

TENDENCIES OF MOTOR SKILLS DEVELOPMENT IN STUDENTS-BASKETBALL PLAYERS FROM THE SPORTS ACADEMY IN SKOPJE

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(Original scientific paper)

Borche Daskalovski, Milan Naumovski, Andrijana Misovski, Aleksandar Aceski

Ss. Cyril and Methodius University in Skopje, Faculty of Physical Education, Sport and Health

Abstract

The research was conducted on a sample of 79 participants in order to determine the effects of programmed training process for a period of one academic year, the students of the Sports Basketball Academy in Skopje. In the research there are a total of 16 variables changed of which 7 are for assessment of motor skills and 9 variables for the estimation of specific motor skills. Based on the results we concluded that the applied training programs generally cause positive transfer of the studied skills. The results indicate the need in the further training process to pay special attention to basketball technique with the ball, because it was concluded that in a large number of students-basketball players, was not at the expected level. In the future, the professional teams that carry out the selection of these students -basketball players need to sharpen the criteria for the selection of future students - basketball players at the Sports Academy.

Key words: *basketball , motor, specific motor skills*

Introduction

For the first time in our country a Sports Academy was founded which educate talented young athletes from all over our country in sports like: football, basketball, handball and tennis. The selected students are educated and trained in previously prepared curricula and training contents generated by professional staff for each sport separately. This situation imposes the need for monitoring the motor skills development of students-athletes in each sport separately, while enabling control of the effectiveness of the curriculum.

Subject in this research are motor and specific motor skills in student-basketball players of first, second and third year of the Sports Academy in Skopje.

The purpose of the research is aimed at determining the effects of programmed training process in the studied sample respondents or its impact on the motor and the specific motor skills among students-basketball players of first, second and third year of the Sports Academy in Skopje.

Based on the determined problem and the set subject and purpose of the research derived the following specific objectives:

To determine the effect of the training process on the motor variables in three subexamples separately.

To determine the effect of the training process on the specific motor skills in three subexamples separately.

To identify intergroup differences in motor skills in threesubexamples.

To identify intergroup differences in the specific motor skills in three subexamples.

Method of Work

The survey was conducted from November to May, in the academic year 2014/15.

The research was realized by the Institute for Research in Sport School of Physical Education, Sport and Health, University "Ss. Cyril and Methodius "in Skopje, Macedonia.

Testing the motorand specific motor skills are realized in the halls and sports fields where athletes perform practical training.

Sample of respondents

The survey was conducted on a sample of 79 respondents of which 23 are female students-basketball players and 56 are male students-basketball players from the Sports Academy in Skopje.

The total sample is divided into three subsample: first subsample include the students basketball players from first year at the age of 14 years, the second subsample include students basketball players from the second year at the age of 15 years and the third subsample encompass students of the third year at the age of 16 years .

In any subsample students (from I, II and III year), applied tests to assess the specific motor and motor skills are identical.

Their choice is determined by the characteristics of basketball, while tests are characterized by satisfactory measuring characteristics. Measurements in all three age groups were conducted by trained gauges (professors of physical education, sports and health).

Sample of variables

The research applied a total of 16 variables of which 9 for estimation of specific motor skills and 7 to assess motor skills.

For estimation of specific motor skills among students basketball, applied the following tests:

1. Speed for pass with two hands / sec /
2. Speed for pass with one hand and another alternate / sec /
3. Running between Stalk / sec /
4. Doing a cross between Stalk / sec /
5. Quickly running up to the middle of the court and back with the weaker hand / sec /
6. Quickly running up to the middle of the court and back with the stronger hand / sec /
7. Dribbling by and through the legs with right and left arm / pc /
8. Shot in the basket from the free-throw / goals /
9. Test for the measurement of specific basketball durability and precision.

Test are according Meticosh, мерење bazičnih motoričkih dimen....1989.

Karaleich, M., Jakovljevič, S., testing and measurement 1998th

For the assessment of general motor skills in all students (in all sports), the following tests were applied:

1. Beep Test (Legertov test) / sections /
2. Illinois agility test / sec / (Illinois Agility Test)
3. Push-ups / no /
4. Deep pretklon in sed / cm /
5. Long jump from place / cm /
6. Running 20 meters / sec /
7. Raising the torso in 30 seconds / no /

3.3. Methods for data processing

In accordance with the purpose of the survey, the data are processed with appropriate statistical methods.

