INFLUENCE OF THE VARIOUS PER CONTENT PROGRAMS WITH MOTOR ACTIVITIES

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Abstract: At the beginning of 2011, two author's programmes were created – Body-programme GD-PP and Body-programme GD-MS, with included exercises for different muscle groups of complex influence, presented in a specific order. The aim of the research is to make comparison of the influence of the various per content programs with motor activities, on the physical qualities and morpho-functional indices of female students. With both programs, the building up effect on the physical qualities has been established, as it is higher in Body-program GD-PP.
The morpho-functional indices were positively affected in both programs, but Body-program GD-MS changes are greater. We recommend the application of Body program GD-PP and Body program GD-MS in the mandatory study on physical culture and sports in the higher schools.

Introduction

Higher schools play an important role in the process of creating of intellectual and material values of each society. Highly-qualified and skilled workers are prepared in them, in the various spheres of science, technology, management and culture.

In the environment of global information society, the character of the training process in higher schools is also changing. The educational load of students is constantly increasing, their work becomes more intensive and full of suspense, and it is conducted at conditions of a decreased motive activity, with static tension of a limited number of muscles, mainly for keeping up the working pose.

Of special importance for keeping up the optimum working capacity is the correct observation of labor and rest regimen. Of importance is the wide use of various per content trainings with motor activities, for improvement of the physical qualities and morpho-functional indices [5, 7, 8, 9]. The change of the components of physical fitness reveals the efficiency of every training programme. For the needs of the educational system, it is useful to develop programmes of physical exercises, that would contribute for the development of physical fitness [1, 3, 4].

At the beginning of 2011, two author's programmes were created – Body-programme GD-PP and Body-programme GD-MS, with included exercises for different muscle groups of complex influence, presented in a specific order.

Body-programme GD-PP methods, has been presented at the International scientific conference "Contemporary Technologies of Education, Control and Assessment of Physical Culture and Sports in

the Training System", 01-03.09.2011, in Varna [6]. Body-programme GD-MS methods, has been presented at the VI International Balkan Congress for Education and Science: The Modern Society And Education, 30.09-01.10.2011, in Ohrid [2].

The aim of the investigation is to compare the influence of the various per content programmes with motor activities on the physical qualities and morpho-functional indices of female students.

The following tasks have been fulfilled:

- Tests have been conducted prior and after the experiment, on a developed test battery.
- Pedagogic experiment has been conducted with Body-programme GD-M" and Body-programme GD-PP.
- The data got have been analyzed.

The Study

Subject of the investigation is the influence on the physical qualities and morpho-functional indices of female students.

Object of the investigation are 95 female students from the Faculty of Economics, Agrarian Faculty, Veterinary-medical and Medical Faculty of Trakia University – Stara Zagora town.

Pedagogic experiment for a period of 6 weeks has been conducted. In the beginning and in the end of the experimental period, 5 tests have been conducted, for measuring the physical qualities ("standing long jump", "stand-by (support) hold", "sitting forward tilt", "getting up from occipital back position to sitting position" and "step-test duration").

For measuring the body-mass content, the professional, medical Japanese BODY COMPOSITION ANALYZER BC - 420MA "TANITA" has been used. The following has been measured: body-mass weight, fat mass, fat fee mass, body water content, muscle mass, basic metabolism, internal fats and metabolic age. The pulse at rest and after the step-test has been measured.

With Body-programme GD-PP, exercises included have been conducted with dumb-bells of 2 kg each, without using fitness devices. During the first two weeks, after the fulfillment of each exercise, there is a rest of 1 minute. Exercises are fulfilled twice (two rounds), and there is a rest of 3-5 minutes between the first and second round. During the third and fourth week, the rest is of 1-2 minutes, between the exercises for the various muscle groups, i.e. the exercises for one muscle group are fulfilled without a rest. During the third week, two rounds are conducted, and during the fourth – three rounds. The rest between the rounds is 3-5 minutes. During the fifth and sixth week, the exercises are fulfilled without interruption, i.e. one round is played without a rest. There is a rest of 3-5 minutes between the rounds. Three rounds are conducted. Stretching of 10 – 15 minutes puts the end.

With Body-programme GD-MS, exercises included have been conducted with fitness devices and exercises with dumb-bells of 1 kg each. The first two weeks start with three series of 8-10 repetitions each, and 1-2 minutes rest between the repetitions and 3-4 minutes rest, between the exercises. The following four weeks, the loading is increased to three series of 15-20 repetitions each, at the same time, decreasing the time for rest between the series to one minute, and between the exercises – to 2-3 minutes. Both Programmes have been approbated in Trakia University.

