

## STUDY ON DEVELOPMENT OF FORCE THROUGH ATHLETICS SPECIFIC MEANS AT SEVENTH CLASS

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### Abstract

**Purpose.** The purpose of this paper is to present and apply a series of specific athletics methods and means, to force development and demonstrate their efficiency in achieving some purposes and objectives of the school physical education, namely the development indicators of the driving qualities force growing, and to contribute to research activities enrichment, of the physical education and school sport domain.

**Methods.** Driving qualities are features of body, concretizing in to perform ability actions, of moving with some speed, force, resistance and skill indices (S.F.R.S.). There was used circuits with intervals, with repetitions, weightlifter method, power-training method and isometric contraction.

**Results.** The results of study shows that the methods used has succeeded growth indices of the force development.

**Conclusions.** The hypotheses was checked and the intended purpose was reached because of rigorous and scientific activity planning, in cycle of lessons what was precise drawn up. Using appropriate means and following the results of initial and final tests was observed an increase of the indices of force development.

**Key words:** force, development, means, athleticism.

### Introduction

As the instructive-educational process, physical education is a social activity designed and carried out to improve physical development, and driving capacity of the practitioners of physical exercises, depending of the age and sex, social integration requirements, specific at one profession, etc.

Physical education is available an extremely large number of physical exercises, adapted and differentiated from all subsystems and variables, assuming that the practice systematic, continuous and by the well defined scientific rules of these exercises (C., Albu si colab., 2000).

Physical education carry on in among young school generation is the best organized subsystem, its level, existing teachers with specialized training in teaching physical education, as a compulsory discipline, specific programs, various forms of organization and practice physical exercises by the students and their performance evaluation, based on fixed criteria and samples (C., Filip si colab., 2002)

Physical education and sports, represents

and constitute a constant and continuous, for all the factors responsible for the education of the young generation.

Physical education activities follow developing and improving the physical side (biometrical), of the personality, but favourably influence and performance activities (N., Ionescu, V., Mazilu, 2005).

Ideal of physical education in school allow determines of the educational goals, them concretising on a different planes and levels general prescriptions of the ideal (E., Scarlat, 1981).

The purpose of the physical education in schools, it is the development of individual personality, in accordance with society requirements from acquisition of autonomy, efficiency and balance with the natural and social environment, it can be defined in two ways, namely:

-- strategic, which ensures on long term of development area on long term;

-- practical, which basically sets up the main actions in a defined historical period (E., Scarlat, M. B., Scarlat, 2002).

School physical education aims, represents the materialization of the objectives in all their aspects, namely: somatic, functional, physical-motoric, cognitive, affective and social (E., Scarlat, P., Dragomir, M., Hondrilă, I., Mironescu, 2008).

The purposes can be concretizing in a variety of objectives, what targeting influence personality whole.

The current stage, leads to the terms of efficiency, development, evolution, progress, in all spheres of social activity.

Locating this terms to the content of physical education class, stem part of the most important basic requirements, to be met, to conduct an effective physical education class.

### Content

It is well known and demonstrated that only by measuring and then judging, can be the size of a phenomenon or activity application, that is intended to be studied, controlled, especially directed towards an finality.

Hypotheses, are temporary solutions to problems of scientific research.

The assumptions of this paper are as follows:

-- If the action may reveal an increase to level of develop of driving quality, force,

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materialized by the results obtained by students, to control samples.

-- If the difference between the methods and means used, between control group and experimental group, will to obtain an improvement to the indices of force development and other driving qualities, because without the development of other basic driving qualities we can not approach only one development, in this case, the force.

Deep knowledge of morpho-functional and psychological particularities of each child, of each group, or classes with we work, represent the only way to allow point out for the two mistakes, more frequent in physical education and sports activities, namely over-taxed body through over-exaggerated efforts, on the one hand and excessive caution, because of that the training is maintained at a lower level of student possibilities, on the other hand.