- For all applied variables calculated the basic descriptive data:
 - Arithmetic middle (X)
 - Standard deviation (SD)
- The significance of the differences between the arithmetic of the initial and final measurement is determined by applying the students' t-test for small dependent samples
 - Fixed a percentage increment results
 - Differences in individual tests between groups was determined using analysis of variance.

Results and Discussion

Interpretation and discussion of the results of t-test and analysis of variance for student players.

Table 1 presents the results of t-test for student basketball players of first year. It may be noted that of the 16 variables studied, in 8 of them are determined statistically significant differences between the average values of the initial and final measurement. Statistically significant differences were determined in motor variables: Illinois test with percentage improvement of 6.5%, long jump with percentage growth of 6.3% and 20 meters run with a percentage increase of 11%. Although not statistically significant difference was made between the arithmetic of the initial and final measurement, the percentage increase is remarkable in motor variables, Deep deep forward bend with 19.1% and 13.5% Push-ups. In the remaining motor variables there is negligible improvement percentage rise.

In the specific motor variables, statistically significant differences have been spotted between the arithmetic middle of the initial and final measurement determined in the following variables: BD2R improving the outcome for 22.1% BD1RN improving the result by 12.3%, TMC result in a deterioration of 25%, a deterioration VTMS the result of 26.3% and DSNNDLR result in a deterioration of 11.5%. Among the other variables was determined a percentage increase in results, but it's not statistically significant. The applied training model causes positive transformations in the motor and specific motor space in student basketball players.

Weaker results from the final measuring variables associated with agility, speed and manipulation with the ball, should be taken with a certain reserve, because students are in intense pubertal period, which due to the disproportion between the development of muscle and bone growth are mostly lowering their motor skills.

Table 1. T-tests for the studied variables among student basketball players of first year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	8,90	1,03	9,29	1,56	0,59	-1,13	4,4	,277
Illinois a.t.	17,49	0,84	16,36	0,81	0,51	4,59	-6,5	,001
Push ups	20,18	9,87	22,91	8,03	0,85	-1,75	13,5	,110
Sit and reach	6,18	4,14	7,36	5,55	0,75	-1,06	19,1	,312
Long jump	222,27	20,64	236,36	21,57	0,88	-4,53	6,3	,001
20m run	3,27	0,26	3,63	0,24	0,81	-7,68	11,0	,000
Ris.the torso 30s	25,91	2,98	26,18	3,66	0,67	-0,33	1,0	,750
BD2R	3,21	0,27	2,50	0,26	0,77	15,75	-22,1	,000
BD1RN	5,05	0,65	4,43	0,71	0,52	3,68	-12,3	,002
TMS	6,12	0,41	7,65	0,52	0,75	-17,73	25,0	,000
VTMS	6,54	0,42	8,26	0,48	0,76	-21,53	26,3	,000
BVSIINPDR	6,35	0,30	6,25	0,34	0,70	1,56	-1,6	,140
BVSIINPSR	6,39	0,30	6,25	0,34	0,60	1,91	-2,2	,075
DSNNDLR	16,81	1,87	18,75	1,81	0,79	-6,56	11,5	,000
SHKLSF	7,06	1,44	7,81	1,11	-0,16	-1,54	10,6	,145
TMSKIP - 1'	3,56	2,06	3,63	1,54	0,24	-0,11	2,0	,914
TMSKIP - 2'	3,31	1,82	3,94	1,73	0,01	-1,00	19,0	,333
TMSKIP - 3'	3,13	1,67	2,69	1,62	-0,30	0,66	-14,1	,520

Table 2 presents the results of t-test for student basketball players of second year. It may be noted that of the 16 variables studied, in 6 of them are determined statistically significant differences between the average values of the initial and final measurement.

Statistically significant differences were determined in motor variables: 20 meters run, with a percentage increase of 19.7% and raising the torso in 30 seconds, with a percentage increase of 12%. Although not statistically significant difference were made between the arithmetic middle of the initial and the final measurement, the percentage increase was the most significant variable in motorical push-ups, with a percentage increase of 100%. Among other variables there is a percentage improvement of results, but it is not statistically significant.

To point out, the weaker results from the final measuring in the variables associated with agility, ball manipulation and precision in execution of shots from different positions, after six months of training process, the student basketball players were expected to achieve better results in these variables.

