

PHYSICAL STATE OF BOYS FROM PRIMARY CLASSES IN THE RURAL AREAS OF THE REPUBLIC OF MOLDOVA

Adelina Ghetiu¹

*¹State University of Physical Education and Sport, Chisinau, Republic of
Moldova*

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Summary. The present article describes the experimental-analytical information about state of physical development, motor preparedness, the existence of negatives factors (scoliosis, flat foot, and obesity) of village's primary school students of Republic of Moldova. This information will permit to know the situation and form a process of education and development in physical education, taking into account the state secondary school students in cities

Nowadays, a very up-to-date topic is strengthening the resistance for the increase of labor and intellectual capacity, for physical development, maintenance and reinforcement of health, which are possible only by planning the activities of the human body in an unfavorable social, economic and ecological environment, that contribute to the development of specific motor skills.

To this end, a great importance is paid to motor development of the young generation, and namely of children who, if developing in a favorable environment, will reflect the state of their health and of the entire society. It should be mentioned here that the necessity of movement and intense motor activity are the most important biological characteristics of the body of a child. Reduced muscular activity does not only hamper the development of the body as a whole and damages health, but also leads to serious future consequences, such as the decrease of the capacity of assimilating knowledge and of acquiring essential motor skills.

A very important age stage in the development of children is the twelve-years school education, which contributes to the intense development of intellectual, psychic, psychological and motor-functional capacities which, as a whole, represent the level of instruction and health of school students. In this context, we can state that an important aspect

at this age stage is also the motor development of children which, at its turn, improves the physiological functions of the body, encourage the physical growth and development, increases the level of intellectual capacities of school students [1;2;3]. Nevertheless, currently a great number of researchers have found that the instructional-educational process from the educational institutions is characterized by the increase of the volume and intensity of educational-cognitive activity which influence the reduction of the level, insufficient as it is, of the motor activity. Such an orientation and tendency in the development of a modern education institution is in absolutely no correlation with the necessity of settling the issues of physical development of school students, from the viewpoint of sufficient neuromotor activity and appropriate physical development.

Moreover, the lack of appropriate conditions and non-execution of sufficient motor activities by children at home, in pre-school and pre-university institutions lead to the appearance of disorders of the function of the muscular and locomotor systems, such as scoliosis and flat foot (platypodia), which practically cannot be cured along the life but can be prevented and stopped by practicing correctly selected motor activities. The presence of scoliosis and flat foot phenomenon, as well as of insufficient motor activity of healthy children leads to an inappropriate physical training, which at its turn generates disorders of the motor development, influencing in the same time the psychic aspect of the child and reduces his communication capacities, an important factor in the creation of school student's personality.

In the light of the above, we have organized and carried out a pedagogical research within the national project „Modern tendencies in the promotion of a healthy lifestyle, by means of prophylaxis and rehabilitation of locomotor system's disorders of school-age children, using physical development methods". The implementation of this project supposes the study of the level of physical development, of motor training and of negative factors in the motor development of school students from different districts of the Republic of Moldova, including primary schools from Edinet, Chisinau, Stefan Voda, Causeni, Singerei districts and from Tataresti locality.

For investigating the physical development level and the motor training of school students and for detecting negative factors, we have applied an optimal number of tests, for various categories of children and

school environments that would provide sufficient validity, credibility and transparency of the studied phenomena [4].

Types of conducted tests:

a) for the evaluation of the physical development of school students:

-height (cm);

-weight (kg);

b) for the evaluation of the motor development of school students:

- shuttle run 3x10m (sec);

- standing long jump (cm);

- bench push-ups (no.);

- sit-ups (hands on the chest) in 30 sec. (no.);

- forward bends on the bench (straight legs) (cm);

c) for determining negative factors of the physical development of school students:

-flat foot (platypodia) (%);

-scoliosis (%);

-obesity (%).

