STUDY ON DEVELOPMENT OF THE SWING IN THE PHYSICAL EDUCATION

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Abstract

Purpose, The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

Methods, In sporting training, it rarely occurs that only one quality dominates both effort and movement, this usually is the product or the combination of at least two driving qualities. There are situations when force and speed are equal, the combination of endurance and force produces muscular endurance; the result of combining endurance and speed is speed-resistance; agility is a combination of speed, power and coordination; agility and flexibility results in mobility. It is recommended that specific exercises are practiced, concurrent with the exercises specific to the development of the driving exercises. The development of the dominant driving qualities can have a positive or a negative transfer effect.

Results. There was significant differences, the biggest progress were made by the experimental group, and for the control group the progress was insignificant.

Conclusions, Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.

Key word: swing, plyometric, leaps, anaerobic-alactacide power

Introduction

Generally, moving qualities represent a more interesting subject among specialists, the methodology of the development of these qualities, being the centre preocupation of the experts from different sporting branches. During the driving act, the driving qualities influence each other and constantly depend on one another, and this leads to the so-called manifestation regime of the driving qualities (O.T. Bompa, 2001). This regime represents the differencial way of manifestation of a driving quality, determined by the influence of one or more driving qualities, with which the first manifests in the same time or even entirely and represents functional combinations of speed, force, skill and stamina. The force and speed are found in a reverse proportion rapport: if the speed is bigger, the charge used is smaller (O.T. Bompa, 2003).

Sporting and physical education activities make up a direct stimulus, nearly exclusive for the morfo-functional development, and their absence can lead to situations harmful to health, of which dimensions are hard to anticipate. The mobility represents the key element for the tasks that target the instructive content of any physical education programme (D. Colibaba-Evulet, I. Bota, 1998). In the physical education and sporting activity in the non-specialized universities we are interested in the exhausting effort which, through its parameters (intensity, volume, complexity), obliges their bodies to react intensive and generalized. For this we chose that in our research we approach the conditional capacities, especially those combined of speed and strength, in physical education classes with the students of the Petroleum Gas University of Ploieşti. Through this process we followed the effects which resulted after applying the preparal program in the research, adressed especially to the development of the combined driving capacities, through plyometria (M. Deacu, 2008).

Purpose

The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

Hypotheses

1. If we use the plyometric exercises during training, the raise of the swing of students who practice sporting games during the physical education lesson will be possible.
2. A higher manifestation of the maximum anaerobic-alactacide power during the sporting game will be realised based on the gatherings from the preparation program.

Tasks

- Fixing some methodical priorities and the principles of the plyometric training;
- Fixing the tests;
- Elaborating a training program using the plyometric method;
- Fixing the development level of the the combined driving qualities of the subjects (initial and final testing);
- Arranging and grouping the gathered data necessary for the statistical-mathematical processing;
- Processing the obtained data and drawing the conclusions.

Research methods

- *Scientific documentation;*
- *The descriptive method – the observation;*
- *The experimental method;*

➢ *Processing and interpretation methods: the logical method, the statistics method, the grafical method.*

The content of the experiment

The experiment took place during the physical education lessons with the students of the Petroleum Gas University of Ploieşti in the 2007 -2008 learning year.

The subjects of the research are 40 students from the Petroleum Gas University of Ploieşti, 20 students belonging to the experimental group and the other 20 to the control group. The subjects of the experimental group were trained with the use of plyometric exercises during the physical education classes.

