SCIENTIFIC ARGUMENTATION OF STANDARDS RELATED TO MOTOR TRAINING OF PRIMARY GRADES STUDENTS

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Abstract. *This article contains scientific information on the research of motor condition of primary grades students under the example of educational institutions in rural areas of Ialoveni district, Republic of Moldova. For the first time in the last 37 years (since 1978), according to mass research of motor condition of students of primary grades, it was founded a model of tests corresponding to their motor manifestation and the control of their fulfillment will contribute to the successful development of children.*

Keywords: *scientific approach; standard; motor training; primary grades students; physical condition; motor tests; physical development; physical education.*

Novelty of the issue approached. The primary level is an important age step in child development. On the one hand, it is known and understood a long time ago that optimum motor activity according to age of children in primary grades contributes to their functional, mental and motor development at the appropriate time, providing them the necessary health condition and success in the educational process. It also forms stable motivation for independent and lasting practice of physical exercise [1].

On the other hand, in practice, in most different ways, we try to reduce the importance of physical education for children, thus showing that, "physical education" is a secondary subject matter for them and it is not so important in the educational process [1, 2]. It should be noted that for many years it is successfully carried out in our country.

At the same time, failure to ensure appropriate motor development of children according to their age leads to serious functional motive disorders of the body, leaving a significant negative imprint on their life. To this also contributes such negative factors of timeliness, such as: the motor training of students from Moldova, including primary grades students, especially of educational institutions in rural areas, is now extremely low and does not correspond to standards according to age; excessive progress of negative factors of

child development - scoliosis, flatfoot and obesity (approximately up to 50-70%); most teachers conducting physical education classes in primary grades (teachers of such classes) are not specialists in this area and can not provide professionally physical development of children; available material and financial conditions (including gyms) for physical education classes with primary grades students is poor in most of the educational institutions of the Republic of Moldova [5].

Moreover, it is well known that one of the factors retaining the progressive development of physical education system of students is also the excessive centralization and sometimes even decentralization of directing motor activity of children generally and physical education of students in particular. Excessive detailing, standardization and unification of programs and directives "coming from up" does not stimulate creative activity in search of new solutions, innovative in a certain school. The content of the programs is sometimes in contradiction with age peculiarities of the development of children living in different districts of the Republic of Moldova with different local climatic conditions, customs and traditions of the population, with various material resources available [1, 2, 5].

More than twenty years ago, standards and unified indicators of physical condition necessary for children were also required. In case of failure

to perform them for various reasons, negative consequences were progressing, namely exaggerations and falsification of reports and indices (GMA, CMS etc.).

It should also be noted that currently some attempts to impose "from up" unified standards of motor training for children in educational institutions of the Republic of Moldova do not have any scientific justification and are a bureaucratic formal process of officers in this field. Such approaches do not contribute to the appropriate development of children, both physical as well as intellectual.

In our opinion, a similar situation exists in general in the entire educational system and "in the most significant" (as often wrongly considered) subject matters: mathematics, physics, chemistry, history and others.

That is why at this stage the reform of educational system in Moldova is relevant and including physical education, as the most universal means of improving integrated educational development of students.

We believe that at the current stage of development of pre-university education in Moldova, it is necessary to develop and use innovative ideas and scientific approaches for improving educational process in physical education for students through its proper organization, objective assessment and estimation of motor development of children especially in primary grades, at the age of which the motor necessity and intellectual activity shall form the basis for a period of greater duration of their perfection.

Research objectives

To develop scientific and validate an optimal number of motor tests according to age in order to identify the physical training of primary grades students in rural areas.

To study the motor condition of primary grades students in educational institutions of Ialoveni district based on scientifically validated tests.

To scientifically develop appropriate and credible sample standards of motor training for primary grades students of educational institutions in Ialoveni district.