We would also like to mention that the results of physical development tests complexly reflected the motor state of school students, according to the competencies of development of force, force-speed, coordination of body movements and elasticity. Hence, all tests had been conducted in accordance with the established methods, represented at full extent in the relevant literature and their results had been analytically – mathematically processed, emphasizing basic statistical characteristics from the entire selected data, which constituted the basics for an accurate comparative analysis in accordance to the Student's t-criterion. The obtained results allowed us to determine the level of physical development of school students and to analyze, using the comparative method, the preponderant regional difference of physical development between the northern, southern and central parts of Moldova.

Tables 1, 2, 3 and picture 1 represent the results, based on which can be determined the physical and motor state and the presence of negative factors at boys from primary classes from Tataresti, Singerei and Causeni districts. Thus, in table 1 had been presented statistical data of the investigation performed on these children according to their physical development (height, weight and their correlation with the Quetelet index, DE- diaphragmic excursion), as well as to their motor state, based on tests which reflect the development of basic physical

qualities and the presence of negative factors: flat foot, scoliosis and obesity.

Table 1. Statistical characteristics of investigation results over primary classes boys from rural educational institutions of the Republic of Moldova, according to their physical state, motor development and the existence of negative factors in their development.

District centers (villages)	Tests											Flat foot %	Scoliosis %	Obesity %	Quetelet index (norm) %
	Height (cm)	Weight (kg)	Quetelet index	Shuttle run (sec)	Standing long jump (cm)	Sit-ups (no.) (hands on the chest) in 30 sec. (no.)	Push-ups (no.)	Diaphragmic excursion (cm)	Forward bends on the bench (straight legs)						
1st grade															
Tataresti	123,80±1,68	24,70±0,90	0,19±0,003	11,50±0,19	115,00±6,16	16,70±1,23	1,00±0,68	4,40±0,33	5,60±2,60	33,33	6,66	-	100,00		
Singerei	130,33±1,19	26,40±1,14	0,20±0,004	9,05±0,15	119,33±4,47	19,47±0,74	2,67±1,49	3,73±0,22	5,53±1,04	46,66	13,33	-	100,00		
