

STUDY OF STRENGTH DEVELOPMENT IN 5TH GRADE BOYS

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Summary

Starting from the old Latin saying "mens sana in corpore sano", the modern man is concerned about his health, the need to exercise, the practice of physical exercises in order to train and develop the motor qualities indispensable to life. Physical education is a component of global education that influences the growth and development of the human body, maintaining an optimal state of health, develops motor skills, mental processes and phenomena favoring socialization. It involves and contributes to the development of a healthy and strong youth to integrate into modern society.

Introduction

The discipline of physical education is a form of education that capitalizes on movement for physical development, communication, the formation of motor skills and favorable attitudes regarding the practice of physical exercises both in primary, secondary and lifelong education. Through the specific content, it leads to the realization of the educational and social ideal, of the formation of a personality that involves the competent and active individual in solving society's problems and in shaping one's own person. The role of physical education has been highlighted and supported since ancient times until today, as well as sports as a means of strengthening the human personality. There are enough arguments to support this idea of great pedagogues of the times. In essence, physical education consists of a set of actions that contribute to the development of the student's personality.

Through its formative role, physical education is required in the development of essential character traits and attitudinal dimensions. From the perspective of the

content and the way of carrying out, physical exercises contribute to the formation and stabilization of perseverance, the desire to assert oneself, as well as positive attitudes towards oneself, of collectivity, intolerance, arrogance or contempt towards the opponent through the fair play promoted by such activities.

As several specialists in the field say, [1,4,8,12,14] physical education and sports represent activities of national interest, with an increased role in strengthening health, harmonious physical development, development of motor, intellectual and moral qualities of the whole our people and especially the young generation. The specialized literature offers us a lot of means and methods for optimizing the physical education lesson regarding the development of motor qualities and the formation of motor skills [2,5,6,11,13].

The specialist in physical education, Dragnea A, [3] says about strength that it represents "the ability of the human body to overcome an internal or external resistance by means of muscle contraction". Strength represents the basic motor quality for the efficient performance of most motor acts. Superior results, both in physical education and in performance sports activity, cannot be obtained without proper superior strength training of all muscle groups. Most of the time, strength conditions the manifestation at a high level of the other qualities, as well as motor skills. Of all qualities strength is most easily developed if it is systematically acted upon, but just as quickly diminishes if it is neglected for a long period of time. Strength development can begin as early as possible using exercises appropriate to the age and training level of the students, in relation to the load and duration of execution.

At the level of each age period, heredity and environment have particular influences on growth and development. In the first years of life and up to puberty, more than in other periods, the external environment has a special influence. The adaptation of the organism to varied living conditions in varied environments depends on the influence of stimuli coming from the external environment, their strength and intensity, in close connection with the individual ability of each organism to react to them. Also, physical exercise practiced since childhood contributes to the harmonious development of the human body, qualities and motor skills [7,9,10].

The physiological peculiarities of this age designate this period as one of the most favorable stages for the development of motor skills. So, or used 6 tests specific to the quality of motor strength, as follows: the muscles of the upper limbs - push-

ups (no.), pull-ups from hanging (no.), the muscles of the abdomen and back - raising the legs from lying on the back (no.), extension of the trunk in face lying 30" and the muscles of the lower limbs – standing long jump (cm), jump over the gymnastic bench 30".

Research methodology and organization

28 students from the 5th grade participated in the experiment, belonging to the "Iorgu Vârnăv Liteanu" Technological High School, Liteni city, Suceava county. The experimental group consisted of 13 boys and the control group 15.

Through the application of research methods, the accumulation of new knowledge from specialized literature was pursued, the observation of students' behavior during physical education classes, the ascertainment and highlighting of the evolution of the results obtained after the two tests and the presentation of the data after collection through tables and graphs.

Results and their interpretation

Two tests were applied in the research. Initial testing took place at the beginning of the 2023-2024 school year in September, and final testing took place at the end of May. After the initial assessment, activities according to the school curriculum were used in the control group, while in the experimental group a complex of means was introduced that led to its progress.

Table 1. Results obtained at the initial and final tests, 5th grade, experiment class

Name	Pushups (nr.)		Pull-ups on the gym bench (nr.)		Lifting tr. from supine position		extension tr. facial lying down 30"		Standing long jump (cm)		Jump over the gym bench. 30"	
	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F
A.D.	5	8	3	6	4	8	16	19	150	164	6	15
A.M.	6	9	4	7	4	9	17	20	154	165	7	17
B.R.	5	9	3	5	5	10	17	21	153	162	9	18
C.C.	4	8	3	6	3	8	18	22	156	167	10	18
D.A.	5	9	3	7	4	8	16	21	149	165	8	17
G.E.	6	10	4	8	5	9	17	21	152	164	7	18
H.I.	5	9	3	7	3	8	15	20	150	163	8	18
I.C.	4	8	4	8	4	9	17	21	153	166	9	17
J.A.	4	8	3	7	4	9	17	22	149	165	7	17
L.A.	5	9	5	9	4	10	16	20	147	165	8	18
L.V.	5	9	4	8	4	8	16	21	156	162	7	18
M.M.	4	8	4	8	4	9	17	22	148	164	9	19
N.A.	6	10	4	8	5	9	17	23	152	168	8	17

