STUDY CONCERNING THE USE OF MODERN MEANS OFFERED BY BASIC GYMNASTICS FOR GENERAL STRENGTH DEVELOPMENT IN 8TH GRADE STUDENTS.

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Abstarct: Through the study developed with the 8th grade students from Negrilesti, Galati, we wanted to observe if by the usage of modern means offered by basic gymnastics, we would be able to increase the manifestation index of driving force quality. Towards this end, 4 general fitness training exercise programs were developed, oriented towards the development of sequential force. Also, within the learning programs where the objective was the development of general strength, the circuit work method was employed and accessible exercises such as cardiofit were proposed. This study was developed during an entire school year. The results gathered from the subject group have made us consider that the techniques employed were efficient and can be successfully applied in physical education lessons.

Keywords: educatie fizică, gimnastică, calităţi motrice, forţă, cardiofitness

Introduction:

The importance of physical exercise on child growth and development is an aspect that is no longer contested by anyone in a modern society. The organized practice of physical exercises is achieved in the school system for a long period of time through physical education.

Physical education is present in the instructive and educational process starting with very young children (6 years old), in the preparatory age group, until the university studies period, when the individual has already become an adult (20 years old or more).

This very long period of time in which "Physical education" traverses the process of transformation from child to adult, speaks for itself regarding the benefits the body obtains through its practice(Talaghir LG, 2015).

Gymnastics is an essential component in the "Physical education" school discipline. Considering the current lesson structure, presented by the majority of specialist in specialty books, courses or treaties, basic gymnastics are found in almost every aspect of Physical education.

Gymnastics dispose of of very rich and diverse means which confer it the basic discipline of the physical educations and sport status, as it has at its disposal proprietary theory and methods of teaching as well as specific means and forms of organisation, which are based on data gathered from related sciences (anatomy, physiology, biochemistry, biomechanics , psychology and pedagogy) (Nicola I., 2000).

Physical education lessons differ from school lessons through its content, structure, methodology, dynamics, space and the specificity of learning. The teachings legitimacy are specific; they aim to form driving perceptions and skills as well as the gathering of knowledge through the practice of physical education, as well as the education of driving and moral-volitional qualities (Iconomescu TM., 2013).

Method:

The hypothesis was that through the use of basic gymnastics the improvement of driving qualities, which are necessary to the individual in everyday life, can be achieved.

The purpose of this work is to demonstrate that, the use of means offered by basic gymnastics during school physical education classes can lead to the improvement of driving qualities and through this the goals of physical education can be achieved. This a significant aspect, especially in a rural environment, where often the basic material equipment is lacking.

The experiment took place in the Secondary School nr. 1, Negrilesti, in Galati area, where 2 students classes were involved to form the subject group.

As such, the students of 8th A and 8th B classrooms, formed of 17 and 18 students respectively, were the components of the subject group on which the basic gymnastics means were applied towards the development of general strength. In this subject group formed of 35 students, 15 were male and 20 were female.

The witness group was formed by students from Secondary School Nr. 1 Munteni, the village adjacent to Negrilesti village. This group was formed by 37 students, 14 of which were female and 23 male, members of the 8th grade from the school aforementioned. These students followed the planing organised by the school in which they executed the activities in the traditional way, according to the recommendations of the school curriculum. The proposed activities did not require any special materials as their practice was achieved by the use of corporeal weight.

Procedure:

The experiment constitutes in the implementation of complexes of harmonious physical development with a content oriented towards general strength improvement of the body on one side, and the implementation of specific programs aimed at developing general strength of the cardio-fitness variety, employed in lessons themes which pursued the improvement of the manifestation index of these driving qualities, on the other side.

Concerning the lessons themes that aimed towards development through specific means of the driving strength qualities, in the learning program 14 lessons were planned, of which 8 lessons were during Semester I and 6 lessons were during semester II. These were achieved through the circuit work method, with cardio-fitness type means proposed by myself and the organisational forms specific to the method employed. Also, the dosage took into account the physical capabilities of this age group.

For the groups included in the experiment we established 4 work stations in the proposed circuit. 4 circuits were used in total in a successive manner. As such, circuits 1 and 2 were used for 3 lessons and circuits 3 and 4 were used for 4 lessons. The alternative use of these work circuits for strength development aimed to improve the variety and as such the attractiveness of the proposed means.

Concerning the division of students for the proposed work stations, each station had in principal a number of 4 subjects, but for the grade 8th A there was a station with 5 subjects and for grade 8th B 2 stations with 5 subjects.

This change was the result of the number of students in each grade.

The components of the work stations were changed constantly to increase subject stimulation during the work executed in a specific group.