Causeni	118,20±2,69	23,11±0,67	0,19±0,016	10,00±0,12	120,30±5,61	21,11±1,45	1,55±1,01	4,70±0,44	3,44±1,12	26,66	-	-	100,00		
\bar{X}	124,11±1,85	24,74±0,90	0,19±0,056	10,18±0,15	118,21±5,41	19,09±1,14	1,74±1,06	4,28±0,33	4,86±1,59	35,55	6,66	-	100,00		
2nd grade															
Tataresti	132,00±3,72	28,70±3,10	0,20±0,01	10,80±0,19	140,00±3,70	22,50±0,15	2,00±0,40	5,30±0,24	8,50±1,86	33,33	6,66	-	100,00		
Singerei	134,60±0,82	28,44±0,91	0,21±0,005	9,06±0,13	125,00±3,94	19,53±0,97	2,00±1,04	4,27±0,37	3,53±0,74	53,33	13,33	-	100,00		
Causeni	130,80±0,79	28,00±0,12	0,21±0,015	9,31±0,06	121,70±6,16	21,00±1,9	2,70±0,46	4,90±0,20	1,70±1,12	33,33	6,66	-	100,00		
\bar{X}	132,47±1,78	28,38±1,38	0,21±0,055	9,72±0,13	128,90±4,60	21,01±1,02	2,23±0,63	4,82±0,27	4,58±1,24	40,00	8,88	-	100,00		
3rd grade															
Tataresti	135,70±1,68	30,0±2,91	0,21±0,01	10,30±0,5	131,20±7,25	21,00±1,2	3,20±0,36	5,00±0,72	8,00±1,69	20,00	6,66	-	100,00		
Singerei	133,30±1,23	28,80±1,44	0,21±0,009	11,00±0,3	146,50±4,62	16,20±0,9	2,80±0,64	3,50±0,20	8,50±1,64	40,00	6,66	-	100,00		
Causeni	132,60±1,13	30,60±0,64	0,22±0,006	9,11±0,02	161,60±3,23	17,50±2,4	3,00±0,80	4,80±1,30	1,50±1,62	20,00	-	-	100,00		
\bar{X}	133,87±1,35	29,80±1,66	0,21±0,026	10,14±0,29	146,43±5,03	18,23±1,51	3,00±0,60	4,43±0,74	6,00±1,65	26,66	4,4	-	100,00		
4th grade															
Tataresti	139,70±2,15	34,16±2,01	0,21±0,02	9,32±0,38	141,80±6,67	16,20±2,4	3,90±1,05	5,80±0,51	5,40±1,43	20,00	13,33	-	100,00		
Singerei	139,08±2,16	32,77±1,58	0,24±0,008	8,96±0,09	152,46±4,99	18,23±0,7	4,46±1,33	3,92±0,50	3,85±1,41	40,00	20,00	6,66	93,34		
Causeni	136,63±2,28	33,27±1,33	0,23±0,06	8,77±0,15	140,27±4,76	18,45±0,5	4,36±0,81	6,00±0,47	2,45±1,33	26,66	6,66	-	100,00		
\bar{X}	138,47±2,20	33,40±1,64	0,23±0,03	9,02±0,21	144,84±5,47	17,73±1,26	4,24±1,08	5,24±0,49	3,90±1,3	28,89	13,33	6,66	93,34		
Average general indexes of boys from primary classes															
Tataresti	132,80±2,31	29,39±2,23	0,20±0,011	10,48±0,33	132,00±5,94	19,10±1,2	2,52±0,62	5,13±0,45	6,87±1,90	26,66	8,33	-	100,00		
Singerei	134,33±1,35	29,10±1,26	0,21±0,006	9,52±0,17	135,82±4,50	18,36±0,8	2,98±1,12	3,85±0,32	5,35±1,21	45,00	13,33	6,66	93,34		
Causeni	129,56±1,72	28,74±0,69	0,21±0,011	9,30±0,09	135,97±4,94	19,51±1,5	2,90±0,78	5,10±0,60	2,27±1,30	26,66	3,33	-	100,00		
\bar{X}	132,23±1,79	29,08±1,39	0,21±0,042	9,77±0,20	134,60±5,13	18,99±1,23	2,80±0,84	4,69±0,46	4,83±1,47	32,77	8,33	6,66	93,34		

