STUDY REGARDING THE DEVELOPMENT OF MOTRIC QUALITY FORCE IN HIGH SCHOOL

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Abstract:

In this study we followed the development of motric quality - force. We tried, taking into account the Education Law and school curricula, to monitor this motric quality by applying the specific means. The study was made on two classes from high school, namely the class IX R.A. and R.B. from National College "Ștefan cel Mare", from urban medium. Class IX R.A. was the experimental group, and class IX R.B. was the witness group. After testing evaluation: dumbbells test with hands supported on gymnastic bank, test of simultaneously lifting up the body and feet (square), long jump test from standstill and vertical jump test it was made a comparison between the evolution of the two groups.

Introduction:

"Force" is a common term often used in the field of Physical and Sports Education, either as a physical quality (motric) of human, or as a mechanical feature of movement.

Secondly, force became a study object of mechanics. This expresses the size of bodies' interdependences, at that moment and it can be applied to a mobile body, accelerating it or to an immobile body, deforming it. Force can be expressed through a vector, having a sense, a size and a point of application.

The forces of gravity, of contraction, of inertia, of friction and so on, act on the same time in most movements, resulting that the dependence of force against the other movement's features (acceleration, speed and space) is complex.

As physical quality, the force expresses the size of performed charge and it is measured in kilograms force (kgf). A typical exercise for force is lifting the dumbbells using the pushed style, and from the dumbbell

weight itself that was pushed it results the index force. As a result, the distinction between the physical quality force and the term “force” from mechanics is strictly necessary.

Force definition describes the product between mass and acceleration (F=m.a) that corresponds to the action of inertial forces. In this situation, increasing the force can be achieved through increasing one of the two factors (mass or acceleration), or through increasing both factors. A great importance for sport activity is knowledge of the factor which produces the force’s increase, because changing each of these two factors determine clearly differentiated qualitative states. So, we could present two equations resulted from the formula of force used in mechanics. Equations express the two different situations of force’s manifestation.

$F_{max} = m_{max} \cdot a$ F_{max} = maximum force

$F_{max} = m \cdot a_{max}$ m_{max} = maximum mass

a_{max} = maximum acceleration

Material-method:

The aim of this research that is ongoing is to improve the motric quality force at pupils from classes IX RA and IX RB from National College “Ștefan cel Mare”, from Tîrgu Neamț. Optimization will be effective only if the used means and methods will be adequate.

The tests were given in the small hall of the high school, and the used materials were: measuring meter, whistle and stopwatch.

We made a random sort of 12 pupils from the two classes, RA (real profile A) and class RB (real profile B), and then we divided into two groups in order to achieve the experiment, namely: class IX RB was the witness group, and class IX RA was the experimental group. The two groups showed openness and genuine interest in the work that was performed.

The experiment took place over a period of 6 months namely the initial testing took place in 29.10.2015, and the final test in 29.04.2016.

Research hypothesis

In this research paper we started from the following hypothesis: we assumed that the methods and specific means used to develop force that are in line with age peculiarities, will be optimum and it will achieve the development of motric quality – force.

We applied four control tests: dumbbells test with hands supported on gymnastic bank, test of simultaneously lifting up the body and feet (square), long jump test from standstill and vertical jump test.

Below we present in table number 1 the standards found in National System of school evaluation:

Evaluation test	Minimal grading scale for grade 5	
	boys	girls
Dumbbells test with hands supported on gymnastic bank	-	5
Test of simultaneously lifting up the body and feet (square)	3	-
Long jump test from standstill	2.80	2.50
Vertical jump test	4	-

Specific methods and means used to develop force at our subjects are the following: stand up on the toes from sitting, simple lunges, extensions, crunches with the help of a partner, squats, side lunges.

Results and discussions:

After the initial tests were applied on subjects, we recorded the following results visible in tables 1, 2 and graphics number 1, 2:

Table no.1: values at initial tests al witness group

	Dumbbells test with hands supported on gymnastic bank (rep.)	Test of simultaneously lifting up the body and feet (square) (rep.)	Long jump test from standstill (m.)	Vertical jump test (m.)
X	8,16	9,33	1,8	22,41
S	1,46	1,37	0,12	3,66
C.V.	17,96	14,68	10,40	6,12