Secondary education is a new step, upper primary education, fact witch determines by the student's adaptation efforts, especially in the new system of organization, witch without exception, consisting in transition from mode teaching all school disciplines, to one teacher, to separate disciplines teaching by several teachers.

Secondary education finalities, may be classified as:

-- insurance for all students to a standard comparable to European Education;

-- formation at the students of the ability to communicate effectively in real situation, using the romanian language, mother language, foreign languages and various specialized languages;

-- formation and developing of adaptation and integration capacity in community;

-- formation of positive attitudes in relation with the social environment; of tolerance, responsibility and solidarity;

-- ensuring optimal educational and vocational orientation in relation to the students aspiration and skills;

-- formation of the capacities and motivations necessary learning in the a changing society conditions;

Realization of the objectives of school physical education, is possible only if it systematically follow final completion some finalities of the primary importance for the motor training, such as motor skills development.

In the professional activity of a any citizen, especially in the athletic training, development level reached by driving qualities has a great importance.

We can say that entire motor actions variety make by individual, in the daily activity or sports, is carried out properly or less correct, directly related to the degrees development of the motor skills.

Motor actions make mainly on account of four basic motor skills namely: speed, skill, strength and endurance and on account some manifestation forms of their.(Gh. Mitra, Al. Mogoş 1977)

Of driving qualities own them and specific certain parameters, through witch we can determine the value and contribution to the achievement of each driving qualities at realization of a different driving actions.

Thus, for determine the value of force, used as a standard parameter – load, for speed – movements rapidity, for resistance – action duration, and for skill – complexity and precision of action.(E. Firea 1979)

Objectification of the process for developing to the driving qualities, determine one a more precise ordering of the teacher, oblige him to continue searching, to find the most effective means and forms of activities organization, ensure a greater efficiency in achieving planned objectives.

In any school, even those who do not have a optimal material basis, on any time, motor skills development, can be done in the level of curricula requirements.

Driving qualities, are divided into three main categories, namely:

-- basic motor qualities: speed, skill, force and resistance, some authors adding mobility and flexibility;

-- specific motor qualities: are those involved with priority in the practice sports branches and contests;

-- special or intermediate motor qualities: mobility and flexibility.(Gh. Mitra, Al. Mogoş 1977)

“Driving qualities are features of body, materialized in the ability to perform movement actions, with some indices of speed, force, resistance and skill.”(E. Firea 1979)

Driving qualities are native character, whose initial manifestation level, depends on the genetic hereditary fund.

Force, easier perfectly driving qualities, can be taught systematically from nine, ten ears, having a upward trend and a maximum possibility for improvement.

Force is a body's ability to overcome resistance, by muscular effort or possibility to lift, to transport, to overcome, to pull some weight on muscle contraction.(Gh. Mitra, Al. Mogoş 1977)

Muscular force, is one of the most important driving qualities, frequently required in motor activities, there are no movement that can be done without force, without it, the possibilities for learning motor qualities, are practically nonexistent.

Force, like other motor qualities otherwise, involves a several forms of manifestation, forms that can be classified as by the numbers of muscles fibers involved:

-- general force, in witch participate of most important muscular groups of the body;

-- specific force (segmentary), in witch participates by contraction, to overcome a resistance, only one or a several muscles groups;

After muscle contraction character, the force can be classified into:

a). static force (isometric), with contraction muscle fiber length does not change, engaged in making motor action or act;

b). dynamic force (isotonic), with contraction, length of muscle fibers involved in the effort, changes;

c). joint force, combined, when to overcome resistance, be effect dynamic and static contractions in report with drivers acts and action those;

Force development method.

First, we work to increase force of all muscle groups, involved in fixing and maintaining in good posture, of a segments as whole body, in this sense, one drive priority, giving to the development of back and abdominal muscles.

To develop the force we use two main groups of exercises, namely:

a). exercises with defeats their body weight (push-up's, jumping, climbing, exercises to develop force abdominal and back muscles);

b). Overcoming external resistance exercises, using different objects with different weights (dumbbells, sand bags, sticks, resistance to a partner, different devices such as: gymnastics bank, weightlifting, etc.).