The excuse for such poor results can be found in the impaired coordination, which is a result of acceleration that occurs in this period of development or lack of commitment of participants during the testing.

In the further training process special attention to basketball technique with the ball should be paid, because in a large proportion of student basketball players was concluded that it is at unsatisfactory level. Given that these students have been selected as the most talented in our country, the results obtained did not fully met expectations. The professional teams that carry out the selection of these student basketball players in the future need to sharpen the criteria for the selection of future student basketball players at the Sports Academy.

Table 2. T-tests for the studied variables among student basketball players of second year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	8,97	0,93	9,97	2,80	-0,93	-0,88	11,1	,470
Illinoisa.t.	17,89	0,86	17,50	0,71	1,00	3,55	-2,2	,175
Push ups	10,00	7,07	20,00	14,14	1,00	-2,00	100,0	,295
Sit and reach	6,50	2,12	7,00	1,41	1,00	-1,00	7,7	,500
Long jump	224,50	45,96	245,0	35,36	1,00	-2,73	9,1	,223
20m run	3,20	0,28	3,83	0,24	1,00	-21,00	19,7	,030
Risin.the torso 30 s.	25,00	5,66	28,00	5,66	0,36	6,16	12,0	,004
BD2R	3,11	0,11	2,45	0,26	0,36	6,16	-21,2	,004
BD1RN	5,27	1,06	5,10	1,09	0,78	0,54	-3,2	,616
TMS	6,41	0,62	7,98	0,54	0,85	-10,60	24,5	,000
VTMS	6,74	0,59	8,36	0,40	0,75	-9,38	24,0	,001
BVSIINPSR	6,11	0,24	6,30	0,27	0,37	-1,46	3,1	,218
BVSIINPDR	6,12	0,50	6,30	0,27	0,94	-1,58	2,9	,189
DSNNDLR	17,00	4,12	18,00	3,81	0,94	-1,58	5,9	,189
SHKLSF	8,60	0,55	6,80	0,45	0,61	9,00	-20,9	,001
TMSKIP - 1'	3,80	0,84	3,20	2,17	0,30	0,65	-15,8	,553
TMSKIP - 2'	3,60	1,82	3,80	1,48	0,80	-0,41	5,6	,704
TMSKIP - 3'	4,20	2,17	3,60	1,67	0,23	0,56	-14,3	,607

Table 3 presents the results of t-test for students of third year players.

It may be noted that of the 15 variables studied, with 9 of them are determined statistically significant differences between the average values of the initial and the final measurement.

Statistically significant differences were determined in motor variables: Illinois test, where the time for performance has been improved by 6.3%; Running 20 meters, where the time has improved to 9.8% and raising the torso in 30 seconds, with percentage growth in the average value of 7.8%.

Although not statistically significant, a difference has been made between the arithmetic middle of the initial and final measurement, noticeably reducing of the results has in the variable of deep forward bend, which was 49.9%.

Table 3. T-tests for the studied variables among student basketball players of third year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	9,72	0,79	9,66	1,29	0,40	0,15	-0,6	,885
Illinois a.t.	16,98	0,51	15,91	0,83	0,59	5,31	-6,3	,000
Push ups	29,18	7,69	32,64	4,08	-0,63	-1,07	11,9	,311
Sit and reach	7,27	6,33	3,64	11,94	0,18	0,97	-49,9	,355
Long jump	230,91	16,40	224,77	75,28	0,03	0,27	-2,7	,796
20m run	3,17	0,10	3,48	0,19	-0,06	-4,64	9,8	,001
Risin.the torso 30s	27,91	4,06	30,09	3,59	0,80	-2,91	7,8	,015
BD2R	2,93	0,22	2,73	0,19	0,20	2,67	-6,8	,022
BD1RN	4,71	0,55	4,47	0,44	0,58	1,78	-5,1	,103
TMS	6,10	0,45	7,72	0,39	0,04	-9,59	26,6	,000
VTMS	6,47	0,74	8,21	0,38	0,01	-7,24	26,9	,000
BVSIINPSR	6,02	0,42	6,03	0,17	0,35	-0,09	0,2	,931
BVSIINPDR	5,78	0,24	6,03	0,17	0,69	-4,78	4,3	,001
DSNNDLR	18,67	2,19	20,67	2,19	0,73	-4,34	10,7	,001
SHKLSF	8,08	1,24	8,00	1,65	0,27	0,16	-1,0	,874
TMSKIP - 1'	3,92	2,02	5,00	2,70	0,58	-1,68	27,6	,121
TMSKIP - 2'	4,17	1,64	4,58	1,08	-0,16	-0,68	9,8	,508
TMSKIP - 3'	4,92	1,56	4,75	1,66	0,34	0,31	-3,5	,761

