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# INTERCONDITIONALITY OF MOTOR AND INTELLECTUAL DEVELOPMENT IN PRIMARY SCHOOL STUDENTS

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Rezumat. Articolul prezintă informații științifice privind cercetarea stării motrice și intelectuale a elevilor claselor primare în baza exemplului școlilor din localitățile rurale ale raionului Ialoveni, Republica Moldova. Pentru prima dată, în ultimii 37 de ani (din anul 1978), conform cercetării în masă a stării motrice a copiilor din clasele primare, a fost determinat un model de normative corespunzătoare ale manifestării lor motrice, controlul asupra îndeplinirii cărora va contribui la dezvoltarea lor cu succes. S-a determinat gradul de influență a educației fizice sistematice asupra formării competențelor cognitive la elevii din clasele primare prin dezvoltarea proceselor psihice cognitive: atenția, percepția, memoria, gîndirea și imaginația.

**Cuvinte–cheie:** abordare științifică; normative conform vîrstei; pregătire motrică; elevii claselor primare; teste motrice; dezvoltare fizică; educație fizică; competențe cognitive.

**Introduction.** It is well known the fact that optimal motor activity of children, depending on their age, during the primary school period contributes to their appropriate functional, psychic and motor development, ensuring them the necessary state of health and success in educational process and also creates a fully reasoned motivation for the independent execution of physical exercises during the entire life [1, 8]. At the same time, in practice, we are trying by any means to minimize the importance and the outcomes of the educational process of physical education for students, thus proving that "physical education" in the educational process is a non-essential, secondary and not so important subject [5, 6].

Moreover, not ensuring an appropriate motor development, depending on the age, of primary school students leads to serious functional and motor disturbances of their body, leaving a visible negative mark on their future development and on their life [5, 8, 9]. At their

turn, functional and motor disturbances in primary school students are caused by the following factors:

- insufficient motor activity at school and as consequence extremely weak motor preparedness;
- active formation of such negative factors as scoliosis, platypodia and obesity (up to 50-70%).

To the appearance of the above-listed factors also contribute:

- the overloaded educational school program in daily and weekly study regime;
- as a rule, physical education classes in primary school are taught by form masters (teachers), who cannot ensure an appropriate professional physical development of students;
- the sports basis in schools, in the majority of cases, does not meet the current requirements for the motor development of primary school students from the Republic of Moldova;
- regulatory requirements of evaluation characteristics of the motor preparedness of primary school students has no scientific substantiation and no practical value;
- the content of Physical Education Training and Development Programs for primary school students does not meet the requirements set for the functional and motor development, sometimes being even in contradiction with age peculiarities of children development, who live in different regions of the republic, with various local climate conditions, traditions and customs of the population, with an available material basis [5, 8].

Moreover, in our opinion, practicing specialists who ensure educational process have only a vague theoretical perception of the high correlation of the appropriate motor development in children with their intellectual perfection and, as a result, they do not contribute to the realization of this axiom in school structure [5, 8].

Namely for this reason the reform of the education system of the Republic of Moldova has a current importance at this stage, including of the physical education, being the most important universal means of improvement of the entire educational development process in children [1,5,8]. Therefore, at the current stage of development of general education in the Republic of Moldova it is necessary to draft and use advanced ideas and scientific approaches for the improvement of the physical education process through its appropriate organization, objective evaluation and forecast of motor development of children, especially in primary school. Namely at this age should be put the basis of motor needs and of the intellectual activity for a long-term period of his/her development.

### Research objectives:

- 1. The study of physical preparedness of primary school students from rural areas in the traditional and experimental organization of the educational process of physical education.
- 2. The study of the traditional and experimental state of intellectual development of children, based on their cognitive competences, depending on the organization method of the educational process of physical education.

