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STUDY CONCERNING THE INFLUENCE OF PHYSICAL EDUCATION IN THE DEVELOPMENT OF THE MOTOR POTENTIAL LEVEL AT STUDENTS

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Abstract

Purpose. This study is meant to complement various previous researches and its main purpose is to determine the motor potential of students, boys and girls, knowing that the age involved is represented by numerous changes in terms of psycho-motor skills and also demonstrating that physical education and sports, through its specific activity, may influence the development of these skills even into adulthood.

Subjects and methods used. This study was conducted on a sample of 200 students (100 boys and 100 girls) in the academic years 2009/2010 and 2010/2011 and the place of the experiment was the Petroleum and Gas University from Ploiesti. The motor manifestation tests were conducted at the beginning of year I and II.

The data was recorded, centralized, processed and interpreted statistically using the following methods: observation, bibliographic study method, measurement and recording method, experimental method, statistical and mathematical method and graphic method. Motor indicators targeted in this study were: speed run on the distance of 50 m, pull-ups – at boys, abdominal muscles strength at girls, standing long jump and with take-off, back muscle strength, resistance running - 1000 m boys and 500 m girls and throwing the oina ball.

Results. Processing the statistical interpretation of data we observe in the second experiment an increase more or less significant in most parameters investigated both for boys and girls, except the resistance run for the girls where the mean value remained unchanged.

Conclusions. Taking the obtained results as a whole we can also say that the age we refer to in this study, namely the student age, physical condition can be improved by attending an organized instructive-educational process, this bilateral process having an important role by engaging students in permanent, organized sports activities. By knowing the psycho-motor potential of students, we can establish some indicators applicable in the university physical education and also an effective targeting of specific means and methods used.

Key words: physical education, development, motor potential, students

Introduction

This study is meant to complement various previous research and its main purpose is to determine the motor potential of students, boys and girls, knowing that the age involved is represented by numerous changes in terms of psycho-motor skills and also demonstrating that physical education and sports, through its specific activity, may influence the development of these skills even into adulthood.

I also believe it is important to know the actual level of youth enrolled at the university in terms of their motor potential and if there is an evolution or involution in the second year of college, based on a curriculum aimed at developing the motor skills.

The development of the human body is divided into three periods, namely: growth and development, the period of maturity and involution period (early involution), this study refers to the period of growth and development, knowing that this period is about 21-23 years age range that fits most of the students from study year I and II in higher education, and of course there are subjects which have reached the maturity period (M. Ifrim, 1986).

In the specialty literature the age notion has different meanings, being confusing regarding the clear delimitation of age even for teachers.

Chronological age is defined as "the age determined by the number of years, months and days of life" (R. Manno, 1996), whereas the biological age involves "assessing the individual features of each athlete or of those who deviate from the general features of the age "(E.D. Colibaba, I. Bota, 1998), through which the degree of maturity of the individual can be assessed.

Also, the psychological age is understood as the amount of experience and maturity, based on the child's self image, the subjective reactions as well as his individual adaptability (Bocher, 1969, quoted by C. Bota, 2000).

However, social age is the kind of age which is influenced by the structure of society. (Bocher, 1969, quoted by C. Bota,, 2000) and working age is actually the real age, this age consisting of those listed above.

Bota, C. (2000) considered that in the period between 18-20 years and 30 years, an untrained adult is manifested by a relative preservation of motor performance capacity, the same author pointing out that some regressions may occur such as to the motor quality-speed.

University continues the instructive-educational process of pre-university education, and has to fulfill certain goals, among which an increase in the physical condition level of manifestation. In order to achieve the objectives specific to the stage we consider it crucial to determine as accurately as possible the development level of motor capabilities helping us to get an idea of the means and methods that can be used in relation to the actual development level of students.

Used materials and methods

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This study was conducted on a sample of 200 students (100 boys and 100 girls) in the academic years 2009/2010 and 2010/2011 and the place of the experiment was the Petroleum and Gas University from Ploiesti. The motor manifestation tests were conducted at the beginning of year I and II.

