

**THE EXPERIMENTAL STUDY CONCERNING THE  
IMPROVING OF THE VERTICAL DETACHEMENT OF THE  
NINTH CLASS STUDENTS - USING THE SPECIFIC  
BASKETBALL GAME MEANS**

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**Keywords:** explosive force, operational structures, technical processes

**Abstract:** The force is a dynamics quality, highly complex and rather nondescript. The expansion is a force manifestation and it is defined as the ability of muscle groups to develop maximum strength in a short time, strength-speed. This paper aims to emphasize if the development methods and means of specific basketball play, of the combined dynamics quality, the expansion at flashing legs level, in ninth class students, have application and are effective in the basketball game. Acting on students, by means of the basketball game, of attack through shooting from dribbling, it take place a higher load of the musculature, that develops in parallel, the force muscle and speed in ankle, knee and hip femoral articulations.

**Introduction**

The term „ expansion" is considered to be a specific term of physics and the question is whether this term in the sport has a clear sense or is different from that used in mechanical bodies and elastic media in the sense „ sudden expansion of one elastic body comprimed over rest of its size". The therm content "force - speed" emphasizes that this term is understood as "the capacity that has the neuromuscular system to overcome a resistance with the greatest possible speed syncopation".

The expansion, the explosive force or speed under power regime, as force manifestation form, is defined as the ability of muscle groups to develop maximum force in the shortest possible time.

The expansion has a different behave in body segments and depends on the following factors:

- The number of muscle fibers which is contract simultaneously;
- The contraction speed of the active muscle fibers, rapid mobilization of phosphates as in the white and red fibers;

- The contraction ability of the muscle fibers, the thickness and cross-section fibers.

The expansion, the vertical jump height is achieved through the exercise or specific gesture „high jump,, which is an auto projection where works only mechanical linkages with support. The height of one vertical jump coincide with the height of the raised center of the body gravity, and depend on the detachment speed, the detachment angle, which is on 90 degrees, theoretically.

In conceptual sense it can say that: „ *the expansion is power manifestation effect in stretching – shortening cycle, expressed by vertical detachment height measured in centimeters as a result of force and speed combination*”.

#### **The goal and motivation of research approach**

The research purpose is to highlight the basketball game practicing effectiveness, on the development of expansion in physical education lessons with ninth class students.

This approach was followed:

- Physical training level increases of ninth class students, and aerobic and anaerobic exercise capacity;
- Designing of a training program using basketball exercise, through shooting from dribbling;
- Developing of dynamic games which are specifics for basket ball for expansion strength improving, both lower and upper limbs;
- Causes and issues identification that are key for finalizing the vertical detachment;

The development of this study started from the assumption that the use of basketball game will obtain higher values of ninth class students, in improving of vertical detachment, expansion respectively.

The basket ball is characterized as a dynamic game with several changes of situation in game conditions. Playing the game showcase a special motricity, which are required in different processes and technical-tactical actions. The shooting from dribbling improvement, increases efficiency vertical detachment, bringing of the team as many points near the basket hoop. The battle for basketball game wining, the match the game ask some psychophysical and behavioral qualities of both students and players such as: combativeness, self-control, will to win, capacity for analysis and decision inventiveness.

**The used research methods and techniques:**

1. The bibliographic study method;
2. The observation method;
3. The anthropometric measurements method;
4. The experimental method;
5. The statistical and mathematical method.

**Subjects and research stages**

The present study is a ascertained longitudinal study that included two groups: ninth class A students from Secondary School of Cajvana, Suceava as a control group with a staff of 10 boys, while the experimental group made up of students from the ninth class B, from the same secondary school, with a staff of 10 boys. The two classes have undergone of an initial testing, for tests: the tapes, tapes metric, medicinal balls, timer, whistle, poles, were used in order to ascertain the training level and development of motor skills in particular force to the legs, explosive force, expansion through vertical detachment.

**Stage of research**

In the first stage we carried out the initial tests with timer, whistle, poles, markings, tape measure, medicinal balls of 2kg, basketball ball.

In the second stage of the study we conducted the final tests, followed by obtained data interpretation from summative assessment.

In order to make this study I used:

- The anthropometric measurements method;
- The development level of motor skills.