The subjects were solicited in the following tasks :

The oina ball throw, is the task which tests upper body strength. The subject throws the ball using an overhand throw, during which, the foot opposed to the throwing arm remains fixed to the ground. The throw is measured in meters and centimeters and the subjects were asked to execute 2 throws in a marked space where the best throw was marked down as performed.

The standing long jump was employed to test lower body strength. The distance from the tip of the feet, which are situated behind a marked line, to the heels in the landing position is measured. One or two balance actions are permitted to assist in the jump. 3 tries are allowed for each subject and the best performance is marked down. Results are measured in meters and centimeters.

Lifting of upper body from a laid down position (sit-up) is the task which tests abdominal strength. The subject is initially laying on his/her back, with arms bent and hands behind his/her head, elbows on the mattresses, legs bent with soles on the mattress, the tips of the feet are held by a fixed support (or by a colleague).

When the signal is given, the subject lifts his/her upper body into a vertical position, touching his/her knees with the elbows after which he immediately reverts to the initial position to repeat the execution. Only the executions in which the elbows touched the knees in up-right position

and the mattress was touched in the laid down position are marked as correct. The results are measured in number of correct executions during a 30 seconds period.

Lifting of upper body from a facial laid down position is the task through which the back muscle force is tested. The subject lays down with his/her face towards the mattress, hands behind his/her head, and is held at ankle level by a partner. The extension must be realized in such a way that the head must pass the gymnastics bench present in front of the subject, after which he reverts to the initial position. The number of executions achieved during a 30 seconds period are marked down and the task is only executed once.

Result and discussion:

The application of physical development complex during all classes as well as the application of circuit work using cardio-fitness type means with 8th grade students was meant to facilitate the development of their strength index as well as to assist them in obtaining favorable results during physical education.

Following initial testing concrete data was gathered which built the foundation of our work for the last part of the research.

The written results were centralized and subjected to statistical analysis in order to create a better picture of the level of progress achieved as well as to subject ourselves to the rigorous standards imposed by scientific research.

The interpretation of the results was done in 2 directions :

- between groups (witness group and test group)
- in the same group but between initial and final testing

The 3rd tab presents the results registered in the female group in the initial and final testing for all 4 tasks they were subjected to during the research. It depicts the analysis of progress achieved at the final testing between the 2 groups.

Table 3. Statistical analysis of initial and final test between the two groups of girls

GROUPS	FEMALE							
	Control Group **(n=14)**	Experimental Group **(n=15)**	t	P	Control Grup **(n=14)**	Experimental Group **(n=15)**	t	P
TESTS	T.I. $\bar{x} \pm m$	T.I. $\bar{x} \pm m$			T.F. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$		
Standing long jump (cm)	137± 0,06	136± 0,38	0,100	0,917**	141± 0,07	149± 1,04	3,560	0,001*
The oina ball throw (m)	17,44± 0,62	17,35± 0,47	0,458	0,651**	18,31± 0,43	19,01± 0,39	4,531	0,000*
Raising of trunk from laid down position (rep.)	11,14± 0,77	11,06± 0,79	0,261	0,796**	12,50± 1,01	15,53± 0,99	8,128	0,000*
Raising of the trunk from face-down position (rep.)	11,42± 0,93	11,33± 0,81	0,292	0,772**	12,57± 0,75	15,80± 1,42	7,542	0,000*

**>0,05; *<0,001

As you can observe, during the initial testing both the control and subject groups had similar values in the performance average.

The control group registered average values of 137 for standing long jump 17,44 m for the oina ball throw, 11,114 repetitions for the raising of the trunk from a laid down position and 11,42 repetitions for raising of the trunk from face down position while the subject group had average results of 136 cm for the standing long jump, 17,35 m for oina ball throw, 11,06 repetitions for raising of the trunk from laid down position and 11,33 repetitions for raising of the trunk from face down position.

In the final testing differences can be observed between the results obtained by the control group and the subject group, favoring the subject group.

As such, the control group obtained during the final testing an average of 141 cm for standing long jump, 18,31 m for oina ball throw, 12,50 repetitions for raising of the trunk from a laid down position and 12,57 repetitions for raising of the trunk from face down position while the subject

group obtained average results of 149 cm for standing long jump, 19,01 m for oina ball throw, 15,53 repetitions for raising of the trunk from laid down position and 15,80 repetitions from raising of the trunk from face down position.

In this case, the threshold is quite significant, $p < 0.001$. We can say that the application of means offered by basic gymnastics towards the development of driving force index had a positive effect in the subject group and contributed to obtaining superior results in these strength tests compared to the control group which trained in the traditional way.