➢ **The applied tests** – *The Ion Grinţescu Test* to measure the height of the vertical jump, and to measure the maximum anaerobic-alactacid power the Sargent Test was used, with the following formula:

$P = \sqrt{4{,}95xGx\sqrt{D}}$; where P = power in kg/s, G = corporal weight, D = swing in cm. Three vertical jumps are performed -the best jump is considered- (V. Tudor, 2005). The estimation of the power was made in comparison with the values presented by dal Monte 1988(C. Bota, 2000). For the technique not to influence the height of the jump, only one vertical jump without a big upsurge is recommended. This type of jump is called the

„Sargent jump", named after the man who analysed it from a biomechanic point of view. It is one of the most relevant proofs concerning the estimation of the swing at the lower limbs level, in a vertical plan. It is executed standing next to a 4 meter long wooden ruler, the performer streches his arm up, leaves a mark on the ruler, then jumps with a small upsurge and makes another mark on the ruler. The distance between the 2 marks is measured. To measure the height of the jump we used the Ion Grinţescu method (V. Tudor, 2005).

➢ **The training program** included the following exercises (M. Deacu, 2008).:

- **Multiple or sequential jumps** – the on-the-spot jumps are combined with the from the spot horizontal jumps. These require a maximum effort utilised in a sequence. The distance must not be bigger than 30 meters.
- **In-depth jumps** – counter-movement jumps are used from a high crate, followed by counter-movement jumps off boxes, benches, low fences.
- **On-the-spot jumps** – a jump in which the detachment and the landing is executed on the same spot. These jumps are of a somewhat small intensity, but they still have a short damping phase and require a fast comeback. The jump is executed sequentially, with a short damping phase between jumps.
- **From the spot horizontal jumps** – the maximum effort used when detaching from the ground horizontally or vertically is stressed.
- **Exercices with boxes** – ths type of exercises utilises jumps successive with the jumps in depth. These exercises depend on the height of the boxes. They have both horizontal and vertical components.

The obtained results

Table 1. The values of the maximum anaerobic-alactacide power – Experimental Group

Nr.	Surname Forename	T.I.			T.F.		
		Stature (cm)	Weight kg	$P = \sqrt{4{,}95xGx\sqrt{D}}$ kg/s		Stature (cm)	Weight kg
1	Mihăiță A	163	64	122- satisfactory	125- satisfactory	163	64
2	Duță M..	179,5	69	129- satisfactory	133- satisfactory	180	68
3	Burducea D.	183	79	118- satisfactory	121- satisfactory	183	78
4	Neacşu A.	177	97	135- satisfactory	138- satisfactory	177	95
5	Ciutacu L.	175,5	74	121- satisfactory	129- satisfactory	180	74
6	Zamfir R.	175	64	102-weak	106-weak	175	64
7	Necula I.	182	67	135- satisfactory	141- satisfactory	182	67
8	Eftimie B.	165,5	64	105-weak	111-weak	166	64
9	Ghiță A.	172	57	107-weak	113- satisfactory	172	57
10	Manea D.	166	61	115- satisfactory	119- satisfactory	167	61
11	Călin A.	169	49	103- weak	107- satisfactory	169	49
12	Bostină A.	179,5	79	123- satisfactory	127- satisfactory	180	78
13	Frâncu B.	176	71	128- satisfactory	133- satisfactory	176	71
14	Gheonea I.	172	61	116- satisfactory	121- satisfactory	172	61
15	Negulescu I.	174,5	92	120- satisfactory	128- satisfactory	174,5	90
16	Matache C.	172,5	64	128- satisfactory	132- satisfactory	173	64
17	Lixandru L.	176	70	128- satisfactory	135- satisfactory	176	70
18	Niculae I.	175	80	116- satisfactory	118- satisfactory	175	79
19	Ghiță M. .	180,5	64	113- satisfactory	118- satisfactory	180,5	64
20	Marcu D.	177,5	56	107- satisfactory	111- satisfactory	177,5	56

Chart 1. The values of the maximum anaerobic-alactacide power – Experimental Group