The experiment was conducted during as 1 october 2010 – 2 mars 2011.

The tasks of this work were:

-- information and documentation on the subject;

-- choice of the school unit and the group of students with experiment was performed;

-- establish a representative set of control samples with to be verified the research hypotheses;

-- "harvesting" and noting the results obtained at initial testing;

-- sustain the final testing and evaluating results;

-- processing and interpretation data, of statistical and mathematical terms;

-- graphic representation;

-- presentation of conclusions and recommendations.

Research methods and techniques

Research methods and techniques used in this paper were documentation, references study, observation, experimental study, methods of data processing and interpretation (statistical-mathematical and graphical).

The statistical and mathematical procedures have allowed the description and characterization, of objective based (digital) of the various data collected, were represented measured indicators.

Statistical indicators used in this experiment were:

-- The Arithmetic Average:

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

-- Standard Deviation:

$$S = \pm \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}} \quad \text{sau} \quad S = \pm \sqrt{\frac{\sum d^2}{n - 1}}$$

-- The Coefficient of Variation (Cv):

$$C_v = \frac{S}{\bar{x}} \cdot 100$$

Measurements and tests:

To demonstrate the growth indices of force development, by effective means, appropriate and related to the age and sex of the students, was choice a relevant system control samples for this experiment, namely:

1). Push-up's for checking as a upper limbs, how many of 15;

2). On lying back, legs blocked on the trellis, raising and lowering of the body (abdomen), for 30 seconds;

3). Standing long jump (S.L.J.);

4). Traction in arms, how many of 10 executions?;

5). Ten-steps jump;

TABLE OF INITIAL AND FINAL RESULTS OF TESTS Boys **Table nr.1**

SUBJECTS	Push-up's		Abdomen (30 sec.)		S.L.J. (cm.)		Traction in arms		Ten-steps jump	
	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf
S1	6	7	19	21	163	165	5	6	15	16
S2	7	9	16	18	165	167	4	6	14	16
S3	5	6	17	19	165	167	5	6	14	15
S4	7	9	15	17	160	164	6	7	15	17
S5	6	8	18	20	163	165	5	6	13	15
S6	7	10	19	21	164	167	6	8	12	14
S7	9	11	18	20	162	164	4	5	15	16
S8	6	8	17	18	166	169	7	7	17	17
S9	5	6	16	19	162	164	6	8	18	18
S10	6	8	19	21	168	170	5	7	16	18
$\Sigma=$	64	82	174	194	1638	1662	53	66	149	162
$X=$	6.4	8.2	17.4	19.4	163.8	166.2	5.3	6.6	14.9	16.2
<b>PROGRESS</b>	<b>1.8</b>		<b>2</b>		<b>2.4</b>		<b>1.3</b>		<b>1.3</b>	

We observe an improvement of results at the final tests, compared to the original, so the methods used were appropriate to tasks and objectives proposed.

SUBJECTS	Push-up's		Abdomen (30 sec.)		S.L.J. (cm.)		Traction in arms		Ten-steps jump	
	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf
S1	7	9	19	21	164	168	7	9	16	18

TABLE OF INITIAL AND FINAL RESULTS OF TESTS Girls **Table nr. 2**

S2	9	11	17	20	165	167	8	10	17	20	
S3	10	12	21	23	167	171	6	9	15	18	
S4	8	11	18	20	162	166	5	7	16	18	
SUBJECTS	Push-up	11	Abdomen (30 sec.)	22	S.Led (cm)	164	Traction in 6 arms	8	14	Pen-steps jump	17
S6	8	11	18	20	162	166	5	7	16	18	
S7	8	10	18	22	163	166	6	8	19	21	
S8	10	10	18	24	165	168	8	8	15	17	
S9	8	10	19	22	166	167	5	8	18	19	
S10	8	12	17	19	163	166	7	8	14	16	
S5	7	8	21	21	164	167	4	6	17	19	
S6	9	11	20	22	165	167	6	8	16	18	
S7	11	12	19	21	163	165	5	7	18	20	
S8	9	11	21	22	164	167	6	8	16	18	
PROGRESS	8	10	17	18	162	164	9	10	17	19	
S10	9	11	18	20	163	166	7	9	19	21	
Σ=	87	99	190	205	1646	1671	65	78	164	182	
X=	8.7	9.9	1.9	20.5	164.6	167.1	6.5	7.8	16.4	18.2	
PROGRESS	1.2		1.5		2.5		1.3		1.8		