Research organization

By studying accessible bibliographic sources and using pedagogical experience of physical education specialists, including their experience, we have scientifically developed an optimal complex of motor tests, which have a sufficient level of validity, reliability and informational content. Based on scientific tests there have been examined in total 1547 boys (68%) and 1358 girls (65%) of primary grades of educational institutions in Ialoveni district. The results obtained formed the basis for developing appropriate regulations according to age of children of primary grades.

Research results

To achieve the first objective it was necessary to determine the optimal number of motor reliable tests, reflecting development of speed skills of motion and coordination, force, and the static, force - speed, strength, elasticity of primary grade students in rural areas and allowing to determine the real motor condition of the children.

Table 1 shows a set of tests known to everyone in the specialized literature [2, 3], which characterizes by their results to a certain degree, the development of physical qualities indicated by us, specific to the development according to the age of primary grades students. Furthermore, the results obtained from these tests have been processed mathematically and statistically to calculate the main statistical characteristics, on the basis of which the correlation analysis of their mutual influence has been performed. Such interconnection of tests set, allowed us to determine the optimal group of tests proposed, which according to their results can truthfully reflect the specific motor skills of primary grades students. The results of the correlation analysis are also presented in Table 1 and have an ordinary presentation and are highlighted (bold).

Therefore, we selected motor tests namely those who had the greatest number of significant

levels of correlation coefficients. Exception was the test „Running, 30m", containing like the test „Shuttle Run" the same number of reliable interconnections, however we were not satisfied for the reason that the second test, along with movement speed is showing in higher degree coordination skills than the first test.

In this context, from the twelve tests proposed it has been selected an optimal number (5) motor tests, relatively simple by the methods of their performance but reliably reflecting the physical qualities studied. These tests (highlighted in green in the table) are as follows:

- shuttle run, 3x10m;
- standing long jump;
- push-ups;
- lying torso lift in 30 s;
- forward bends (straight legs).

Table 1. Statistical matrix of correlation coefficients (r), which reflect their interconditionality to studying the motor skills of primary school students in rural areas.

	Tests	1	2	3	4	5	6	7	8	9	10	11	12
1	Shuttle run 3x10m		0,427	0,510	0,368	0,536	0,350	0,625	0,400	0,375	0,501	0,290	0,278
2	Running 30m	0,427		0,409	0,311	0,478	0,315	0,587	0,370	0,383	0,468	0,285	0,310
3	Laying torso lift in 30 sec.	0,510	0,409		0,383	0,427	0,366	0,411	0,403	0,375	0,596	0,250	0,271
4	Med. ball throw	0,368	0,311	0,383		0,351	0,381	0,389	0,375	0,400	0,355	0,284	0,310
5	Forward bends (straight legs)	0,536	0,478	0,427	0,351		0,377	0,480	0,404	0,388	0,412	0,409	0,321
6	Chin-ups	0,350	0,315	0,366	0,381	0,377		0,365	0,406	0,360	0,510	0,344	0,396
7	Standing long jump	0,625	0,587	0,411	0,389	0,480	0,365		0,345	0,400	0,453	0,383	0,296
8	Square hanging, feet under < 90°	0,400	0,370	0,403	0,375	0,404	0,406	0,345		0,284	0,241	0,366	0,392
9	Standing high jump	0,375	0,383	0,375	0,400	0,388	0,360	0,400	0,284		0,260	0,385	0,280
10	Pushups	0,501	0,468	0,596	0,355	0,412	0,510	0,453	0,241	0,260		0,300	0,278
11	«Flamingo» test	0,290	0,285	0,250	0,284	0,409	0,344	0,383	0,366	0,385	0,300		0,241
12	Hanging to a fixed bar	0,278	0,310	0,271	0,310	0,321	0,396	0,296	0,392	0,280	0,278	0,241	

Remark: n-12; P - 0,05; 0,01; 0,001.
f=22; r = 0,404; 0,515; 0,629.

By achieving the second objective, based on scientifically developed tests, we conducted a study of motor skills of primary grades students of the educational institutions in rural areas of Ialoveni district.

