening the state of health of primary school pupils in order to improve the quality of life.

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Following the researches and the results obtained by applying the BMI as an effective method in acquiring the guide in the discipline "Physical education and sports ", the following aspects and recommendations come off:

1. The brainstorming of requirements directed to harmonization of pupils intellectual and physical development, foresees the variation of the effort dynamics of the means of study regarding the above-mentioned groups of BMI in the instructive-educational process of physical education and sports.

2. In order to obtain the relatively objective data regarding the level of theoretical training of the students in the discipline "Physical education and sports ", it is recommended to apply in the instructive-educational process the Guide of Physical Education and sports, the contents of which contribute efficiently to the formation of the theoretical knowledge needed in the motor activity of the pupils both within and outside the lessons, at various individual motor activities.

The theoretical content of the *Guide for Physical Education, Sports and Health (the primary cycle)* in electronic format developed by us can be recommended for all educational institutions that provide this cycle.

3. The strengthening of the health status of the primary pupils is ensured for the most part by the volume and content of their motor activity and the healthy way of life. For these reasons the contents / exercises for the development of the basic motor qualities, for the practice of the various activities on their own should be selected depending on the way and the possibilities of their practice by the students individually or under the guidance of the parents.

4. It is recommended to use the contents presented in the Guide for physical education and sports on groups in certain phases of student learning, training and development, as learning involving such activities becomes enjoyable and attractive.

5. We also recommend continuous evaluation (at the beginning and / or end of the year), which aims at simultaneously cultivating the capacity for assessment and self-evaluation at the student level and considerably shortens the interval between the evaluation of the results and the improvement of the activity.

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## ADNOTARE

**Urichianu Bogdan Andrei** *Fortificarea stării de sănătate a elevilor din ciclul primar prin componentele intelectuale și motrice*: teză de doctor în științe pedagogice. Chișinău, 2020.

**Structura tezei:** Lucrarea este alcătuită din introducere, 3 capitole, concluzii generale și recomandări, bibliografie - 196 titluri, 7 anexe, 115 pagini text de bază, 53 figuri, 12 tabele, 1 schemă. Rezultatele obținute sunt publicate în 10 lucrări științifice.

**Cuvinte cheie:** fortificarea stării de sănătate, componente intelectuale și motrice, elevi ai claselor primare, lecție de educație fizică, optimizarea procesului instructiv-educativ, conținuturi didactice, activități sportive, Ghid "Educația fizică, sport și sănătate", evaluare.

**Scopul lucrării** constă în eficientizarea procesului de fortificare a stării de sănătate a elevilor din ciclul primar prin implementarea componentelor pregătirii intelectuale și motrice.

**Obiectivele cercetării:** 1. Studiarea conceptelor metodologice privind optimizarea procesului educațional la educația fizică în vederea fortificării stării de sănătate a elevilor ciclului primar; 2. Stabilirea conținuturilor didactice necesare în procesul de fortificare a sănătății la lecția de educație fizică în clasele primare în baza sondajului sociologic. 3. Analiza nivelului dezvoltării fizice și pregătirii motrice a elevilor din ciclul primar și elaborarea conținutului experimental axat pe componente intelectuale și motrice. 4. Argumentarea experimentală și valorificarea eficienței componentelor intelectuale și motrice în procesul de fortificare a sănătății la elevii ciclului primar

**Noutatea și originalitatea științifică** constă în faptul că cercetarea în cauză își propune să contribuie la fortificarea stării de sănătate a elevilor din ciclul primar prin aplicarea unui ghid în lecția de educație fizică, creat în urma analizei componentelor intelectuale și motrice.

**Rezultatele obținute care contribuie la soluționarea unei probleme științifice importante** în teză constau în fundamentarea din punct de vedere științific și metodologic a procesului de fortificare a stării de sănătate a elevilor din ciclul primar, prin intermediul formării componentelor intelectuale, motrice și de sănătate (IMS), incluse în conținutul Ghidului de educație fizică, sport și sănătate în vederea îmbunătățirii calității vieții.