We worked in the same fashion with the male subject and control groups and their results are represented in the 4th table. According to the registered data, the performance results during the initial testing between the control and subject groups are somewhat similar, in a similar way to the female groups.

The control group obtained during the final testing an average of 163 cm for standing long jump, 23,73 m for oina ball throw, 15,26 repetitions for raising of the trunk from a laid down position and 16,39 repetitions for raising of the trunk from face down position while the subject group obtained average results of 163 cm for standing long jump, 23,59 m for oina ball throw, 15,20 repetitions for raising of the trunk from laid down position and 16,00 repetitions from raising of the trunk from face down position.

Just as it was the case with the female groups, these initial results show us that the level of physical possibilities through which strength is manifested is similar for both groups. For this reason we wished to observe if through the application of cardio-fitness type means in the subject group and tradition work in the control group, the average results obtained during the final testing will be modified.

As you can observe, during the initial testing both the control and subject groups had similar values in the performance average.

As such, the control group obtained during the final testing an average of 175 cm for standing long jump, 24,76 m for oina ball throw, 16,47 repetitions for raising of the trunk from a laid down position and 17,60 repetitions for raising of the trunk from face down position while the subject group obtained average results of 178 cm for standing long jump, 25,44 m for oina ball throw, 17,55 repetitions for raising of the trunk from laid down position and 18,50 repetitions from raising of the trunk from face down position.

Table 4. Statistical analysis of initial and final test results between the two groups of males

Groups	MALE							
	Control group **(n=23)**	Experimental Group **(n=20)**	t	P	Control group **(n=23)**	Experimental Group **(n=20)**	t	P
TESTS	T.I. $\bar{x} \pm m$	T.I. $\bar{x} \pm m$			T.F. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$		
Standing long jump (cm)	163± 0,14	163± 0,16	0,739	0,464***	175± 0,61	178± 0,41	2,052	0,047**
The oina ball throw (m)	23,72± 0,95	23,59± 1,11	0,418	0,678***	24,76± 0,96	25,44± 0,87	2,422	0,020**
Raising of trunk from laid down position (rep.)	15,26± 1,42	15,20± 0,89	0,675	0,870***	16,47± 0,52	17,55± 0,84	2,499	0,002*
Raising of the trunk from face-down position (rep.)	16,39± 0,83	16,00± 0,72	1,624	0,112***	17,60± 1,53	18,50± 0,99	2,670	0,001*

***>0,05; **<0,05; *<0,01

The significance of the progress achieved by the male subject group is given by the analysis of the significance threshold which, with a value of $p < 0.05$ and < 0.01 shows that the difference between the two groups is significant, in favor of the experiment.

We can say that the application of the means of basic gymnastics cardio - fitness in the experimental group had the desired effect , namely the experimental group showed greater progress in improving quality indicators driving force to the control group .

The statistical analysis was to study direction and evolution of performance achieved by

each group . Thus, we can appreciate the progress made by each group independently from the other groups involved in research and we can appreciate the effectiveness of the means proposed or level of development of driving force skills, but not only. Table 5 presents data statistically analyzed within the control and subject groups for the female groups.

Table 3. Statistical analysis of initial and final test between the two groups of girls

GROUPS	FEMALES							
	Control group (n=X)				Experimental Group (n=X)			
TESTS	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	P	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	P
Standing long jump (cm)	137± 0,06	141± 0,07	4,09	<0,001	136± 0,38	149± 1,04	13,84	<0,000
The oina ball throw (m)	17,44± 0,62	18,31± 0,43	7,68	<0,000	17,35± 0,47	19,01± 0,39	9,84	<0,000
Raising of trunk from laid down position (rep.)	11,14± 0,77	12,50± 1,01	10,21	<0,000	11,06± 0,79	15,53± 0,99	27,03	<0,000
Raising of the trunk from face-down position (rep.)	11,42± 0,93	12,57± 0,75	11,77	<0,000	11,33± 0,81	15,80± 1,42	13,28	<0,000

Regarding the control group of females, by comparing the results obtained in the final testing with the initial testing, we can observe that it had better results. This can be the result of the fact that the initial means used during the school year to improve the strength index were efficient. The significance of the progress is depicted through statistical analysis and by the statistical indicator p which, being $< 0,001$, confirms it.

The female subject group had a similar evolution. Comparing the results from the final testing before the initial ones show better performance obtained by the group. These may be considered significant in terms of progress .

The significance factor is offered also by statistical analysis and the value of the p indicator. With a value of $p < 0.000$ the female group is significantly stronger. This leads us to consider that the specific gymnastic means proposed in the experiment, represented by the cardio-fitness means had the desired effect and greater efficiency compared to the means offered by traditional physical education lessons.