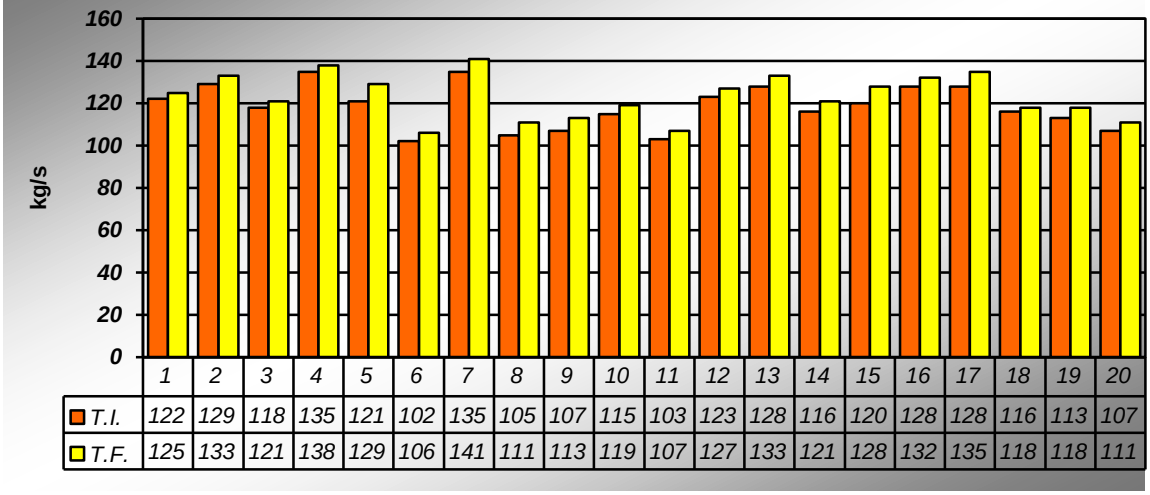


Table 2. The values of the maximum anaerobic-alactacide power – Control Group

Nr.	Surname Forename	T.I.			T.F.		
		Stature (cm)	Weight kg	$P = \sqrt{4,95xG}x\sqrt{D}$ kg/s		Stature (cm)	Weight kg
1	Ionescu D.	176	76	135- satisfactory	137- satisfactory	176	76
2	Toader C.	176	56	109- weak	112- weak	176	56
3	Alexandru B.	171,5	85	128- satisfactory	131- satisfactory	171,5	85
4	Dumitrescu C.	186	70	108- weak	111- weak	186	70
5	Iancu A.	174	60	113- satisfactory	114- satisfactory	174	60
6	Ioniță S.	173,5	62	105- weak	106- weak	174	62
7	Şarpe D.	181	79	113- satisfactory	111- weak	181	78
8	Marin D.	171,5	72	105- weak	105- weak	172	72
9	Gheorghita A.	175	89	142- satisfactory	145- satisfactory	175	89
10	Ionescu B.	169	96	125- satisfactory	126- satisfactory	169	95
11	Dinu B.	183	61	116- satisfactory	116- satisfactory	183	61
12	Marin A.	179,5	66	129- satisfactory	127- satisfactory	179,5	66
13	Ionescu M.	168,5	62	114- satisfactory	112- weak	169	62
14	Matei D.	166	61	115- satisfactory	116- satisfactory	166	61
15	Bălăceanu D.	166	52	113- satisfactory	113- satisfactory	166	52
16	Petre G.	174,5	69	129- satisfactory	130- satisfactory	174,5	69
17	Rosu V.	174,5	61	111- weak	112- weak	176	61
18	Stancu M.	188	103	129- satisfactory	127- satisfactory	188	100
19	Hluşcu C.	180	60	108- weak	110- weak	180	60
20	Pulbere N.	174	58	111- weak	112- weak	174	58