The data was recorded, centralized, processed and interpreted statistically using the following methods: observation, bibliographic study method, measurement and recording method, experimental method, statistical and mathematical method and graphic method.

In the statistical processing we used the following indicators: weighted arithmetic mean, median, upper limit (x_{max}), the lower limit (x_{min}), quartiles - are those characteristic values that divide the series into four equal parts, the amplitude (W), deviation mean square (S), coefficient of variation (Cv).

The obtained data in the two years was compared and could highlight the obtained dynamic results and trends manifested from a motor point of view both at boys and girls.

The motor indicators that were targeted in this study were: the distance speed run of 50 m, pull-ups at boys and abdominal muscles strength at girls, standing long jump and with take off, force back muscles, resistance run - 1000 m boys and 500 m girls and throwing the oina ball.

The obtained results and their interpretation

The data obtained from the registration, centralization, processing and statistical interpretation of the seven tasks subjected to the experiment are presented in tables 1-4, tables 1 and 2 represent the data collected from boys in the first and second year, tables 3 and 4 showing statistical results at the seven samples that targeted girls in the two years.

Table 1. The calculated statistical values of the motor indicators – boys – year I

Boys	Year I						
	Speed 50m	Pull-up	Standing long jump	Long Jump with take off	Back	Resistance 1000 m	Oina
Arithmetic mean	7,21	7,3	2,25	4,43	30,95	4,20	47,7
Minimum	6,3	1	1,9	3,85	13	3,42	36
Maximum	8,7	20	2,5	5,46	64	5,15	58
Amplitude	2,4	19	0,6	1,61	51	1,73	22
Median	7,05	7,5	2,25	4,35	29,5	4,18	48,5
Lower quartile	6,8	3	2,2	4,00	21,75	4,01	41,75
Upper quartile	7,7	10	2,3625	4,6875	36,25	4,36	55
Standard deviation	0,62	4,75	0,15	0,45	12,81	26,01	6,92
Coefficient of variability	8,60	65,03	6,44	10,23	41,38	9,98	14,51

Table 2. The calculated statistical values of the motor indicators – boys – year II

Boys	Year II						
	Speed 50m	Pull-up	Standing long jump	Long Jump with take off	Back	Resistance 1000 m.	Oina
Arithmetic mean	7,17	7,85	2,29	4,51	33,10	4,19	49,43
Minimum	6,3	3	2	3,91	18	3,41	37,5
Maximum	8,3	21	2,51	5,5	66	5,1	59
Amplitude	2	18	0,51	1,59	48	1,69	21,5
Median	7	8,5	2,3	4,46	31,5	4,17	49,5
Lower quartile	6,8	4	2,195	4,12	23,75	3,58	44,75
Upper	7,725	9,5	2,375	4,73	37,25	4,36	55,25

quartile							
Standard deviation	0,55	4,49	0,15	0,42	12,24	26,48	6,42
Coefficient of variability	7,72	57,16	6,51	9,27	36,97	10,21	12,99

The data presented in tables 1 and 2, which shows the values obtained from seven tasks at boys in the two years we can conclude that all seven samples tested were superior in the second year compared with the ones since year I. At the speed test on 50 m distance in the first year the average was of 7.21 sec. compared to the average result from year II of 7.17 sec., the progress being of 0 "04. The pull-up test, in the first year the boys made a mean of 7.30 pull-ups, and in the second year the average was of 7.85, the progress being of 0.55 pull-ups.

In the long jump case, in the first year, the average was of 2.25 m and of 2.29 m in year two, the progress being of 4 cm., this growing tendency being noticed at the long jump with take off, the first year being characterized by an average of 4.43 m compared with 4.51 m realized in the second year, the evolution of students results being in average superior by 8 cm.