Table 2 represents the comparative statistical analysis of the obtained results on the physical and motor state of the investigated boys from primary classes. The results of the obtained statistical analysis show that from the physical development criteria, and namely according to height indexes, boys from primary classes from Tataresti and Causeni have basically a similar development (with $P>0,05$). In the same time, boys from Singerei district have a higher and accurate body development

comparing to the primary classes boys from Causeni district ($P < 0,05$). This means that primary classes boys from Tataresti and Singerei district have higher results (in height), comparing to their peers from the primary classes of Causeni district. The comparative analysis of the weight investigation results show that primary classes boys from Tataresti and Singerei districts have a greater weight than boys from Causeni district, but these differences are not statistically confirmed (with $P > 0,05$). This fact is also available for Quetelet indexes which, according to the standard tests, is observed at the boys from Tataresti and Causeni districts (100%), followed with a slight difference by the primary classes boys from Caseni district (93,34%).

Table 2. Investigation results of physical and motor development and the presence of negative factors of the motor state of boys of primary classes from the educational institutions of the Republic of Moldova.

No.	Tests	Statistical characteristics $\bar{X} \pm m$			Comparative analysis					
		Tataresti	Singerei	Causeni	1-2 Tataresti- Singerei		1-3 Tataresti- Causeni		2-3 Singerei- Causeni	
		1	2	3	t	P	t	P	t	P
I Physical development										
1	Height(cm)	132,80±2,31	134,33±1,35	129,56±1,72	0,57	>0,05	1,12	>0,05	2,19	<0,05
2	Weight(kg)	29,39±2,23	29,10±1,26	28,24±0,69	0,11	>0,05	0,28	>0,05	0,25	>0,05
3	Diaphragmic excursion (cm)	5,13±0,45	3,85±0,32	5,10±0,60	2,33	<0,05	0,04	>0,05	2,21	<0,05
4	Quetelet index	100,00	93,34	100,00	—	—	—	—	—	—
II Motor state										
1	Shuttle run 3x10m (sec)	10,48±0,33	9,52±0,17	9,30±0,09	2,59	<0,05	3,47	<0,001	1,16	>0,05
2	Standing long jump (cm)	132,00±5,94	135,82±4,50	135,97±4,94	0,51	>0,05	0,51	>0,05	0,02	>0,05
3	Bench push-ups (no.)	2,52±0,62	2,98±1,12	2,90±0,78	0,36	>0,05	0,38	>0,05	0,04	>0,05
4	Sit-ups (hands on the chest) in 30 sec. (no)	19,10±1,26	18,36±0,84	19,51±1,59	0,49	>0,05	0,20	>0,05	0,64	>0,05
5	Forward bends on the bench (hands down) (cm)	6,87±1,90	5,35±1,21	2,27±1,30	0,67	>0,05	0,02	>0,05	1,74	>0,05

Note: P – 0,05; 0,01; 0,001

t= 1,980; 2,618; 3,374

Table 3. The existence of negative factors of physical development of boys of primary classes in the rural educational institutions of the Republic of Moldova