Research methodology. The main hypothesis of the research consisted in presupposing the efficient and sufficient influence of the results of the appropriate organization of the educational process of physical education with 2<sup>nd</sup> form students on the improvement of their intellectual development through the intermediary of the assessment of the state of their cognitive capacities. Having studied the available bibliographic sources [2,3,4], and also using the wide experience of specialists in physical education [1,9], including our own experience,

we have drafted an optimal complex of motor tests and cognitive tests, which have a sufficient reliability level, validity and informational content. On the basis of the drafted tests, there had been assessed a total number of **1547 boys** (**68%**) and **1358 girls** (**65%**) from primary classes of educational institutions from Ialoveni district. The results obtained at the mass research constituted the basis for developing appropriate qualifying standards, depending on the age, for primary school students and for determining the level of motor preparedness and of their intellectual state.

#### Research results.

Achieving the first objective, it was necessary to determine the optimal number of reliable motor tests, which reflect the development of movement speed, coordination and force skills, including the static ones, of force-speed development, resistance and elasticity in primary school students from rural areas and which allow determining the real motor state of children. Such tests proved to be: shuttle run 3x10m; standing long jump; push-ups; sit-ups (hands on the chest) in 30sec.; forward bends (straight legs).

Focusing on the difficulties of primary education in schools from rural areas, including the  $2^{nd}$  forms in the educational process, we studied the level of motor capacities of  $2^{nd}$  form students from educational institutions from rural areas of Ialoveni district. Thus, in Table I are presented the average integral statistical indexes of motor capacities tests carried out on  $2^{nd}$  form students in every educational institution from villages of Ialoveni district, Republic of Moldova.

Table 1. Average statistical indexes of tests performed on the 2<sup>nd</sup> form students from rural areas of Ialoveni district, Republic of Moldova at motor capacities and models of

qualifying standards criteria (with P < 0.05)

	qualifying standards criteria (with 1 \ 0,05)									
No.	Tests Tests results and appropriate	Shuttle run (sec)	Standing long jump (cm)	Sit-ups (hands on the chest) 30 sec (no.)	Push-ups (no.)	Forward bends (straight legs) (cm)				
	qualifying standard	$\overline{X} \pm m$	$\overline{X} \pm m$	$\overline{X} \pm m$	$\overline{X} \pm m$	$\overline{X} \pm m$				
	Boys									
1	Tests results	11,00±0,68	131,76±3,00	16,62±1,25	2,60±1,11	5,02±0,95				
	Model qualifying standard	9,67 and <	138,00 and >	19 and >	5 and >	7 and >				
	Girls									
2	Tests results	12,06±0,70	124,71±3,82	16,00±1,38	2,17±1,36	7,65±1,51				
	Model qualifying standard	10,69 and <	132,00 and >	19 and >	5 and >	11 and >				

Moreover, also on the basis of the results obtained at the testing, we calculated the principles of statistical characteristics of variational sequences and on their basis, using the appropriate statistical method of calculating credible intervals, we determined the appropriate qualifying standards of motor manifestations of primary school students of educational institutions from rural areas of Ialoveni district. Therefore, as you can notice

from Table 1, in the above columns are reflected the average statistical results of tests performed on boys and girls; in the columns below are reflected (highlighted in green) the appropriate calculated qualifying standards, which represent the initial stage of a successful motor state depending on the age at the studied physical tests.

For achieving the research objectives, we organized a pedagogical experiment with an experimental Program at physical education, which provides that the school timetable shall include daily classes of physical education for  $2^{nd}$  form students, the used methods and procedures having a ludic content.

Conducting the comparative analysis between the results of experimental groups and the periods of the experiment, we found that experimental groups (boys and girls), attending the physical education classes after the experimental Program obtained definitely better results than their colleagues from the control group, who were following the traditional Program (only two classes of physical education per week), with P < 0.05-0.001.

In Figure 1 are presented the results of attaining the appropriate qualifying standards at the tests on the motor state of boys and girls from experimental groups, comparing to various forms of organization of the educational process at physical education. Therefore, initial results are obtained at the beginning of the experiment, general results – at the end of the experiment.

