

INFLUENCE OF PHYSICAL TRAINING PLIOMETRICS EXERCISES THE FIFTH GRADERS

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Abstract: In this research we wanted to see if the application an pliometrics exercises program the fifth grade students can improve their physical preparation. The experiment was conducted in physical education classes for a period of 4 weeks in middle school no. 37 of Constanta with the fifth class boys.

Methods: The research was based on the experiment, achieving a initially test and a final test from which data were collected the necessary research.

Results: To carry out research there were two groups: an experimental group (which were applied pliometrics exercises) and a control group (who worked after school programs established in early). The results obtained allow us to say that the program we implemented resulted in improved physical preparation of secondary school students.

Conclusions: Pliometrics exercises planned over four weeks develops quality force-speed as required in increasing physical preparation of secondary school students.

Key words: physical education, pliometrics exercises, force-speed, jumping.

The introduction and the objectives of the research

Expert opinion, a very important role in preparing athletes to assign the power-speed, because high levels of these qualities contribute compelling motive to increase sports performance. (C. Vittori, 1996) Conditional human ability to perform movements in a shortest possible time to define what we mean by speed driving action.

In the last period of time, it promotes rapid period of driving ability and take the field whose nature is expressed as: maximum acceleration and speed of execution of individual movements (acyclic) or the sequence of movements of the same type (cycle) and frequency these movements (the maximum individual rate of response to a signal).

The concept of speed include concrete conditions in which movements have achieved maximum speed or maximum speed possible action. (M. Stoica, 1999)

The speed link the concept of rapid force, which has components such rapidity and force, in relation to one another and that makes the sequence. (A. Macri, 2005) One benefit of early strength, rapid growth rate is expressed as force, while the maximum force will yield reached the peak force during movement execution.

Speed or power under detention is a combination of basic driving skills encountered in many branches of sports. Force-velocity is characterized by the ability to overcome resistance sportsman with a very high rate of contraction. (R. Manno, 1996) Main desire is the methods used to increase performance as much speed through engagement of large number of muscle fibers in simultaneous action.

Flash, this form of manifestation of the force is defined as the ability of muscle groups to develop maximum strength in as short a time. Force training will help develop not only the legs but the trunk region, lower back and abdominal muscles, which serve as

lower extremity stabilizer and allow more independent movement and explosive leg and thigh.

Pliometrics exercises emphasize lateral movement, change of direction and vertical jumping. Regarding speed drills, which focuses on the ability to start, acceleration, frequency and stride length. These exercises will make an athlete's movements more efficient and agile.

Pliometrics regime, known as the "cycle stretch - shortening" or "stretch reflex miotatic" refers to exercise that muscle contraction is loaded into an eccentric - long, immediately followed by a concentric contraction - shortening. Demonstrated that a muscle stretched before a contraction will contract more vigorous and faster. Pliometrics action is based on reflex muscle tension. (T.O. Bompa, 2002). Pliometrics contraction is a special type of muscle work and addressed to several body segments. The main problem of training is the possibility of converting the muscle fibers and slow speed. In scientific literature, data on this problem are poor, but begin to leave to catch a glimpse of hope for a transformation of slow fibers in fast fibers. Thus, those involved in pliometrics regime change fibers is noticeable.

The pliometrics contraction of a series of phenomena occurs nerve. Classic muscle recruitment is explained by Henneman's law or "size principle", which shows that slow fibers are recruited before fast fibers, irrespective of movement. There is therefore in this case, a default initial mobilization of slow fibers, which is not desirable for explosive movements.

Pliometrics considering a structure that integrates three elements - an eccentric phase, a brief moment of isometrics and concentric phase - training issues will follow two routes operated: a synthetic approach to address simultaneously the three parameters and an analytical method that takes into account only part of the elements.

Pliometrics is represented by those exercises that make muscles in a rapid contraction before an explosive contractions. These exercises include jumping in all forms.

Choosing the optimal intensity requires a great deal of attention. Pliometrics exercises require extremely body and therefore must follow an appropriate program with exercises gradually moving from the mild to the most difficult.