**Semnificația teoretică** o constituie concepțiile teoretico-metodice privind teoria și metodică educației fizice școlare; rolul educației fizice în păstrarea sănătății populației; optimizarea procesului instructiv-educativ; posibilitățile de adaptare a organismului la efortul fizic și intelectual.

**Valoarea aplicativă** constă în posibilitatea utilizării rezultatelor cercetării, a ghidului, în scopul fortificării stării generale de sănătate și funcționalității optime a organismului elevilor în cadrul lecțiilor de educație fizică. Ghidul poate fi folosit în procesul de instruire a viitorilor profesori de educație fizică și formarea continuă a cadrelor didactice din domeniul culturii fizice, pentru elevi și părinți.

**Implementarea rezultatelor științifice.** Conținutul experimental al programului de cercetare, prezentat în Ghidul "Educația fizică, sport și sănătate", a fost aplicat în scopul fortificării stării de sănătate la copiii din ciclul primar și a fost implementat în procesul de studii în Liceul Teoretic "Marin Preda", București, Școala Gimnazială nr. 1 Mogoșoaia și Școala Gimnazială nr. 163, București, fapt care este confirmat de adeverințele de implementare.

## АННОТАЦИЯ

**Урикяну Богдан Андрей** *Укрепление состояния здоровья детей начальных классов посредством интеллектуальных и двигательных компонентов*: диссертация на соискание ученой степени кандидата педагогических наук. Кишинэу, 2020

**Структура диссертации:** аннотация на трех языках, введение, 3 главы, литература – 196 источников, 7 приложений, 115 страниц основного текста, 45 рисунков, 15 таблиц, 16 графиков, 1 схема. Полученные результаты опубликованы в 10-ти научных работах.

**Ключевые слова:** здоровье, ученики начальных классов, спортивная деятельность, оценка, средства, методы, тестирование, комплекс упражнений.

**Цель исследования** состоит в повышении эффективности процесса укрепления состояния здоровья учеников начальных классов посредством внедрения пособия по физическому воспитанию, основанного на интеллектуальных, двигательных компонентах и здоровья.

### **Задачи исследования:**

1. Изучение методологических концепций по оптимизации учебного процесса по физическому воспитанию с целью укрепления состояния здоровья учеников начальных классов.
2. Определение учебного содержания, необходимого в процессе укрепления здоровья на уроках по физическому воспитанию детей начальных классов на основе результатов социологического опроса.
3. Анализ уровня физического развития и двигательной подготовки учеников начальных классов и разработка экспериментального содержания «Пособия по физическому воспитанию», ориентированного на интеллектуальных, двигательных компонентах и здоровья на основе Стандартизированной модели по предмету «Школьное физическое воспитание».
4. Экспериментальное обоснование повышения процесса укрепления здоровья детей начальных классов посредством внедрения содержания пособия «Физическое воспитание, спорт и здоровье», ориентированного на интеллектуальных, двигательных компонентах и здоровья.

**Научная новизна и оригинальность:** новизна и оригинальность состоит в том, что результаты данного исследования способствуют укреплению состояния здоровья учеников начального цикла обучения посредством применения пособия на уроках физического воспитания, разработанного в результате анализа интеллектуального и двигательного компонентов.

**Важная научная проблема,** решенная в данном исследовании, состоит в научном и методологическом обосновании внедрения пособия по физическому воспитанию, спорту и здоровью, что определило укрепление состояния здоровья учеников начальных классов, посредством продвижения интеллектуальных, двигательных компонентов и здоровья, с целью улучшения качества жизни.

**Теоретическая значимость работы** заключается в теоретико-методических концепциях в области физического воспитания и спорта; роли физического воспитания в сохранении здоровья населения; оптимизации учебно-воспитательного процесса; возможностях адаптации организма к физической и интеллектуальной нагрузке.