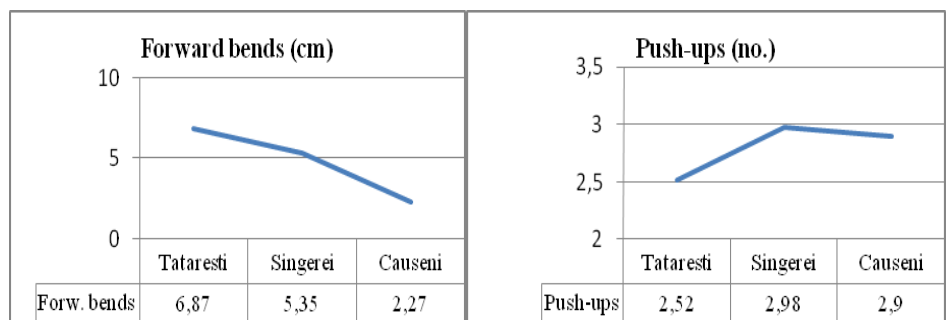
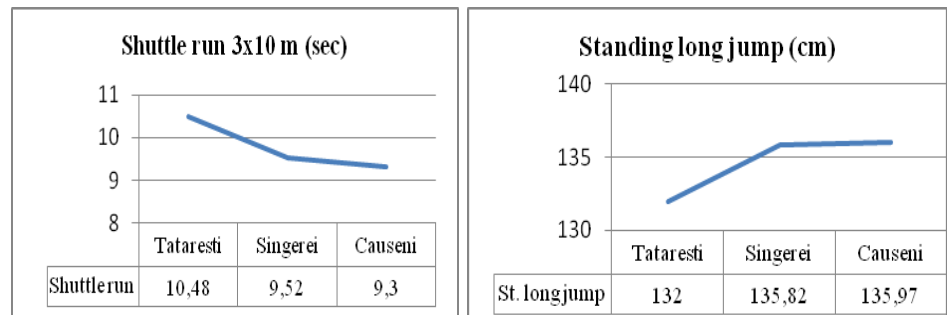
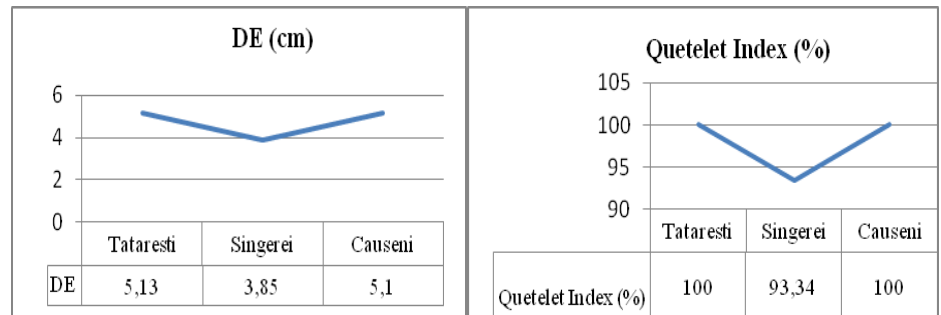
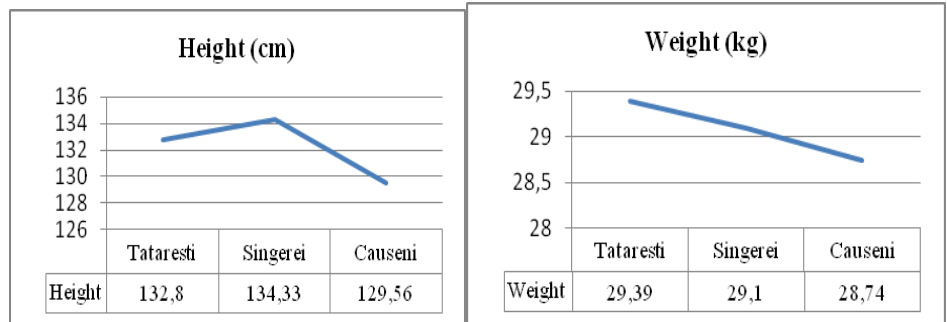
No.	Negative factors of physical development	Tataresti	Singerei	Causeni	Average index	Distribution of places according to the existence of negative factors		
						I	II	III
1	Flat foot %	26,66	45,00	26,66	32,77	Singerei	Tataresti, Causeni	—
2	Scoliosis %	8,33	13,33	3,33	8,33	Singerei	Tataresti	Causeni
3	Obesity %	—	6,66	—	6,66	Singerei	—	—

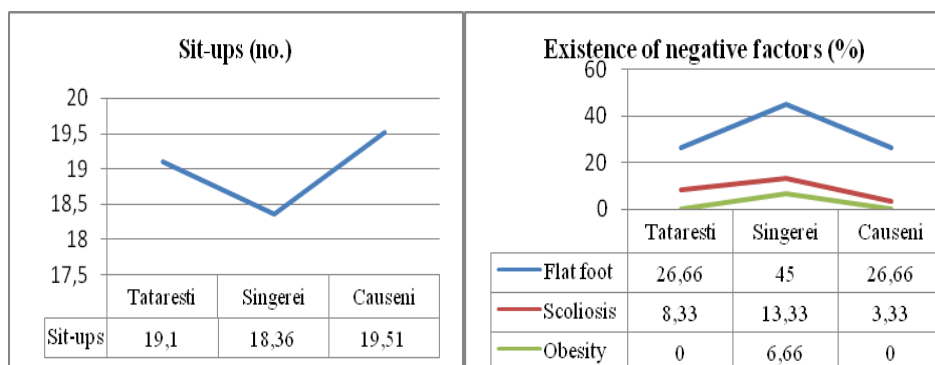
To a certain extent, the physical development degree of boys from primary classes is reflected by the DE (diaphragmic excursion) results also, which characterize the evolution (state) of the respiratory system. As proof, it had been found that the DE index is lower at the boys from Singerei district, comparing to their peers from other districts.