Scientific-investigation and mathematics-statistic methods have been used – analysis through bio-electric impedance (Health Monitor – Tanita Version 2.0.1), pedagogic experiment, variety analysis and comparative analysis.

Findings

On ***Table 1,*** the statistic indices, necessary for comparative analysis of data have been presented. Apparent is the increase in the achievements of female students, included in the trainings on the two programmes (column $\bar{d}$). Their analysis shows the efficiency of the work on Body-programme GD-PP and Body-programme GD-MS.

The investigated indices are grouped into two groups – physical qualities and morpho-functional indices.

In the first group (physical qualities), “sitting long jump”, “stand-by hold”, “sitting forward tilt”, “getting up from occipital back position to sitting position” and “step-test duration” have been included.

Table 1: Reliability of Growth of Physical Qualities and Morpho-Functional Indices With the Pedagogic Experiment

№	Test	Measurement unit	Group	Beginning		End		Growth	α Beg. - End	α $\bar{d}GD-MS$ $-\bar{d}GD-PP$
				$\bar{X}_1$	S_1	$\bar{X}_2$	S_2	$\bar{d}$		
1	Sitting long jump	cm	GD-MS	142,06	23,02	146,14	22,34	4,08	0.00	0.00
			GD-PP	144,17	20,05	157,82	18,87	13,65	0.00	
2	Stand-by hold	s	GD-MS	80	30,78	93,37	33,68	13,37	0.00	0.00
			GD-PP	138	70,47	191	90,25	53,39	0.00	
3	Sitting forward tilt	cm	GD-MS	34,16	12,39	36,4	12,14	2,24	0.00	0.00
			GD-PP	34,34	6,67	38,39	6,65	4,05	0.00	
4	Getting up from occipital back position to sitting position	(n)	GD-MS	32,62	16,95	41,47	15,16	8,85	0.00	0.00
			GD-PP	32,27	16,25	54	17,22	21,73	0.00	
5	Pulse at rest	b/min	GD-MS	100,35	16,35	62,93	12,47	-37,42	0.00	0.00
			GD-PP	90	12,17	94	9,86	-4,00	0,51	
6	Pulse after step-test	b/min	GD-MS	166,72	24,8	115,85	9,33	-50,87	0.00	0.00
			GD-PP	157,03	29,07	162	25,20	4,97	0,41	
7	Step-test duration	s	GD-MS	280,45	50,63	286,54	40,33	6,09	0.01	0.00
			GD-PP	190	93,6	195	87,18	-5	0,81	
8	Body mass	kg	GD-MS	60,95	12,57	60,55	12,64	-0,40	0,10	0.00
			GD-PP	60,13	15,67	59,37	15,04	0,76	0.01	
9	Fat mass	kg	GD-MS	17,37	14,67	16,73	14,73	-0,64	0.00	0.00
			GD-PP	14,8	10,82	14,28	9,80	0,52	0,10	
10	Fat-free mass	kg	GD-MS	43,58	58	43,82	8,88	0,24	0,33	0.00
			GD-PP	43,18	5,24	42,85	5,46	0,33	0,13	
11	Body water content	%	GD-MS	53,88	8,42	53,39	11,4	-0,49	0,42	0.03
			GD-PP	54,32	5,71	54,53	5,16	0,21	0,08	
12	Muscle mass	kg	GD-MS	51,70	43,18	52,15	0,45	0,45	0,05	0.00
			GD-PP	42,85	5,24	43,18	5,46	0,33	0,05	
13	Basic metabolism	kJ	GD-MS	5693,75	953,9	5684,06	964,23	-9,69	0.40	0.11
			GD-PP	5904	753,82	5856	773,46	48	0,08	
14	Internal fats	kg	GD-MS	3,87	14,71	3,75	14,72	-0,12	0,05	0.00
			GD-PP	1,88	2,08	1,72	1,77	0,16	0,65	
15	Metabolic age	year	GD-MS	20,87	14,07	19,95	14,42	-0,92	0,01	0.00
			GD-PP	16,88	8,77	16,77	8,51	0,11	0,13	