Table no. 2: values at initial tests at experimental group

	Dumbbells test with hands supported on gymnastic bank (rep.)	Test of simultaneously lifting up the body and feet (square) (rep.)	Long jump test from standstill (m.)	Vertical jump test (m.)
X	9.08	9.33	1.74	21.5
S	1.78	0.98	0.15	3.75

C.V.	19.61	10.55	11.03	5.72

After the final tests were applied on subjects, we recorded the following results visible in tables 3, 4 and graphics number 3, 4:

Table no.3: values of control tests at final testing at the witness group

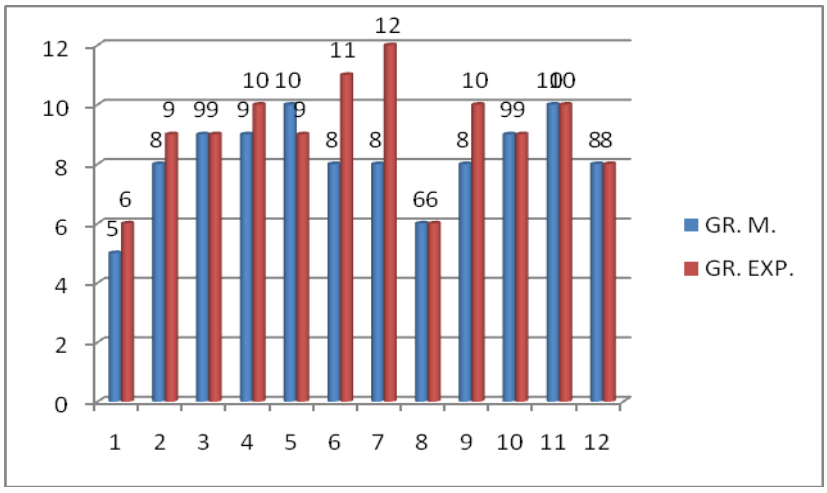
	Dumbbells test with hands supported on gymnastic bank (rep.)	Test of simultaneously lifting up the body and feet (square) (rep.)	Long jump test from standstill (m.)	Vertical jump test (m.)
X	9.66	10.25	1.81	23.91
S	1.23	1.35	0.18	3.67
C.V.	2.73	13.23	10.13	15.38

Table no. 4: values of control tests at final testing at the experimental group

	Dumbbells test with hands supported on gymnastic bank (rep.)	Test of simultaneously lifting up the body and feet (square) (rep.)	Long jump test from standstill (m.)	Vertical jump test (m.)
X	12.25	12	1.78	24.08
S	2.09	1.47	0.16	4.2
C.V.	17.09	12.3	9.26	17.47

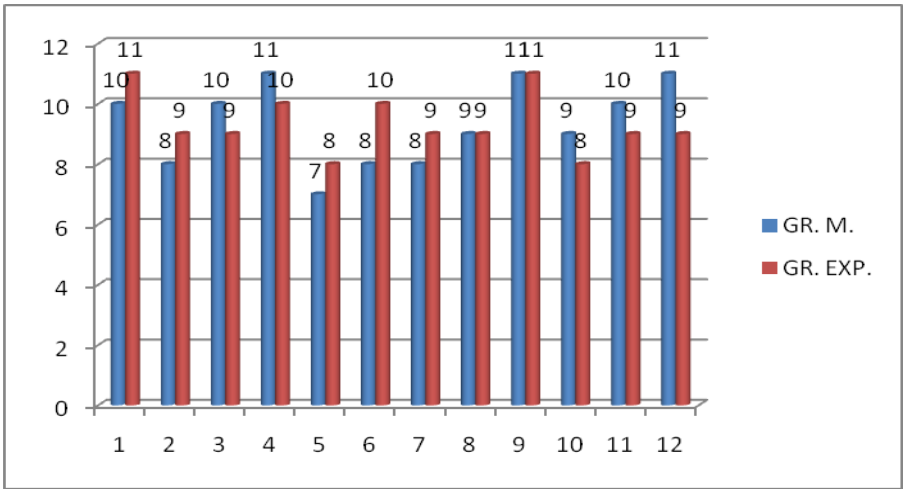
Interpretations of the results:

Initial results of the witness group - class IX- RB and of the experimental group– Class IX RA – are observed in the graphics number 1,2,3 and 4 from below.