X	4,92	8,77	3,62	7,23	4,08	8,77	16,62	21	151,46	164,62	7,92	17,46
S	0,21	0,20	0,18	0,30	0,18	0,20	0,21	0,30	0,81	0,49	0,31	0,27
+/-S	0,76	0,73	0,65	1,09	0,64	0,73	0,77	1,08	2,90	1,76	1,12	0,97
Cv%	15,43	8,27	17,99	15,10	15,71	8,27	4,62	5,14	1,92	1,07	14,07	5,54

In the push-up motor test, in the initial testing, the experiment class has a result of 4.92 repetitions, and the control class 4.93. The final testing differentiates between the two groups, where the experimental group obtains a value equal to 8.77 while the control group has 7.07 repetitions.

The next test for the muscles of the arms is hanging pull-ups, where the research groups have values close to 3.62 and 3.60 in the initial test, and in the final test the experimental class obtains a number of 7.23 repetitions, with 2.5 pull-ups more than the control class which achieves a value of 4.73 repetitions (Figure 1.).

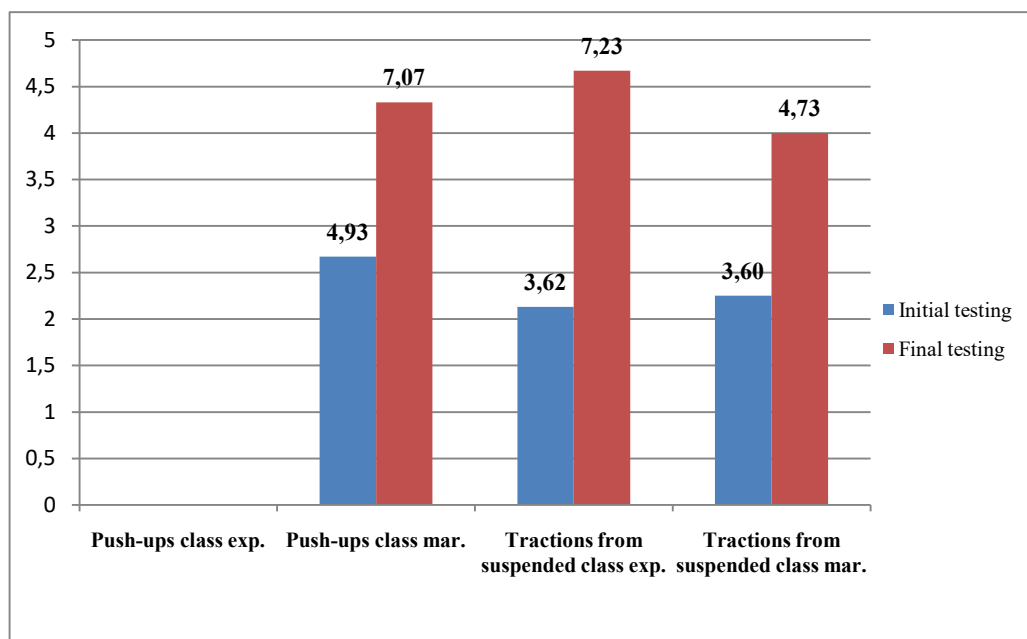


Fig. 1. Comparative analysis of the results obtained for the samples intended for the muscles of the upper limbs

It can be seen in Figure 2. in the initial test, in the test for the abdominal muscles, raising the legs from lying on the back, the experimental group achieves a value equal to 4.08, and in the final test 8.77 repetitions. In the control class, in the first test we have 4.07 leg lifts, and in the final test 5.87 repetitions. The difference between the two groups at the final test is 2.9 executions, which means that abdominal strength in the experimental group is more developed.

Regarding the back muscles, we can specify the fact that here too we have better results in the experimental group achieving a progress of 4.38 executions, and in the control group 1.6 repetitions, although in the initial testing we have values close to 16.62 and 16.4 executions (Figure 2.).

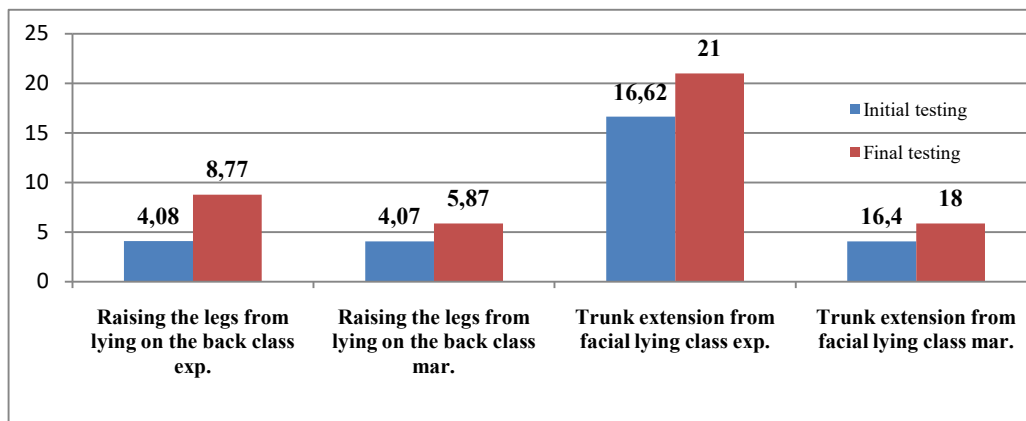


Fig. 2. Comparative analysis of the results obtained for the samples intended for the abdominal and back muscles