**SPEED**

- On movement as manifestation form - running speed on 50 m, with the start up;

**FORCE**

- Of legs - long jump from standstill;
- Of upper limbs – throwing of 2kg medicinal ball, from standstill, with both hands overhead.

In order to evaluate the technique process of shooting from dribbling we used the following tests:

**Test no. 1**

Dribbling through five stakes located from 2 m and 2m, with making a shooting on 2 points.

*Methodic indications:*

- The student is not allowed to stop dribbling;

- The student is forced to run all the way without to break down the stakes.

### Test no. 2

Dribbling through 3 opponents using race, the opponent overcoming, dribbling from running and 1 or 2 steps and shooting. The defenders use the footwork, being in a circle with a radius of 2 m, with restricted mobility action, which is marked of a limit on 0.5 m left/right side of the outer circle by two stakes.

*Methodic indications* - the students are required to perform overcome within existing space.

### Test no. 3

Dribbling on the run from the middle place with shooting near the panel.

#### Assessment system:

- Steps to starting - 1 point penalty;
- Poor control of ball in dribbling - 1 point penalty;
- The offense of fault in attack or felling of one stake - 1 point penalty;
- Shooting with steps committing - 1 point penalty;
- Slow tempo of entire motric structure performance - 1 point penalty;
- Dribbling finished with shooting and points scoring - 2 points penalty.

The recording starts from mark 2. The mark 1, automatically is given.

**Table 1 The anthropometric measurements and tests of dynamic qualities at the control group**

Current no.	Name and surname	Age	High (cm)	Weight (kg)	Wingspam	T1 (s)	T2 (m)	T3 (m)
1	D.A.	15	1.69	55	172	7	1.80	12.0
2	M.C.	15	1.72	65	175	6.9	1.80	10.0
3	B.V.	16	1.80	66	185	6.7	1.90	9.5
4	H.C.	15	1.70	64	174	7	1.85	13.0
5	B.I.	16	1.78	67	181	6.8	1.90	12.5
6	D.P.	16	1.80	66	184	6.7	2.00	10.5
7	S.A.	16	1.88	83	191	6.9	1.90	9.0
8	R.I.	15	1.70	65	173	7	2.00	11.5
9	P.B.	15	1.69	55	172	6.8	1.85	12.0
10	P.M.	15	1.75	67	178	6.9	1.90	10.0
Average			1.75	65.3	178.5	6.87	1.89	11

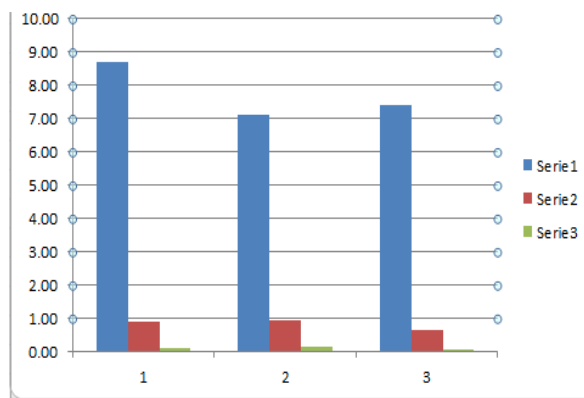
**Table 2 The anthropometric measurements and tests of dynamic qualities at the experimental group**

Current no.	Name and surname	Age	High (cm)	Weight (kg)	Wingspam	T1 (s)	T2 (m)	T3 (m)
1	P.M.	16	1.80	66	183	6.8	1.80	13.0
2	P.B.	16	1.78	65	181	6.7	1.85	11.5
3	M.I.	16	1.71	65	174	6.9	1.90	13.5
4	I.R.	15	1.64	53	169	6.8	1.80	12.0
5	G.A.	16	1.75	65	178	6.8	2.00	10.5
6	G.C.	16	1.72	64	175	6.7	1.85	12.5
7	M.F.	15	1.75	66	178	6.9	1.85	10.5
8	G.D.	16	1.70	64	173	6.9	1.85	11.5
9	F.A.	16	1.71	65	174	6.8	1.80	10.0
10	E.C.	16	1.69	55	172	6.9	1.82	13.5
Average			1.73	60	175.7	6.82	1.85	11.85