**Практическая значимость** состоит в возможности использования результатов исследования, пособия, с целью укрепления общего состояния здоровья и оптимальной функциональности организма учеников в рамках учебного процесса по физическому воспитанию. Пособие может быть использовано в процессе обучения будущих преподавателей по физическому воспитанию и непрерывного образования учителей в области физической культуры, а также для детей и их родителей.

**Внедрение научных результатов.** Учебное пособие может быть использовано с целью укрепления состояния здоровья детей начальных классов и было внедрено в учебный процесс в Теоретическом лицее «Марин Преда» г. Букурешть, в Гимназии №1 г. Могошоаи и в Гимназии №163 г. Букурешть, что подтверждено соответствующими сертификатами.

## ANNOTATION

**Urichianu Bogdan Andrei** *Strengthening the health state of the primary school pupils, through intellectual and motor components*: PhD thesis in pedagogical sciences.

Chisinau, 2020

**Structure of the thesis:** The paper consists of annotation in three languages, introduction, 3 chapters, general conclusions and recommendations, bibliography of 196 titles, 7 annexes, 115 pages of basic text, 45 figures, 15 tables, 16 graphs. The obtained results are published in 10 scientific papers.

**Keywords:** health, primary school pupils, sports activities, evaluation, means, methods, testing, exercise complex.

**Research field:** pedagogical sciences.

**The purpose of the paper** is to streamline the process of strengthening the health state of primary school pupils by implementing the physical education guide, focused on intellectual, motor and health (IMH) components.

**Research objectives:**

1. Studying the methodological concepts regarding the optimization of the educational process of the physical education in order to strengthen the health state of the primary school pupils; 2. Establishing the necessary teaching contents in the process of strengthening the health in physical education lesson to primary school pupils based on the sociological survey. 3. Analysis of the physical development level and motor training of the primary school pupils and elaboration of the experimental content «Physical education guide» focused on IMH based on the Standardized model of the discipline «Physical education in school». 4. Experimental argumentation of enhancing the health strengthening process to primary school pupils by implementing the content of the Guide «Physical education, sport and health», focused on IMH.

**The novelty and the scientific originality:** the new and original character consists in the fact that the research in question aims to contribute to the strengthening of the health state of the primary school pupils by applying a guide in the physical education lesson, following the analysis of the intellectual and motor components.

**The obtained results that contribute to the solution of an important scientific problem in the thesis** consist in the scientific and methodological foundation of introducing the Guide of physical education, sport and health, which determined the strengthening of the pupils' health state, by promoting the intellectual, motor and health (IMH) components, in order to improve the quality of life.

**Theoretical significance:** the theoretical importance of the thesis is constituted by the theoretical-methodical conceptions regarding the theory and the methodology of physical education in school; the role of physical education in maintaining the population health; optimization of the instructive-educational process; the possibilities of adapting the body to the physical and intellectual effort.

**The applicative value:** the possibility of using the guide research results, in order to strengthen the general state of health and the optimum functionality of the pupils' body in the physical education lessons. The guide can be used in the education process of future physical education teachers and the continuous training of the teachers in the field of physical culture, for pupils and parents.

**Implementation of the scientific results:** The experimental guide will be used in order to strengthen the health state of the primary school pupils and has been implemented in the curricular study process in Theoretical High School "Marin Preda", Bucharest, Secondary School no. 1 Mogosoia and Secondary School no. 163, Bucharest, a fact which is confirmed by the implementation certificates.

**URICHIANU BOGDAN ANDREI**

**STRENGTHENING THE HEALTH STATE OF THE PRIMARY SCHOOL PUPILS  
THROUGH INTELLECTUAL AND MOTOR COMPONENTS**

**Specialty: 533.04. Physical education, sport, kinetotherapy and recreation**

Summary of PhD thesis in pedagogical sciences

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