Chart 2. The values of the maximum anaerobic-alactacide power – Control Group

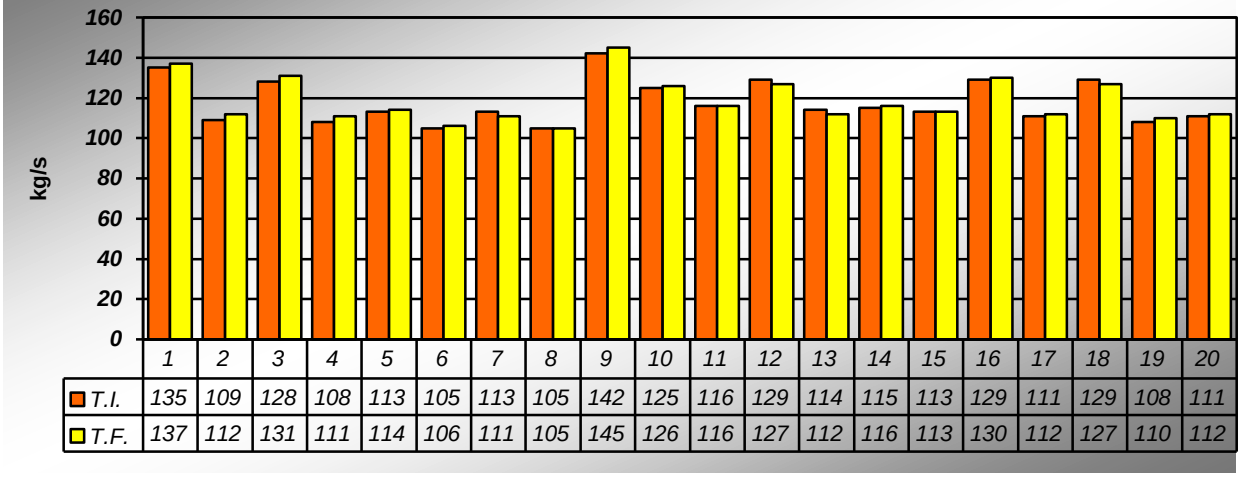
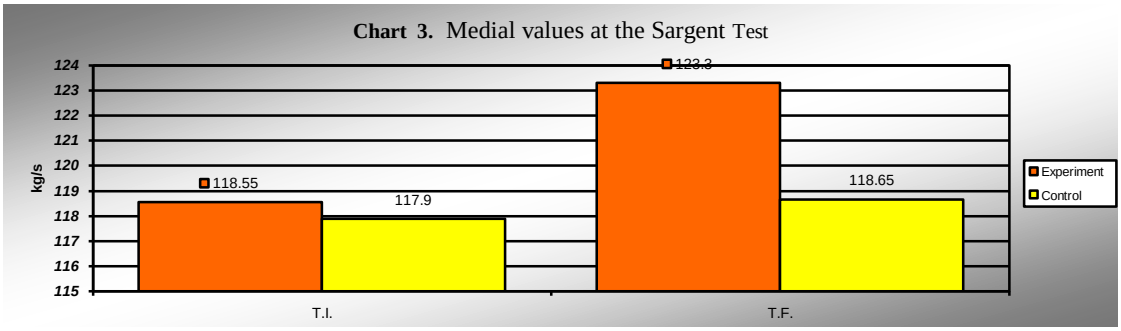


Table 3. The progress realised by each group – Sargent Test (kg/s)

Group	Sargent Test			
	T.I.	**T.F.**	D = T.F. - T.I.	$D_{T.F. - T.I.}$ (%)
Experimental	118,55	123,3	4,75	4
Control	117,9	118,65	0,75	0,63



The result of the Sargent Test for determining the maximum anaerobic-alactacid power is (M. Deacu, 2008):

The experimental Group, at the final testing, registers a gain in power of 4% (4,75 kg/s) in comparison with the initial testing. Two students modified their grade from satisfying to weak.

The Control Group, at the final testing, registers a gain in power of 0,63% (0,75 kg/sec) in comparison with the initial testing. Two students modified their grade from satisfying to weak.

Conclusions

- At the Sargent test which evaluates the maximum anaerobic-alactacid power, the biggest progress were made by the experimental group, and for the control group the progress was insignificant. On a whole, it can be appreciated that regarding the anaerobic-alactacid capacity of the subjects, there still is the possibility of improvement in a significant quantity through the use of plyometric exercises, which concludes to the fact that the functional reserves of young people are insufficiently explored.
- Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.

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