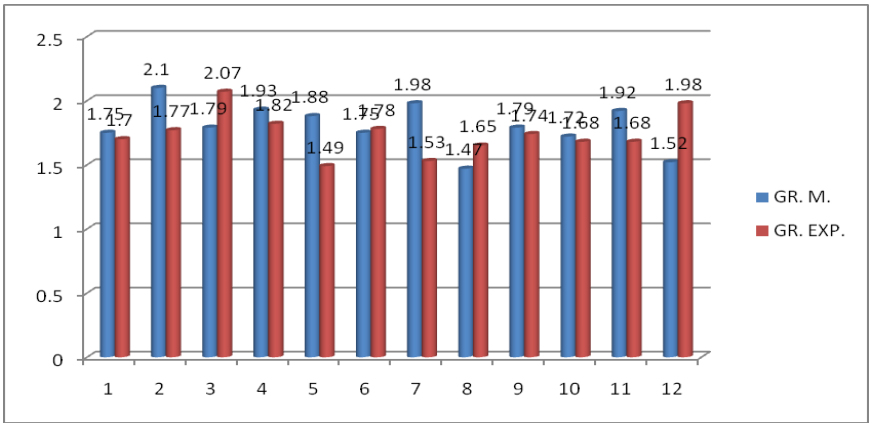
Graphic no. 1: Dumbbells test with hands supported on gymnastic bank

At this test the witness group recorded the following results: pupils L.A and V.C performed 10 dumbbells each and pupil V.A managed to perform a number of 8 repeats, while at the experimental group the pupil N.C performed 12 repeats, and pupil V.B 8 repeats. All these results were achieved in 30 seconds.



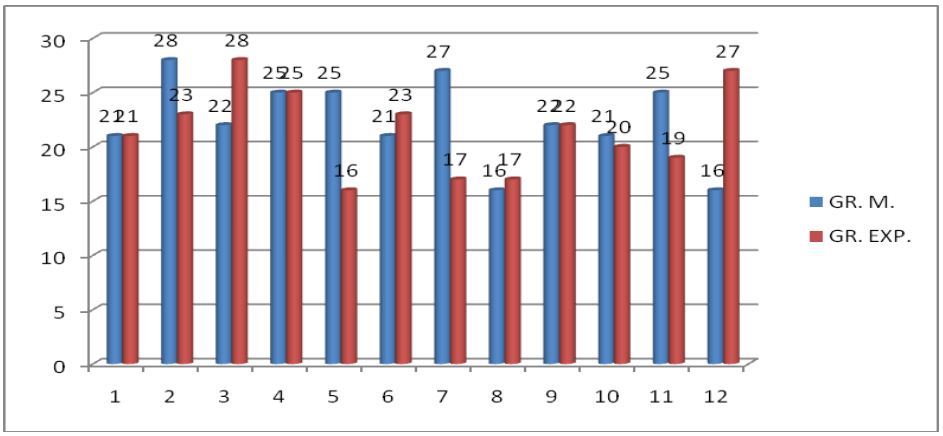
Graphic no 2 - Test of simultaneously lifting up the body and feet

At test of simultaneously lifting up the body and feet, the pupils from both groups had the same maximum number of repeats, namely 11: at witness group there were the pupils F.F and R.R together with pupil V.A, and at the experimental group were the pupils A.C and P.C. We mention that these repeats were performed within 30 seconds.



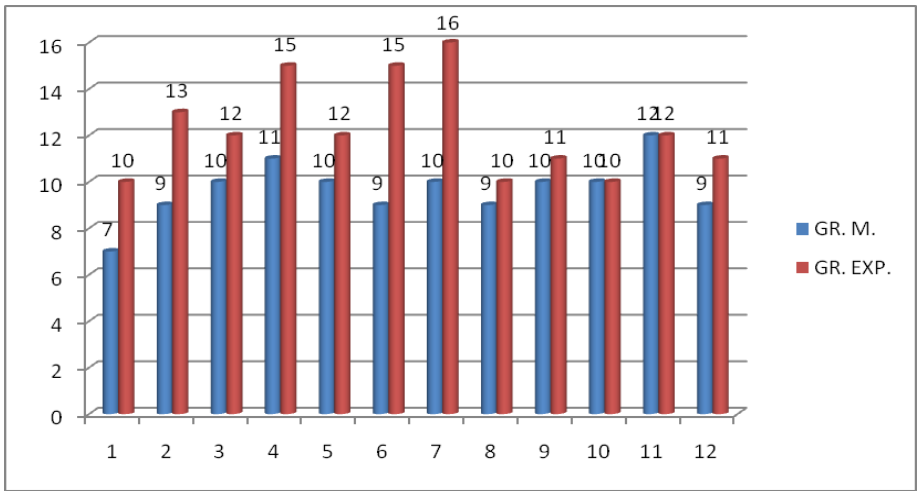
Graphic no.3: Long jump test from standstill

The best jump of boys from the witness group was of pupil B.A who achieved the performance of 2,10m, and at girls A.R jumped 1,75m; at the experimental group, the pupil B.I jumped 2,07m, and pupil V.B jumped 1,98m.