Hence, according to the evaluation of physical development of primary classes boys from rural educational institutions of Tataresti, Singerei and Causeni districts, we have found that in the majority of cases the body and the physical state is being formed in accordance with age physiology and also under the influence of certain negative factors and the ecological environment.

The investigation of the motor state of primary classes school students from the above-mentioned localities showed that according to the majority of tests, indexes which characterize force, force-speed and body elasticity show in different areas a relatively identical development (unconfirmed) with $P > 0,05$. Exceptions are the „shuttle run” test results, which characterize speed and coordination possibilities of primary classes boys from the investigated districts, out of which the boys from Singerei and Causeni districts (relatively similar, with $P > 0,05$) prevail, with a high degree of credibility, over their peers from Tataresti district, with $P < 0,001$.

Thus, we consider that the motor state of primary classes boys from rural educational institutions of the investigated districts corresponds to an unsatisfactory motor activity during their time at school; the speed and movement coordination capacities of primary classes boys from Tataresti locality are low, comparing to Singerei and Causeni districts.





Picture 1. Graphic presentation of final results of investigations over primary classes boys from rural educational institutions of the Republic of Moldova

Moreover, the most concerning fact is that children from each investigated area have bad results as regards motor preparedness during subsequent education stages, after the primary classes (Table 1). We consider that these results are, to a great extent, improving in essence only due to the natural physiological growth of children. From our point of view, these aspects prove the fact that the efficiency of directed physical education of boys from the investigated primary classes is very low and is lacking development characteristics.

The study of negative factors of physical development of boys from the primary classes in the rural educational institutions, shown in Table 3, proves that according to the presence of flat foot, the first place is held by the boys from Singerei district (45%), the second place – by the boys from Tataresti and Causeni districts (by 26,66% each district). According to the number of boys from the primary classes who have scoliosis, the first place is held again by Singerei district (13,33%), the second place – by Tataresti district (8,33%), and the third place – by Causeni district (3,33%). The presence of the first stage of obesity at boys from primary classes had been found at a relatively lower number of boys in Singerei district (6,66%), which corresponds to their Quetelet indexes (93,34%).

Hence, the investigation results of the boys of primary classes from the rural educational institutions of Tataresti locality and of Singerei and Causeni districts show that according to their physical development,

children grow and develop in accordance with physiological age laws and the existent regional peculiarities, including negative ones.

The motor state of the investigated boys of primary classes from the rural area shows that in the majority of cases is relatively the same in all localities and reflects, as a rule, the insufficient motor activity during studies. The efficiency of directed physical education of boys from the investigated primary classes is very low and is lacking development characteristics.

Moreover, the insufficient motor state found at boys is directly linked with the existence of negative factors, such as the flat foot, scoliosis and obesity, which hamper their motor development, found in all educational institutions from the rural area, especially in Singerei district (45%, 13,33% and 6,66%).

The insufficient motor activity of boys, including the one following the mandatory physical education program in schools, causes the emergence of the first stage of obesity at primary classes boys, which is already recorded mostly in the fourth grade.

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STAREA FIZICĂ A BĂIEȚILOR DIN CLASELE PRIMARE ÎN ZONELE RURALE ALE REPUBLICII MOLDOVA

Cuvinte cheie: elevii de școală primară din sat, dezvoltarea fizică, pregătire motrică, coloana vertebrală, deficiențe fizice, scolioza, picior plat, obezitate, aparatul locomotor, exerciții fizice, terapie fizică.

Rezumat: Prezentul articol descrie informațiile experimentale-analitice, despre starea de dezvoltare fizică, pregătire motrică, existența unor factori negativi (scolioza, picior plat și obezitate) a elevilor claselor

primare de la sat, din Republica Moldova. Această informație va permite să cunoască situația și forma procesului de educație și dezvoltare în educație fizică, ținând cont de statutul elevilor de gimnaziu din orașe.