Purpose of paper

Applying a workout pliometrics over the four weeks to fifth graders lead to an improvement in physical preparation.

Method

The experiment was conducted in physical education classes for a period of 4 weeks in primary school no. 37 of Constanta with the fifth grade boys. To achieve research formed two groups: an experimental group (fifth grade A), which were applied pliometrics exercises and a control group (fifth grade B), who worked after school programs established early.

To see if pliometrics exercises led to an improvement in the physical preparation of students to conduct two tests: an initial test and final test.

Results

Data obtained from the two tests were statistically achieving the following:

Sample		Standing long jump (cm)					
Group		Group experiment		Group control		G.E.	G.C.
Testing		T.I.	T.F.	T.I.	T.F.	T.F.	T.F.
n = 15	X	165	170,667	161,667	162,333	170,667	162,333
	DS	15,119	11,159	11,598	9,612	11,159	9,612
	Cv	9,16	6,54	7,17	5,92	6,54	5,92
	t	4,141		0,807		2,191	
	p	< 0,01		> 0,05		< 0,05	

To test the standing long jump, the experimental group subjects showed an average of 170.667 cm to 165 cm in final testing at initial testing, the real difference being 5.667 cm, thus having a significant difference in threshold of $p < 0,01$. In control group the value of "t" calculated as the average difference between initial and final test, was 0.807 - statistically insignificant difference ($p > 0,05$).

If the final test of the two groups in this sample to obtain a value of "t" of 2.191, statistically significant difference ($p < 0,05$).

Variability coefficient values, below 10% indicates a high homogeneity of the results obtained by subjects of both groups in this sample.

Sample		Standing high jump (cm)					
Group		Group experiment		Group control		G.E.	G.C.
Testing		T.I.	T.F.	T.I.	T.F.	T.F.	T.F.
n = 15	X	30,467	33,067	29,067	29,667	33,067	29,667
	DS	5,78	4,92	3,39	3,086	4,92	3,086
	Cv	18,97	14,88	11,66	10,40	14,88	10,40
	t	6,5		1,655		2,267	
	p	< 0,001		> 0,05		< 0,05	

In the sample height of the jump in place, considering the above table, we see significant progress between mean initial and final tests to test the experimental group ($t = 6,5$, $p < 0,001$). In the control group value of "t" is 1.655 representing an insignificant difference ($p > 0,05$).

Following final testing and comparing the results of the two groups to obtain a value of "t" of 2.267, significant difference ($p < 0,05$), which means that the program we developed and applied made a

great contribution in preparing experimental group subjects.

Regarding the coefficient of variability, it shows an average uniformity of the performance of subjects in this sample.

Conclusion

Pliometrics exercises planned over a period of four weeks of force-velocity develops quality, as required in increasing physical preparation of secondary school students.

Pliometrics exercises and the difficulty to match driving skills acquired. Variety of these exercises will help prevent boredom and fatigue that can occur during, exercise.

Choosing the optimal intensity requires a great deal of attention. Pliometrics exercises require extremely body and therefore must follow an appropriate program with exercises gradually moving from the mild to the most difficult. Beginners should establish a base running drills on a flat surface with both legs and a low-impact exercises. Once established a power base, may be included in the program more demanding exercises, such as jumping on one leg, high hurdles and higher impact exercises.

Pliometrics exercises are scheduled immediately after heating, before other exercises that make up the training program. Since the focus of training that includes pliometrics exercises is neuromuscle fatigue may have a negative effect, especially for less-trained athletes. Therefore must be running high intensity pliometrics exercises only rest

when athletes are what will significantly reduce the chances of injury.

Making pliometrics exercises will end when fatigue adversely affect equipment performance. Break between sets and between meetings should be sufficient to enable the body to recover and eventually to adapt to physical stress imposed. Repetition and series to be made dependent on exercise intensity. In general, exercise intensity and number of repetitions is inversely proportional to the effect that, as the intensity is even greater number of repetitions is smaller, and vice versa, as the intensity is even smaller number of repetitions is greater.

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