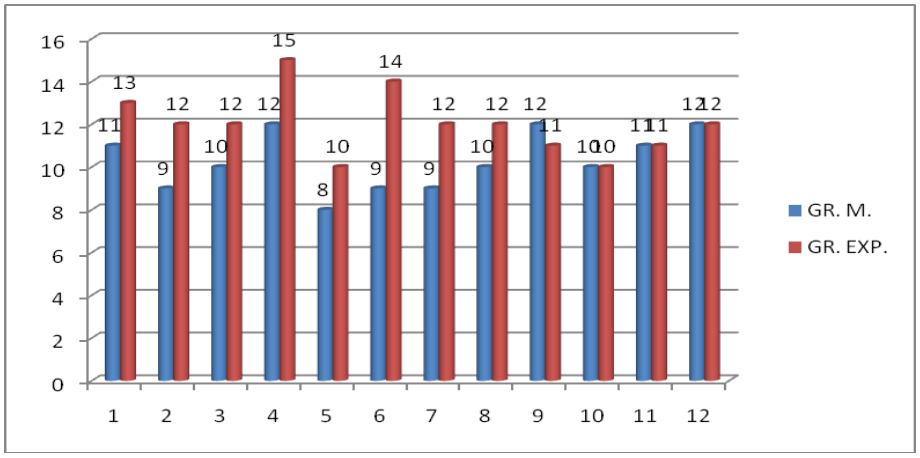
Graphic no.4: Vertical jump test

Maximum recorded jump both at the witness group (pupil B.A) but also at the experimental group (pupil B.I) at boys was 28cm, and at girls the best jump of the pupil from the witness group was A.R of 21cm, and V.B from the experimental group jumped 28cm.
Final results of the witness group - Class IX RB and of the experimental group – Class IX RA are observed in the graphics number 5,6,7 and 8 from below.



Graphic no 5: Dumbbells test with hands supported on gymnastic bank

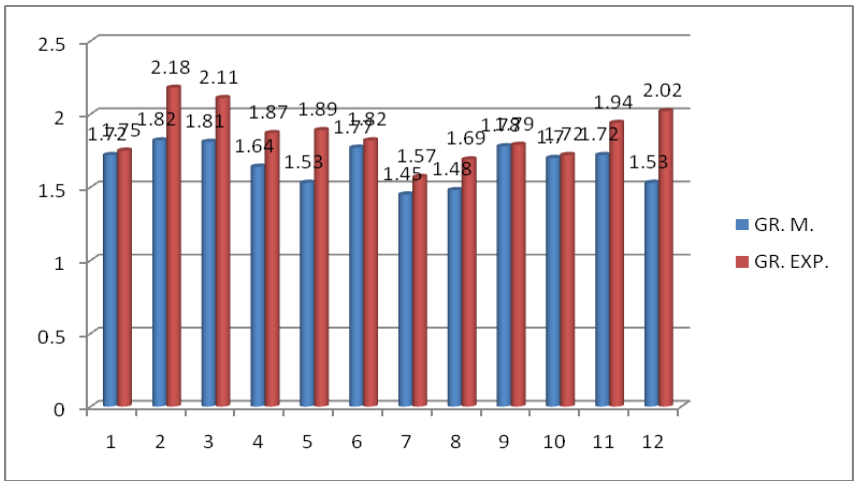
As a result of this study, we can say that the experimental group had a higher progress than the witness group. So, within the experimental group at boys the best score was 16 repeats performed by the pupil N.C. who progressed with 4 more repeats, and pupils P.C. and V.B. performed 11 repeats each, progressing with 1 respective 3 more repeats; while at witness group most of the repeats performed by boys were 12 (V.C.) who performed with 2 more repeats, and at girls 9 repeats (R.L. and V.A.) who performed with 3 respective 1 more repeats.