Referring at the back muscle strength we can see that the results from the second year are superior with 2.15 raises in comparison with the first year, in the first year the average was of 30.95 compared with 33.10 lifting done in the second year. The resistance run on a distance of 1000 m is characterized by a relatively small improvement in average, the difference between those two years was only 1 second (4.20 sec in the first year and 4.19 in year II).

Also, throwing the oina ball keeps the tendency of other tasks presented above, the difference between those two years is quite significant, the progress being of 1.73 m (47.7 m in the first year compared to 49.43 m in the second).

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In the first year can be seen that the degree of homogeneity of the group is high at the speed running, at the standing long jump and resistance run, it is medium at the long jump and throwing the oina ball and weak pull-ups and back muscle strength. In the second year is observed that the degree of homogeneity of the group is high at the speed running, standing long jump and with take off, it is average at the resistance run and throwing the oina ball and weak at the pull-ups and back muscles strength.

Table 3. The calculated statistical values of the motor indicators – girls – year I

Girls	Year I						
	Speed 50m	Pull-up	Standing long jump	Long Jump with take off	Back	Resistance 1000 m.	Oina
Arithmetic mean	8,64	25,6	1,69	3,21	24,60	2,43	23,35
Minimum	7,8	8	1,3	2,5	9	2,15	16
Maximum	10	52	2	3,92	51	3,1	33
Amplitude	2,2	44	0,7	1,42	42	0,95	17
Median	8,6	23	1,71	3,31	23,5	2,34	22
Lower quartile	8,1	19,25	1,5375	2,88	18,5	2,32	18,75
Upper quartile	9,05	32,5	1,805	3,5125	29	2,5	27,5
Standard deviation	0,63	10,58	0,19	0,43	10,27	0,24	5,40
Coefficient of variability	7,30	41,31	11,43	13,48	41,74	10,08	23,14

Table 4. The calculated statistical values of the motor indicators – girls – year II

Girls	Year II						
	Speed 50m	Pull-up	Standing long jump	Long Jump with take off	Back	Resistance 1000 m.	Oina
Arithmetic mean	8,63	27,25	1,71	3,25	24,85	2,43	24,20
Minimum	7,76	12	1,36	2,51	10	2,19	15
Maximum	10,20	53	2,03	3,96	53	3,08	36
Amplitude	2,44	41	0,67	1,45	43	0,89	21
Median	8,54	23,5	1,715	3,28	23	2,36	23
Lower quartile	8,11	19,75	1,55	2,89	19,50	2,31	20,50
Upper quartile	8,96	35,25	1,85	3,52	28,25	2,48	28,50
Standard deviation	0,64	10,42	0,20	0,43	10,04	0,24	6,02
Coefficient of variability	7,42	38,25	11,45	13,13	40,40	9,98	24,89

Tables 3 and 4 show the statistical calculated values of the seven tasks for the girls, the tendency being as the one at boys, a tendency of progress in the second year, except the resistance run where we notice a stagnation.

The progress in the 50 m speed run in girls is relatively small (0 "01 sec.), the values of the mean being of 8.64 sec. in the first year and 8.63 sec. in the second one. At the task in which it was tested the abdominal muscle strength a progress of 1.65 lifts can be noticed, the means values being of 25.6 lifts in the first year and 27.25 lifts in the second year.

Also, the long jump from standing is manifested by an improvement in the average, in the first year the mean being of 1.69 m and 1.71 m in year two, the progress being of 2 cm., this growth tendency being seen also in the long jump with take off, the first year being characterized by an average of 3.21 m compared with 3.25 m realized in the second year, the evolution of the average being of 4 cm.

The task through which we tested the back musculature strength shows us a very low progress in the second year, the increase of the mean being only of 0,25 lifting (24,60 lifting in the first year compared with 24,85 lifting in the second year).

The resistance run over distance of 500 m is characterized by a stagnation of the average, the mean values being of 2.43 min. both in the first year and second year. As for throwing the oina ball, the tendency of progress is seen in the second year, the difference from the first year being of 0.85 m (23.35 m in the first year and 24.20 in the second).