Thus, in Table 2, are shown average and integrated statistical indicators of testing motor skills of students from rural areas for each class of primary education in Ialoveni district, Republic of Moldova.

Moreover, using the results obtained through testing, we also performed the calculation of the main statistical characteristics of variation series and on their basis, using appropriate statistical method for calculating the credible intervals, we have determined the sample standards corresponding to motor manifestation of primary grades students in educational institutions of rural areas in Ialoveni district, Republic of Moldova.

In this context, as can be seen from Table 2 for each class studied there were assigned two rows: the top row reflects the average statistical results of testing; the lower row specifies (highlighted in green) corresponding sample standards cal-

culated, serving as a transition threshold of motor state according to successful age for physical

qualities studied.

Table 2. Average statistical indicators of testing primary grades students of rural areas in Ialoveni district, Republic of Moldova, according to motor skills and model of standard criteria (with P <0.05)

Grade	Tests Test results and sample standard	Shuttle run (sec)	Standing long jump (cm)	Layng torso lif tim 30 sec (rep.no.)	Pushups (rep.no.)	Forward bends (straight legs) (cm)
		X	X	X	X	X
Boys						
I	Test results	12,46±0,46	122,26±2,62	14,28±1,19	2,04±1,03	3,42±0,84
	Sample standard	11,56 and <	127,00 and >	17 and >	4 and >	5 and >
II	Test results	11,00±0,68	131,76±3,00	16,62±1,25	2,60±1,11	5,02±0,95
	Sample standard	9,67 and <	138,00 and >	19 and >	5 and >	7 >
III	Test results	10,03±0,47	134,35±2,73	17,47±1,45	3,39±1,54	6,15±1,33
	Sample standard	9,11 and <	140,00 and >	20 and >	6 and >	9 and >
IV	Test results	8, 87±0,38	142,53±3,71	19,91±1,67	5,17±1,66	7,33±1,54
	Sample standard	8,12 and <	150,00 and >	23 and >	8 and >	10 and >
Girls						
I	Test results	13,28±0,46	110,31±3,13	14,88±1,22	1,88±1,14	4,10±1,47
	Sample standard	12,38 and <	116,00 and >	17 and >	4 and >	7 and >
II	Test results	12,06±0,70	124,71±3,82	16,00±1,38	2,17±1,36	7,65±1,51
	Sample standard	10,69 and <	132,00 and >	19 and >	5 and >	11 and >
III	Test results	10,87±0,53	130,76±2,85	18,85±1,31	3,00±1,76	8,60±1,73
	Sample standard	9,83 and <	136,00 and >	21 and >	6 and >	12 and >
IV	Test results	9,11±0,32	134,89±3,66	20,73±1,76	4,96±1,70	9,46±1,62
	Sample standard	8,48 and <	142,00 and >	24 and >	8 and >	13 and >

Conclusions

1. In this context, we tried for the first time in the last 37 years, to examine the motor condition of primary grades students in rural areas on the example of Ialoveni district, Republic of Moldova.

2. The statistical data of the motor conditions of primary grades students in rural areas have allowed us, also for the first time, at this stage, to develop scientifically credible samples of appropriate standards that will serve them as milestones for progressive motor development according to age.

3. For the successful fulfillment of the motor standards proposed it is necessary to significantly increase the motor activity of primary grades students in school time regime (in our opinion, within 4-5 hours weekly for each class).

4. Teachers conducting physical education classes in primary school should be university graduates in the field of pedagogy.

5. Criteria developed to evaluate motor activity success of primary grades students in Ialoveni district were tested in the pedagogical experiment. The results of students in the primary stage showed their merits. This is confirmed by

the Certificate of registration of objects of copyright and related rights on invention, Series OȘ, no.5186 of September 4, 2015 issued by the State Agency for Intellectual Property of the Republic of Moldova.

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