To observe the effects generated by the application of the means proposed by us towards the development of general strength index in males we continued the statistical analysis within each group involved in the research. The central data results are represented in table 6.

Table 6. Statistical analysis of the results in the male control and subject groups.

GROUP	MALE							
	Control group (n=X)				Experimental Group (n=X)			
TESTS	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	P	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	P
Standing long jump (cm)	163± 0,14	175± 0,61	9,356	<0,001	163± 0,16	178± 0,41	7,459	<0,001
The oina ball throw (m)	23,72± 0,95	24,76± 0,96	3,603	<0,001	23,59± 1,11	25,44± 0,87	5,017	<0,001
Raising of trunk from laid down position (rep.)	15,26± 1,42	16,47± 1,53	1,262	<0,001	15,20± 0,89	17,55± 0,99	1,476	<0,001
Raising of the trunk from face-down position (rep.)	16,39± 0,83	17,60± 0,98	3,844	<0,001	16,00± 0,72	18,50± 1,00	3,516	<0,001

In this table we can observe and comment on the evolution of performance obtained by the male control and subject groups in the initial and final testing.

As such, the control group obtained during the initial testing an average of 163 cm for standing long jump, 23,72 m for oina ball throw, 15,26 repetitions for raising of the trunk from a laid down position and 16,39 repetitions for raising of the trunk from face down position while the subject

group obtained average results of 175 cm for standing long jump, 24,76 m for oina ball throw, 17,47 repetitions for raising of the trunk from laid down position and 17,60 repetitions from raising of the trunk from face down position.

We can observe that the final results are superior to the initial ones which indicates the progress achieved by the male control group.

Their evolution was a positive one, favorable to the instructional and educational process and leads us to the conclusion that the means employed in traditional lessons are efficient.

The significance of the progress is depicted through statistical analysis and by the statistical indicator p which, being $< 0,001$, show itself to be singnificant.

The subject group obtained during the initial testing an average of 163 cm for standing long jump, 23,59 m for oina ball throw, 15,20 repetitions for raising of the trunk from a laid down position and 16,00 repetitions for raising of the trunk from face down position while the subject group obtained average results of 178 cm for standing long jump, 25,44 m for oina ball throw, 17,55 repetitions for raising of the trunk from laid down position and 18,50 repetitions from raising of the trunk from face down position.

Just like the female subject group, the male subject group has achieved superior results in the final testing compared to the initial testing.

This leads us to consider that the specific gymnastic means proposed in the experiment, represented by the cardio-fitness type means, have had a favorable effect on both the female and male subject groups.

The significance factor is offered also by statistical analysis and the value of the p indicator. With a value of $p < 0.000$, it shows us the male subject group has achieved significant progress.

Conclusions :

In this study, we started with the hypothesis that the usage of cardio-fitness type exercises, both within the harmonious physical development premises as well as lessons regarding the development of motor skills will favorable influence the improvement of general strength skills of students.

This experiment demonstrated that our starting hypothesis was true.

This leads us to affirm that this new ways in training muscle and joints, introduced in physical education lessons, can provide a viable alternative for the harmonious development of students of this age group.

Since they are not complex, these means of basic gymnastics of fitness-cardio type can be successfully completed by all students, even by those with reduced motor functions.

By the introduction of basic gymnastics exercises of the cardio-fitness type in the premises of harmonious physical development we achieved the orientation towards its strength aspect which led to the growth of physiological readiness indices in the lessons approach.

Reference:

1. Bontaş I., (2007) Tratat de pedagogie, Ediţia a VI-a revăzută şi adăugită, Bic All Publishing house, Bucureşti.
2. Farcaş V., (2003) Didactica educaţie fizice şi sportului, Universităţii Petru Maior Publishing house, Târgu Mureş,
3. Iconomescu T. M., (2013) Didactica educației fizice și sportului– Note de curs Editura Zigoto Publishing house, Galati.
4. Nicola I. , (2000) Tratat de pedagogie şcolară, Aramis Publishing house, Bucureşti
5. Săvescu I. – 2008, Educație fizică: ghid orientativ pentru titularizare şi definitivat, Aius Printed Publishing house, Craiova.
6. Stan L., Oancea I., Oancea M., Cojocaru Ş. (2005) Ghid metodologic privind proiectarea activităţilor de predare – învăţare – evaluare, Aramis Publishing house, Bucureşti.
7. Talaghir LG., (2015) Gimnastica acrobatică şcolară, Zigotto Publishing House, Galaţi
8. *** - 2009, Programele şcolare pentru educaţie fizică şi sport, (www.edu.ro//curriculum 2009.edu.ro).