Graphic no 6: Test of simultaneously lifting up the body and feet

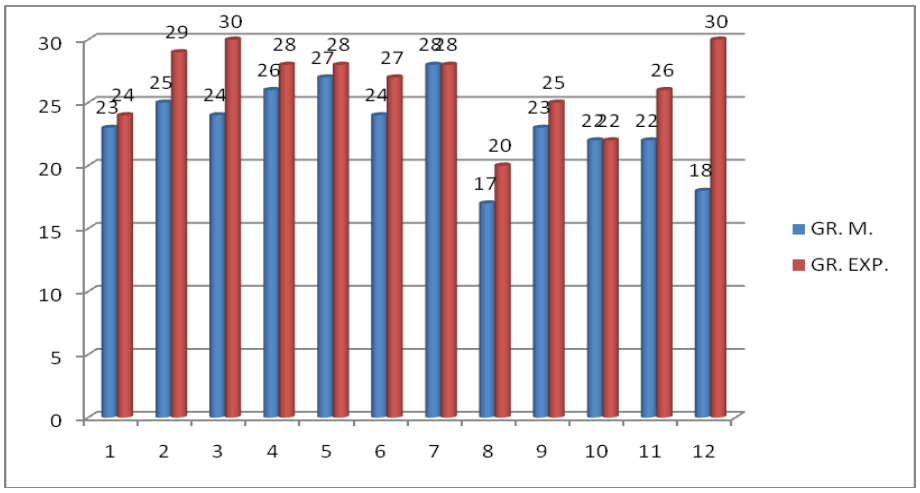
At test of simultaneously lifting up the body and feet, the witness group had the same number of repeats, both at girls and boys, namely: 12

repeats performed the pupils F.F. and R.R. together with the pupil V.A., where all progressed with 1 repeat. Instead, at experimental group the number of repeats was different: 15 repeats performed the pupil L.B., this progressing with 5 repeats and 13 repeats, the pupil A.C. performing two more repeats.



Graphic no 7: Long jump test from standstill

At witness group, pupil B.A. jumped 2,12m, that is with 2cm more, and pupil A.R. jumped 1,76m namely 1cm more than at initial test. At experimental group, the progress was higher than that of witness group. So, pupil B.I. jumped 2,11m, with 3cm more than initial one, and pupil A.C. had the maximum jump of 2,02m, with 4cm more.



Graphic no. 8: Vertical jump test

At this test there were recorded again higher values. So, at witness group, pupil B.A. jumped 29cm, with 1cm more, and pupil A.R. jumped 23cm, with 2 cm more than the initial test. At witness group, the progress was again higher, the pupil B.I. and pupil V.B jumping 30cm, with 2cm respective 3cm more than the initial tests.

Conclusions:

1. The purpose of the conducted research, namely the optimization of motric quality force was reached because the used methods and means were adequate, making the optimization to become efficient.
2. It was achieved the desired result, namely the development of motric quality force and fulfillment of research's objectives, these ones being the research's hypothesis that became viable.
3. There were achieved the desired results after covering and solving paper's tasks.
4. It was made a delimitation of the subjects with a better physical condition, to those who had a smaller motric baggage, through the test used in research.
5. The experimental group had a visible progress in comparison to the witness group, due to the specific means and methods that were applied, statistical – math indices and graphic representations being solid arguments that come to support this conclusion.

References: (TNR 12, left aligned, line spacing 1)

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STUDIU PRIVIND DEZVOLTAREA CALITĂȚII MOTRICE FORȚA ÎN ÎNVĂȚĂMÂNTUL LICEAL

Cuvinte cheie: calitate motrică, forța, ciclul liceal, urban.

Rezumat: În acest studiu am urmărit dezvoltarea calității motrice forța. Am încercat, ținând cont de Legea învățământului și a programei școlare, să monitorizăm această calitate motrică prin aplicarea de mijloace specifice. Studiul a fost făcut pe două clase din ciclul liceal și anume clasa a IX-a R.A. și R.B. de la Colegiul Național Ștefan cel Mare, din mediul urban. Clasa a IX-a R.A. a fost grupa experiment, iar clasa a IX-a R.B. a fost grupa martor. În urma aplicării probelor de evaluare: Testul de flotări cu mâinile sprijinite pe banca de gimnastică, Testul de ridicare simultană a trunchiului și picioarelor (echerul), Testul de săritură în lungime de pe loc și Testul de săritură pe verticală s-a făcut o comparație între evoluțiile celor două grupe.