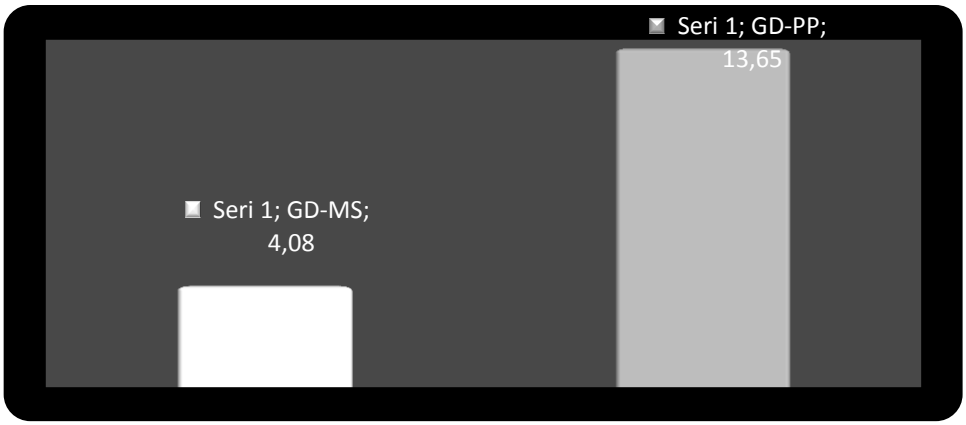

Fig. 1Growth with the test "Sitting long jump"

Through the test "sitting long jump", we get information about the change of the explosive strength of lower limbs. The average value of the growth, with Body-programme GD-PP is more than three times bigger, than the growth got as a result of the trainings with Body-programme GD-MS ***(fig. 1.).***

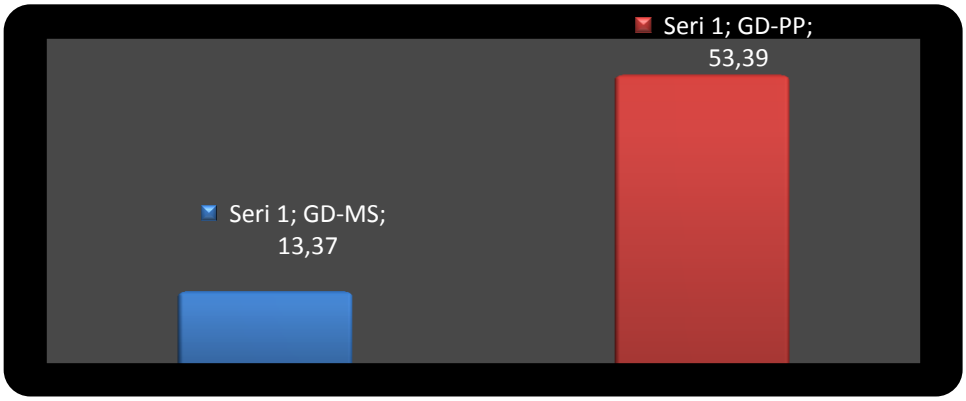

Fig. 2 Growth with the test "Stand-by hold"

With the test "stand-by hold", a very big difference in the growths with both programmes is observed. Data show, that the duration of fulfillment of stand-by hold, with the trainees on Body-programme GD-PP has increased by 53,39 s (very high growth). This is a clear indication for the more successful influence of this programme, in comparison with Body-programme GD-MS on this index ***(fig. 2).***

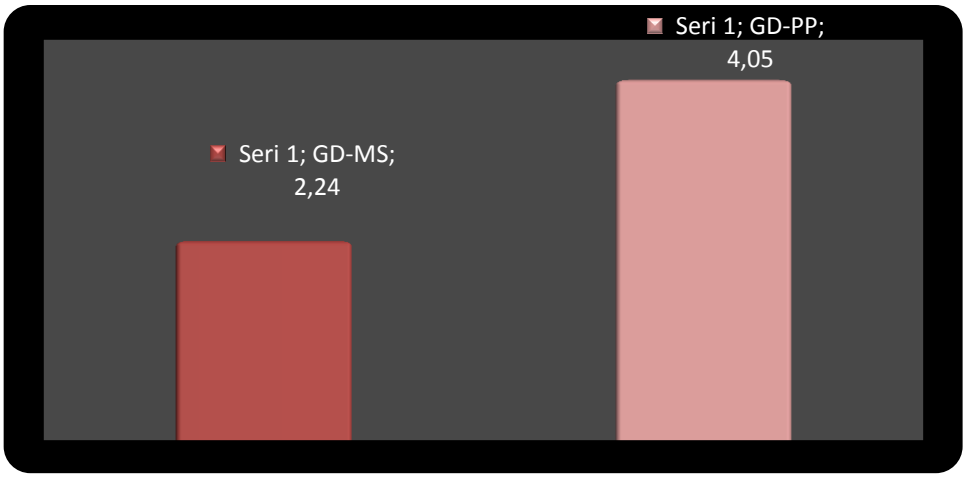

Fig. 3
Growth with the test "Sitting forward tilt"

Analysis of the results with "sitting forward tilt", shows, that the flexibility of the investigated persons has improved with both programmes, but bigger change has occurred with Body-programme GD-PP ***(fig. 3.)***.