As you can see in Figure 1, experimental groups of girls and boys (initial boys and initial girls), according to initial results (which reflect the traditional organization of the educational process at physical education – only two classes per week in the timetable) were attaining the fixed qualifying standards only from 13,10% up to 34,23 %. At the same time, according to the final results of the experiment, the results of attaining the fixed qualifying standards by the group of girls and boys following the experimental program (physical education classes every day) had been considerably higher (from 72,00% up to 98,43%) and exceeded the indexes of the control group in average with 60%.

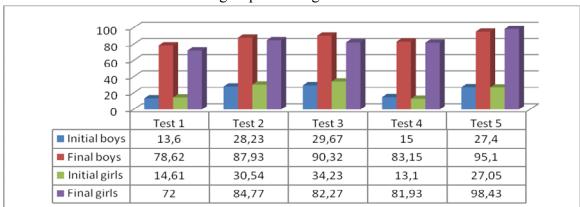


Figure 1. Indexes of fulfillment of appropriate qualifying standards at the testing of motor state of boys and girls from experimental groups (experimental and control groups) depending on their motor activity (%)

Note: Test 1: Shuttle run; Test 2: standing long jump;

Test 3: Sit-ups (hands on the chest) in 30 sec.; Test 4: Push-ups;

Test 5: Forward bends (straight legs).

Thus, the daily practice of physical education by  $2^{nd}$  form students allowed them to considerably increase the physical preparedness and to obtain progress in different motor manifestations.

In accordance with the research objectives, it was necessary to study the intellectual development of primary school students according to their basic cognitive competences depending on the level of their motor activity. In this context, we have drafted experimental cognitive tests accessible to 2<sup>nd</sup> form students for the identification of the development level of their attention, perception, memory, thinking and imagination. Each test consisted of three items with an increasing level of difficulty. At the same time, the appreciation of their success had been determined after the increasing score gained at each item, the total score constituting 45 points.

Obtaining the approval and carrying out the mass research on 2<sup>nd</sup> form children from rural areas of Ialoveni district on the basis of cognitive tests we also determined through the intermediary of statistical-mathematical methods [7], the qualifying standards (or criteria) of students' intellectual state. These data are reflected in Table 2.

As we can see from Table 2, the qualifying standards of minimum academic progress of students at the test of cognitive competences, to each item of the tests had been distributed different points, unevenly. For the first item of all the tests, from the fixed 10 points, the minimum progress of students had been determined by 6 points, for item two of 15 points - 8 points, for item three of 20 points - 11 points.

Table 2. Statistical characteristics and indexes of the appropriate level of criteria of students' minimum progress in the manifestation of their cognitive competences

	Tests and statistical characteristics							
	$\overline{X} \pm m$							
Score from tests and criteria	Test for «attention»	Test for «perception »	Test for «memory»	Test for « thinking »	Test for «imaginatio»			
	Boys and girls							
Item 1, total score	10	10	10	10	10			
The criterion of the inferior limit of academic progress of students at Item 1 (score)	6 and >	6 and 2	> 6 and 3	> 6 and >	6 and >			
Item 2, total score	15	15	15	15	15			
The criterion of the inferior limit of academic progress of students at Item 2 (score)	8 and >	8 and >	> 8 and >	> 8 and >	8 and >			
Item 3, total score	20	20	20	20	20			
The criterion of the inferior limit of academic progress of students at Item 3 (score)	11 and >	11 and	> 11 and	> 11 and >	11 and >			
The criterion of the inferior limit of academic progress of students at the test (score)	25 from 45	25 from	45 25 from	45 25 from 45	25 from 45			

In Table 3 are reflected the indexes of the academic progress of 2<sup>nd</sup> form students in the manifestation of cognitive competences in the qualitative evaluation of the score gained for each item and at the entire test.