In specific motor variables, statistically significant differences between the arithmetic middle of the initial and the final measurement determined in variables: BD2R improving the result by 6.8 and BD1RN improving results by 5.1%; In variables: TMS determined negative trend of the result by 26.6% and VTMS negative trend of the result by 26.9%. In variables BVSIINPDR and DSNNDR is determined negative trend of the results for 4.3% and 10.7% respectable.

Although the results of the t-test is not statistically significant, a marked increase in the results of the variable TMSKIP, which is an increase of precision in the first minute of 27.6% in the second minute has improved results by 9.8%, but in the third minute there a negative trend in the results 3.5%.

In the last minute, the evident fatigue has a major impact on accuracy.

Table 4 presents the results of t-test for female students basketball players of first-year.

It may be noted that out of the 15 variables studied, in 5 of them are determined statistically significant differences between the average values of the initial and the final measurement.

Statistically significant differences were determined in motor variables: Illinois test, where the time for performance has been improved by 5.5% and the 20 meters run variable, the result of the final measurement is lower by 9.3% compared to the result achieved in the initial measurement.

Although not statistically significant difference has been noted between the arithmetic middle of the initial and the final measurement, noticeably reducing of the results has in the variable deep forward bend, which is 55.9%.

In specific motor variables, statistically significant differences between the arithmetic middle of the initial and the final measurement were determined in the variables: BD2R improving the result by 16.6%. In variables: TMS determined negative trend of the result by 18.4% and VTMS negative trend of the result by 19.5%.

Although the results of t-test is not statistically significant, a marked increase in the results has the variable SHKLSF, which is an increase of precision by 12.9% .

The variable TMSKIP shows negative trend of results in the first minute by 14.3%, in the second minute of 19% in the third minute of 16.7%.

Table 4. T-tests for the studied variables in female student basketball players in first-year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	7,64	1,48	6,63	2,20	0,47	1,35	-13,2	,227
Illinois a.t.	18,86	1,17	17,83	1,33	0,86	3,69	-5,5	,014
Push ups	36,33	27,88	35,50	19,23	0,69	0,10	-2,3	,923
Sit and reach	5,67	7,06	2,50	12,83	-0,39	1,19	-55,9	,289
Long jump	198,60	12,34	163,46	91,15	-0,54	0,80	-17,7	,469
20m run	3,53	0,23	3,86	0,24	0,40	-3,03	9,3	,029
Risin.the torso 30s	24,17	2,56	25,33	2,88	0,75	-1,47	4,8	,201
BD2R	3,62	0,23	3,02	0,32	0,85	9,41	-16,6	,000
BD1RN	5,52	0,58	5,81	0,88	0,74	-1,30	5,3	,242
TMS	6,73	0,40	7,97	0,44	0,75	-10,87	18,4	,000
VTMS	7,42	0,46	8,87	0,32	0,66	-11,04	19,5	,000
BVSIINPSR	6,85	0,52	6,76	0,34	0,93	1,06	-1,3	,328
BVSIINPDR	6,64	0,45	6,76	0,34	0,91	-1,52	1,8	,181
DSNNLDR	13,57	2,64	14,43	2,07	0,77	-1,35	6,3	,225
SHKLSF	5,57	2,15	6,29	2,56	0,75	-1,11	12,9	,310
TMSKIP - 1'	3,00	1,15	2,57	1,81	-0,08	0,51	-14,3	,629
TMSKIP - 2'	3,00	2,52	2,43	1,27	0,31	0,62	-19,0	,558
TMSKIP - 3'	2,57	1,13	2,14	0,69	-0,12	0,81	-16,7	,448

Table 5 presents the results of t-test in female student basketball players from the second year.

It may be noted that of the 15 variables studied, in 6 of them are determined statistically significant differences between the average values of the initial and final measurement.