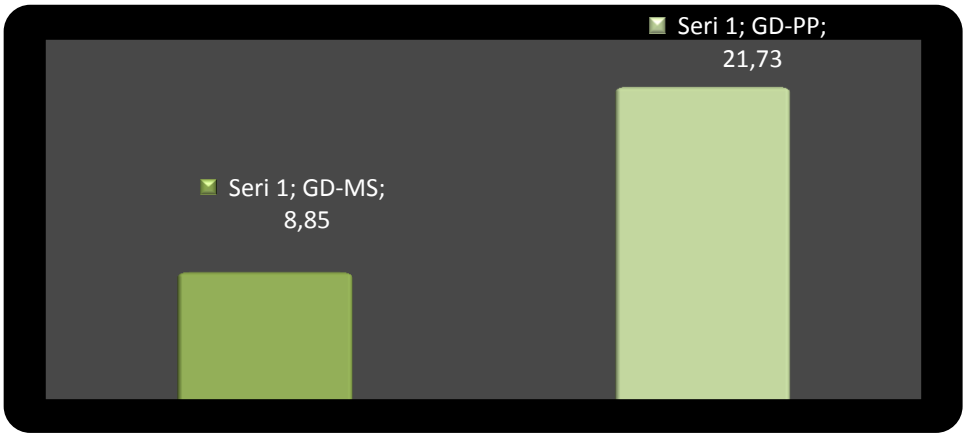

Fig. 4
Growth with the test "getting up from occipital back position to sitting position"

The trainings with Body-programme GD-PP have contributed to a greater extent for the improvement of the strength endurance of abdominal muscles with the investigated persons, in comparison with the trainings with Body-programme GD-MS ***(fig. 4).***

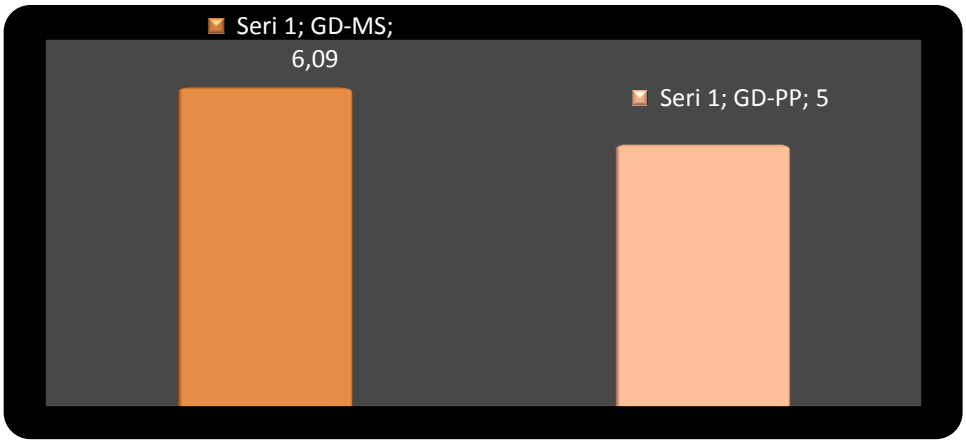

Fig. 5
Growth with the test "Step test duration"

With the modified step-test of Austrand (after I. Iliev,1989) [10], positive changes have also been observed. Analysis of the results with this test shows a higher growth with the trainees, with Body-programme GD-MS ***(fig. 5).***

In the second group (morpho-functional indices), there are significant results as regards the "pulse frequency at rest" and "pulse frequency after step-test". The average values of the growths with Body-programme GD-MS - (37,42 beats/min and 50,87 beats/min) are lower (with registered improvement) than these of Body-programme GD-PP, - 4 beats/min and 4,97 beats/min respectively.

With the rest investigated indices: body mass weight, fat mass, fat free mass, body water content, muscle mass, bone mass, basic metabolism, internal fats and metabolic age, there are differences established, but they are not significant, probably due to the comparatively short duration of the experimental period.

Conclusions

The results got give us a reason to make the following conclusions:

1. The building effect on the physical qualities with both programmes has been established, but it is higher with Body-programme GD-PP.
2. Morpho-functional indices are influenced positively with both programmes, but with Body-programme GD-MS, the changes are bigger.

We recommend the application of Body-programme GD-PP and Body-programme GD-MS in the mandatory trainings on physical culture and sports in the higher schools.

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