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In girls, in the first year it can be seen that the degree of homogeneity of the group is high at the speed run, is average at the standing long jump, long jump with take off and resistance run, and weak at the abdominal musculature strength, back muscle strength and throwing back the oina. In the second year we observed that the degree of homogeneity of the group is high in the speed run and resistance run, average at the standing long jump and the one with take off, and weak at the abdominal muscles strength, back muscle strength and throwing the oina ball.

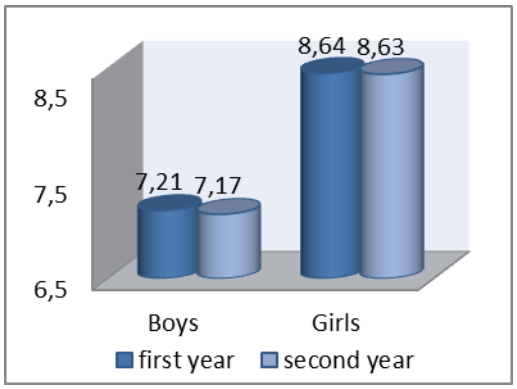

Figure 1. Medium values of speed run over 50 m

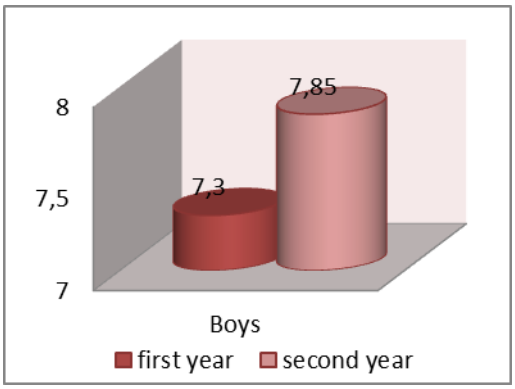

Figure 2. Medium values at the pull-ups

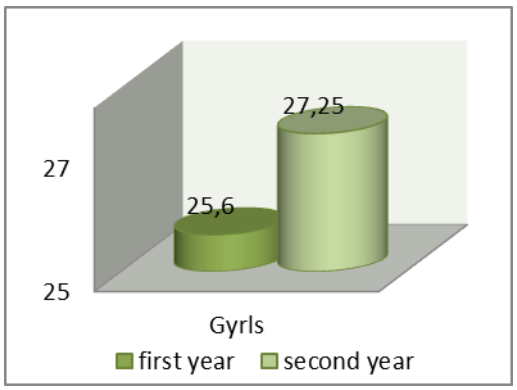

Figure 3. The medium values of the abdominal musculature strength

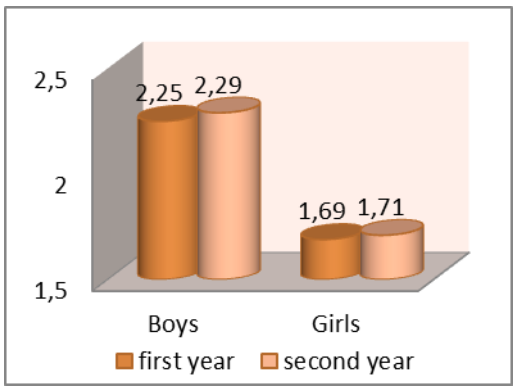

Figure 4. The medium values of the long jump from standing

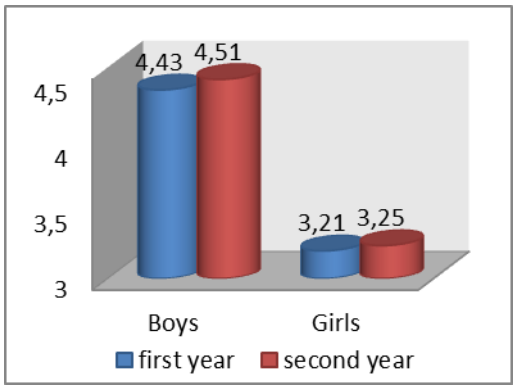

Figure 5. Medium values of the long jump with take off

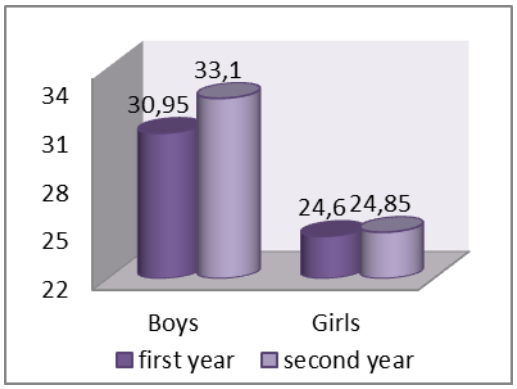

Figure 6. Medium values of the back musculature strength

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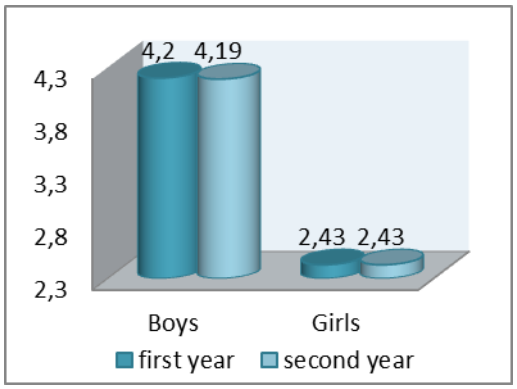

Figure 7. Medium values of the resistance run

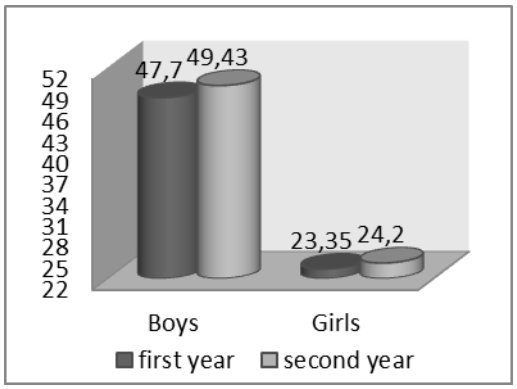

Figure 8, Medium values of throwing the oina ball

In order to point out the progress or the means stagnation, there were presented graphically in figures 1-8 the differences of the means in the two years of the experiment, on tasks, both at boys and girls.

Conclusions

Synthesizing the data obtained from the experiment we can say that the physical education has a proven role in the motor potential development at students, even if at some tasks the progress made was not very high or has even recorded a stagnation of the results.

Of the seven motor indicators tested we determine that the most significant progress was recorded in the abdominal muscle strength – girls, long jump with take off in both sexes, standing long jump and throwing the oina ball in boys, with the remaining tasks having a lower progress, and at the resistance run even a stagnation of the results in girls being recorded.

Taking the overall obtained results we can say that also at the age we refer in this study, namely, student age, the physical condition can be improved by attending an organized instructive - educational process, this bilateral process having an important role by engaging students in organized permanent sport activities.

Physical education activity, besides increasing the biological potential of young people has a more complex role, to achieve a development of bio-psycho-motor predictions with the finality of a state of optimal health maintenance, the knowledge of psychomotor potential of students helping us to establish some indicators which apply in university physical education and the effective targeting of specific means and methods used to develop the reminded potential.

From the collected and processed data results that the motor level of students at entering the university education is a medium one, certain qualities being able to develop in a better way than others.

As a last conclusion I wish to draw the attention to maintain the physical education in higher education, even as a compulsory subject in at least the first two years of study, this is reflected by maintaining and improving the health of the young generation, by its biological potential development, the respective process unfolding in an organized framework under the guidance of experts, knowing that the youngergeneration has other concerns at the age when we refer to, only a small part heading to movement or sport

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