Statistically significant differences were determined in motor variables: Illinois test, where the time for performance has been improved by 5.0% and variable Running 20 meters, the result of the final measurement is lower by 9.2% compared to the result achieved in the initial measurement.

Although not statistically significant difference has been made between the arithmetic middle of the initial and the final measurement, noticeably reducing of the results has in the variable push-ups by 21.7% and to 45.1 % Deep forward bend.

In specific motor variables, statistically significant differences between the arithmetic middle of the initial and final measurement have been determined in the variables: BD2R improving results by 9.3%.

Negative trend of the results is determined in the variables: TMS 26.6%% and the VTMS with 32.1%.

Although the results of t-test is not statistically significant, noticeable changes in the results has the variable TMSKIP, in the first minute of the final measurement results are reduced by 37.9% and improved results are in the second minute and 11.3% in the third minute for high 46.9%.

Table 5. T-tests for the studied variables in female student basketball players in second year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	6,64	0,89	6,79	1,52	0,35	-0,26	2,3	,803
Illinois a.t.	19,10	1,12	18,14	1,07	0,87	4,48	-5,0	,004
Push ups	48,71	16,02	38,14	16,63	0,85	3,17	-21,7	,019
Sit and reach	10,14	8,01	5,57	14,89	-0,02	0,71	-45,1	,504
Long jump	176,29	19,65	168,11	74,71	0,42	0,31	-4,6	,764
20m run	3,69	0,25	4,03	0,27	0,75	-4,99	9,2	,002
Risin.the torso 30s	22,43	7,30	27,14	4,45	-0,27	-1,31	21,0	,239
BD2R	3,21	0,08	2,91	0,33	0,50	2,67	-9,3	,037
BD1RN	5,35	0,52	5,54	1,23	0,50	-0,48	3,6	,647
TMS	6,59	0,41	8,34	0,61	0,79	-12,19	26,6	,000
VTMS	6,91	0,32	9,13	0,63	0,67	-12,23	32,1	,000
BVSIINPSR	6,53	0,34	6,70	0,43	0,59	-1,24	2,6	,260
BVSIINPDR	6,56	0,20	6,70	0,43	0,68	-1,10	2,1	,314
DSNNLDR	14,57	2,94	12,71	3,50	-0,10	1,03	-12,8	,343
SHKLSF	7,14	1,95	7,29	1,38	0,79	-0,31	2,1	,766
TMSKIP - 1'	4,14	2,34	2,57	1,13	0,72	2,42	-37,9	,052
TMSKIP - 2'	2,57	1,27	2,86	1,77	0,85	-0,79	11,3	,457
TMSKIP - 3'	2,43	1,90	3,57	1,81	-0,90	-0,83	46,9	,436

Table 6 presents the results of t-test in female student basketball players from third year.

It may be noted that of the 15 variables studied, 6 of them have statistically significant differences between the average values of the initial and final measurement.

Statistically significant differences were determined in motor variables: Illinois test, where the time for performance is weaker in the final measurement by 7.8%, in the 20 meters run variable, the result of the final measurement is lower by 11.8% and variable raising the torso in 30 second, final result of the measurement is reduced to 23.8% compared to the result achieved in the initial measurement.

Although no statistically significant difference has been noted between the arithmetic middle of the initial and the final measurement, a marked improvement in the results of the variable deep forward bend has been made, which is 23.1%.

In specific motor variables, statistically significant differences between the arithmetic middle of the initial and final measurement have been determined in the following variables: TMS negative trend the result of 37.8% and a negative trend VTMS score of 24.8%, the variable TMSKIP in the first minute set significant improvement in accuracy which is 71.7%.

Although the results of t-test are not statistically significant, there is a marked increase in the results in the variable TMSKIP in the third minute of 22.3%. In the second minute the results are identical in the initial and final measurement.

Table 7 presents the results of the conducted analysis of variance, with which is determined in which of the applied tests there is a statistically significant difference between the student basketball players of all three years,

From the inspection of the table it can be seen that there are statistically significant differences between the arithmetic middle in the initial measurement determined in the following variables: Legert test - the best results achieved by students of first year players; push ups - the best results achieved by students of third year players; In specific motor variables initial measurement are determined statistically significant differences in the following variables: BD2R - basketball players achieved the best results of the third year; BVSIINPSR and BVSIINPDR - basketball players achieved the best results of the third year.