We observe an improvement of results at the final tests, compared to the original, so the methods used were appropriate of task and objectives proposed.

TABLE OF INITIAL AND FINAL RESULTS OF TESTS –BOYS **Table nr. 3**

We observe an improvement of the results at the final tests, compared to the original, but we also observe an improvement of a final results, much higher than those obtained from control group, given that the methods used in the experiment were much more effective.

TABLE OF INITIAL AND FINAL RESULTS OF TESTS GIRLS **Table nr. 4**

We observe an improvement of the results at the final tests, compared to the original, but we also observe an improvement of a final results, much higher than those obtained from control group, given that the methods used in the experiment were much more effective.

After studying and analyzing the final tests results, we observe a trend of two groups, but we will see better progress in the experimental group, which leads to the conclusion that the means and methods chosen and used in this group, were the most effective, to achieve proposed goals, namely growth indices force development at seventh class.

### Conclusions

Educational process of physical education and sport, represent the process of physical qualities education, of driving qualities, technical and tactical qualities, of some sports branches and sports games, through process, developing all organs and body functions, perfecting motor qualities, moral volitional and mental qualities, and forming a large numbers of movement skills, thus creating the basic for the successful development of sports activity and work capacity.

Specific methods and means of physical education and athletics, for prepare in all planes at the level class, on which research was carried out, were

and planning of physical education activity, should be done only after through knowledge of the group of students who we work, and only after a specific personal training, prior theoretical point of view, profound and scientifically based and that take into account of the methodological programs of physical education lessons at this age.

Conducted research hypotheses, were verified because the level of preparation of students as seventh, has been growing.

At the choice of the methods and means, must take into account to the level of physical and motor development of the students and their age and sex particularities.

It is well maintain of control samples, to be made after each cycle or classes system, or at end of a longer training.

At the control samples covered by this research, may be added and others samples, on line level checking of the motor qualities development indices.

SUBJECTS	Push-up's		Abdomen (30 sec.)		S.L.J. (cm.)		Traction in arms		Ten-steps jump	
	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf
S1	5	8	18	21	165	166	6	8	14	16
S2	6	8	15	17	164	167	7	10	16	19
S3	7	9	16	18	167	168	4	5	13	15
S4	6	7	17	21	160	165	7	9	16	20
S5	8	11	19	22	161	164	6	8	14	16
S6	5	8	16	19	165	168	5	7	14	17
S7	8	10	18	21	164	166	6	6	17	17
S8	7	9	17	18	165	168	8	9	18	19
S9	8	11	18	20	163	167	7	9	15	18
S10	6	8	16	20	167	171	6	9	17	19
Σ=	66	89	170	197	1641	1670	62	80	154	176
X=	6.6	8.9	17.0	19.7	164.1	167.0	6.2	8.0	15.4	17.6
<b>PROGRESS</b>	<b>2.3</b>		<b>2.7</b>		<b>2.9</b>		<b>1.8</b>		<b>2.2</b>	

selected, measured and then applied in accordance with the particularities of gender, age and level of training of seventh class.

Research has revealed that analysing, systematizing and applying means of training, to increase of the indices of force development, proved to be effective and educating forms for motor qualities, specific to athletics.

Although this process complex and continually, are considered as general, it must be customized for each objective and task in part, must reported that the number of classes systems, what we want to achieve in the end.

Also research has demonstrate that the approach to prepare students as seventh, programming

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