Analyzing the standing long jump, a value equal to 151.46 cm can be found in the initial test in the experimental class, and 164.62 cm in the final test. In the control class we have an average of 150.67 cm in the initial testing and 156.13 cm in the control testing. The difference between the two groups at the final testing is 8.49 cm (Figure 2.).

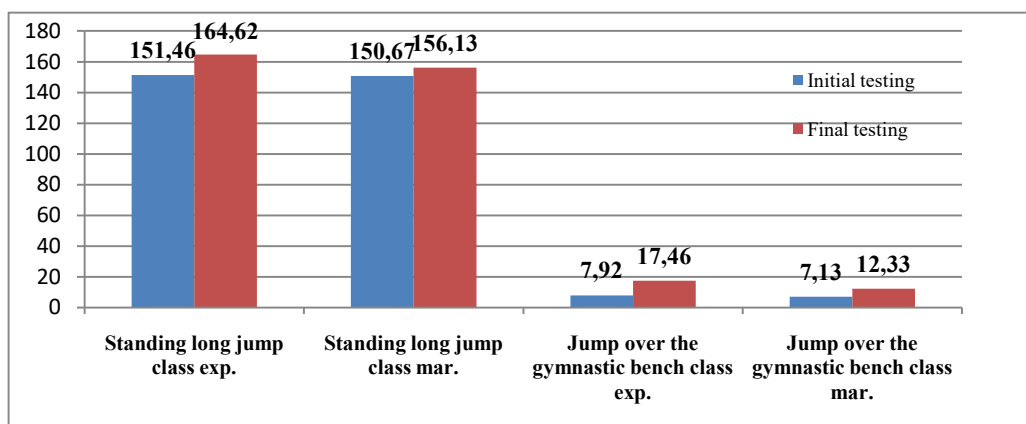


Fig. 3. Comparative analysis of the results obtained for the samples intended for the muscles of the lower limbs

In jumping over the gymnastic bench for 30 seconds, boys from the experimental class perform well compared to the control class. The difference between initial and final testing in the experimental group is 9.54 runs, and in the control group 5.2.

Applying the National Evaluation System in physical education and sports, (Tables 1. and 2.), for the 5th grade, according to the results obtained in the final testing, the boys from the experimental class obtain grades between 9 and 10, and in the control class grades between between 7 and 9, specifying that in the initial testing, both classes started from close values, the grades being between 5 and 7.

Table 2. Results obtained at the initial and final tests, 5th grade, witness class

Name	Pushups (nr.)		Pull-ups on the gym bench (nr.)		Lifting tr. from supine position		extension tr. facial lying down 30''		Standing long jump (cm)		Jump over the gym bench. 30''	
	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F	T ^I	T ^F
A.E.	5	7	4	5	5	7	17	18	149	163	7	9
A.N.	6	8	3	5	4	6	16	18	153	164	8	10
C.C.	5	9	4	5	4	5	17	19	154	160	8	12
C.I.	4	7	3	4	4	7	17	18	155	162	8	12
D.F.	5	7	3	5	3	5	18	20	150	157	7	9
D.M.	6	8	3	4	4	6	16	18	151	158	6	8
H.A.	5	7	4	5	5	7	15	17	149	152	7	10
I.C.	4	6	3	5	3	5	16	18	151	158	8	15
J.A.	4	6	4	4	4	6	15	16	148	152	6	14
L.A.	5	7	4	5	4	5	17	18	149	153	7	15
L.V.	5	7	5	6	5	7	16	18	153	157	7	14
M.A.	4	6	3	5	4	5	18	18	147	154	8	15
M.M.	5	6	4	4	3	5	17	19	152	148	7	14
N.A.	5	7	3	4	4	6	15	17	149	148	7	13
V.G.	6	8	4	5	5	6	16	18	150	156	6	15
X	4,93	7,07	3,60	4,73	4,07	5,87	16,40	18,00	150,67	156,13	7,13	12,33
S	0,20	0,25	0,18	0,16	0,20	0,23	0,27	0,26	0,64	1,38	0,21	0,70
+/-S	0,70	0,88	0,63	0,59	0,70	0,83	0,99	0,93	2,32	4,98	0,74	2,53
Cv%	14,26	12,51	17,57	12,54	17,30	14,21	6,01	5,14	1,54	3,19	10,42	20,48

Conclusions

Following the results obtained by the students involved in the research, it can be noted that both groups started from close or equal values, and the significant difference was realized in the experimental group where the results were better.

The activities proposed in the experimental class compared to the control class in physical education and sports classes were much more effective and led to better results.

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