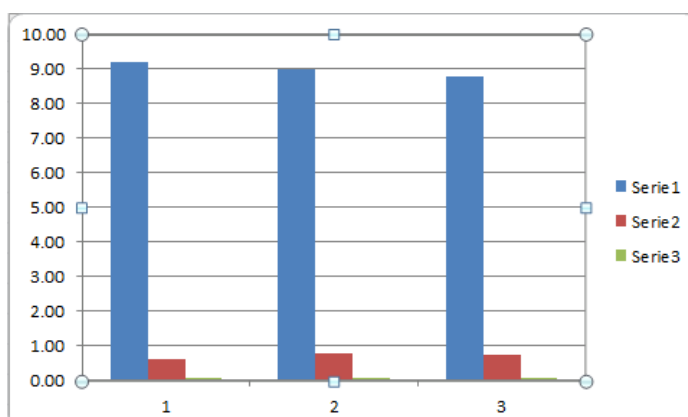
In ninth class students, the running speed average of the control group, in the initial testing was on 6.87 sec. and of the experimental group was 6,82 sec., being superior in comparison with control group.

Long jump from standstill arithmetic average of the control group in the initial testing was 1.89 m and of the experimental group was 1.85 m. So at the experimental group it is registered a difference of 4 cm, a better result having the experimental group. At the medicinal ball throwing it is registered a difference of 85 cm between the control and the experimental groups. It is noted that in anthropometric terms, the groups have approximately equal values.

### The control group results generated by mathematical and statistical indicators in the final testing



### The experimental group results generated by mathematical and statistical indicators in the final testing



Data interpretation is based on the arithmetic average analysis and graphics interpretation.

- At the test no.1, the arithmetic average of the control group in the initial testing is 8, as well as at the experimental group. In the final testing, at the control group, is 8.70 and at the experimental group is 9.20, being registered at the experimental group a progress of 1.30 points, Standard deviation of the control group, in the initial testing has a value of 1.0, and in the final testing is 0.90 in comparison with standard deviation of the experimental group, which in the initial testing is 0.83 and in the final testing is

0.60, that mean there is a small dispersion toward the mean. The variability coefficient indicates a high spreading in both groups, in the initial testing of the control group was 0.12 and of the experimental group was 0.09, and a moderate spreading in both groups in the final testing, being 0.10 in the control group and 0.06 in the experimental group.

- At the test no. 2, the arithmetic average, in the initial testing of the control group is 6, and of experimental group is 7, and in the final testing of the control group is 7.10 and of the experiment group is 9 so that at the experimental group is registered a progress of 1.90 points.
- At the test no. 3, the arithmetic average in the initial testing of the control group was 6 and of the experimental group was 6.90, and in the final testing, the arithmetic average of the control group was 7.40 and of the experimental group was 8.80. So, the improving progress of shooting from dribbling through vertical detachment belongs the experimental group who through physical training improved their performance.

### **Conclusion**

Following this experimental study concerning the vertical detachment by basketball means, such as the shooting from dribbling, it notes that the detachment height grows continuously but not uniformly, during of 15-17 years old at boys, before falling slightly to 18 years old. Arithmetic average value is widening in favour of boys, which continues to grow to 18 years old, so at 14-15 years old, the shooting from dribbling, recorded a jump of 7.36 cm.

The greatest change was seen at boys, in the 15-16 years old, the vertical detachment height being about 8.5 cm.

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**Titlu:** Studiu experimental privind îmbunătățirea desprinderii pe verticală a elevilor de clasa a IX-a utilizând mijloace specifice jocului de baschet.

**Cuvinte cheie:** forță explozivă, structuri operaționale, procedee tehnice.

**Rezumat:** Forța este o calitate dinamică, extrem de complexă și greu de definit. Detenta este o formă de manifestare a forței și este definită ca fiind capacitatea unor grupe de mușchi de a dezvolta forță maximă într-un timp scurt, viteză în regim de forță. Această lucrare își propune să sublinieze dacă metodele de dezvoltare și mijloacele de joc specifice baschetului, la elevii de clasa a noua, dezvoltă la nivelul picioarelor forță explozivă. Acționând asupra elevilor, prin intermediul jocului de baschet cu procedee precum aruncarea la coș din dribbling, se observă că are loc o încărcare mai mare a musculaturii, care dezvoltă în paralel forța musculară și viteza în articulația gleznei, genunchiului și coxo-femurală.