Table 3. Indexes of academic progress of 2<sup>nd</sup> form students from rural areas in the manifestation of cognitive competences at the qualitative evaluation of the score obtained for every item and of the entire test

Test and items	Qualitative and quantitative evaluation according to the gained score						
	«unsatisfactory»	«satisfactory »	« good »	« excellent »			
Item 1 (points)	5 and >	6 - 7	8 - 9	10			
Item 2 (points)	7 and >	8 - 10	11 - 14	15			
Item 3 (points)	10 and >	11 - 14	15 - 19	20			
Total score	24 and >	25 - 31	32 - 42	43 - 45			

The pedagogical experiment, conducted by means of the statistical analysis of initial and final results of tests on cognitive competences of  $2^{\rm nd}$  form students proved the veracity of differences between experimental groups in the dynamics of the conducted study. Thus, the groups of children who followed the experimental program at physical education (daily classes of physical education in the timetable), comparing to the other group (only two classes of physical education per week), proved superiority at all cognitive competences with P < 0.05 - 0.001. In Figure 2 are reflected the results of attaining the fixed qualifying standards (criteria) according to the results obtained at testing cognitive competences of  $2^{\rm nd}$  form students.

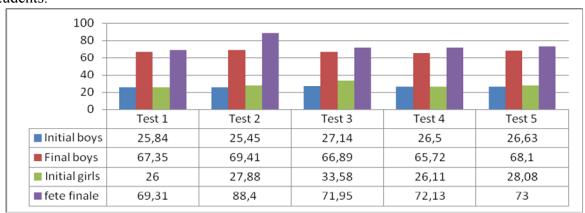


Figure 2. Indexes of attaining the fixed qualifying standards (criteria) according to the results obtained at the tests on cognitive competences of  $2^{nd}$  form students from rural areas.

As you can see in Figure 2, according to the initial indexes of girls and boys (initial boys and initial girls), (reflecting the traditional organization of the educational process at physical education – only two classes in the weekly timetable) attained the fixed qualifying standards only from 25,45% up to 33,58%. At the same time, in the groups of girls and boys (final boys and final girls) who attended physical education classes following the new experimental Program (physical education classes every day), the results of attaining the fixed qualifying standards had been considerably higher (from 65,72% up to 88,40%), exceeding the indexes of initial data in average with 47%. Thus, the daily attendance by 2<sup>nd</sup> form students of

physical education classes allowed the considerable increase of the level of cognitive competences and the possibility of succeeding in the educational and social process.

#### Conclusions.

- 1. For the current development of the educational process it is necessary to pay a special attention to the organization of physical education, including daily classes of physical education in the weekly timetable of students with a positive emotional orientation of the used methods and procedures, being taught by an experienced teacher of physical education. Such requirements refer mostly to primary education, where is put the basis of the motor and intellectual development of children, with an estimated substantiation of their self-improvement.
- 2. It is necessary a constant (once in five years) scientific development (revision) of physical education evaluation qualifying standards for children of school age, for monitoring the real functional and motor development. The systematic study of the correlation of the impact of motor development of children on their intellectual development.
- 3. The systematic attendance of physical education classes, with developmental orientation, allows 2<sup>nd</sup> form students from rural areas (up to 88,40% 98,43%) to meet the requirements of motor development depending on their age, to strengthen their health and to obtain good results in the educational process.

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# THE ROLE OF AN INTERNATIONAL LANGUAGE IN FORMATION OF THE STUDENT FROM THE PHYSICAL EDUCATION DOMAIN

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Rezumat. În domeniul culturii fizice și sportului limba străină satisface necesitatea de comprehensiune și de achiziționare a competenței de recepționare a informației. Limba straină se axează pe recepționarea textelor specifice mai degrabă decât pe producerea acestora în situații de activitate cotidiană. Astăzi, devine tot mai accentuată necesitatea unei limbi funcționale pentru anumite categorii de persoane, în general, pentru studenții din domeniul educației fizice. Învățarea altor limbi permite, de regulă, activarea acestor cunoștințe și de a le face mai conștiente, factor care urmează a fi valorificat mai degrabă decât neglijat de parcă nici nu ar exista. Însușirea a cît mai multe limbi străine are un rol