In the final measure statistically significant differences in between student basketball players of different years are determined in the following variables: Legertov test - basketball players achieved the best results of the first year; push ups - the best results achieved students basketball players of third year; Running 20 meters - the best results achieved students basketball players of third year; Raising the torso in 30 seconds - the best results achieved by students basketball players of third year.

Table 6. T-test for the studied variables in female student basketball players of the third year

Variables	Initial		Final		r	T-test	%	sig
	Mean	SD	Mean	SD				
Legert	7,43	0,55	8,83	1,60	0,92	-2,18	18,8	,161
Illinois a.t.	18,56	0,42	20,00	0,00	0,48	-5,94	7,8	,027
Push ups	56,33	20,26	48,00	8,00	0,96	1,13	-14,8	,375
Sit and reach	13,00	2,00	16,00	0,00	0,76	-2,60	23,1	,122
Long jump	190,00	2,00	196,67	15,28	0,98	-0,87	3,5	,477
20m run	3,63	0,12	4,06	0,03	0,94	-8,54	11,8	,013
Risin.the torso 30s	28,00	1,73	21,33	3,21	0,63	4,59	-23,8	,044
BD2R	3,31	0,15	3,19	0,25	0,83	1,46	-3,6	,282
BD1RN	5,17	0,32	5,09	0,25	0,91	0,90	-1,5	,464
TMS	6,09	0,73	8,39	0,96	0,44	-4,34	37,8	,049
VTMS	7,02	0,19	8,76	0,38	-0,73	-5,63	24,8	,030
BVSIINPSR	6,66	0,10	6,87	0,12	0,15	-2,54	3,2	,126
BVSIINPDR	6,60	0,15	6,87	0,12	0,66	-3,94	4,1	,059
DSNNLDR	15,33	2,08	17,33	0,58	0,28	-1,73	13,0	,225
SHKLSF	6,33	1,15	7,33	2,08	-0,69	-0,58	15,8	,622
TMSKIP - 1'	2,33	1,53	4,00	2,00	0,98	-5,00	71,7	,038
TMSKIP - 2'	3,33	2,08	3,33	2,31	0,28	0,00	0,0	1,00
TMSKIP - 3'	3,00	1,73	3,67	3,06	-0,76	-0,26	22,3	,822

Table 7. Analysis of variance of the studied variables in student basketball players from all three years

Variables	I year		II year		III year		F	Sig.
	Mean	SD	Mean	SD	Mean	SD		
Initiam measurement								
Legert	8,95	1,02	9,82	1,43	9,84	0,94	3,20	0,05
Illinois a.t.	17,52	0,81	17,59	0,81	16,95	0,50	2,50	0,10
Push ups	20,50	9,47	8,00	6,08	28,00	8,40	6,81	0,01
Sit and reach	5,75	4,22	6,00	4,69	8,17	6,78	0,62	0,55
Long jump	223,58	20,2	232,25	32,4	230,83	15,6	0,49	0,62
20m run	3,26	0,25	3,25	0,19	3,18	0,10	0,50	0,61
Risin.the torso 30s	25,83	2,86	26,50	3,79	27,58	4,03	0,74	0,49
BD2R	3,21	0,27	3,10	0,19	2,93	0,21	5,39	0,01
BD1RN	5,12	0,73	4,66	1,66	4,67	0,55	1,09	0,35
TMS	6,20	0,51	6,34	0,50	6,09	0,44	0,76	0,47
VTMS	6,64	0,60	6,71	0,51	6,44	0,72	0,64	0,53
BVSIINPSR	6,45	0,49	6,07	0,25	6,01	0,40	5,26	0,01
BVSIINPDR	6,40	0,49	6,05	0,40	5,77	0,24	9,37	0,00
DSNNLDR	16,68	2,67	15,50	5,89	18,62	2,10	2,30	0,11
SHKLSF	7,11	1,37	8,10	0,88	8,15	1,21	3,66	0,04
TMSKIP - 1'	3,47	1,98	4,20	1,03	4,31	2,39	0,85	0,43
TMSKIP - 2'	3,32	1,83	3,30	1,83	4,15	1,57	1,04	0,36
TMSKIP - 3'	3,11	1,94	3,50	2,01	4,92	1,50	3,92	0,03
final measurement								
Legert	9,49	1,57	24,72	29,3	9,66	1,29	4,03	0,03
Illinois a.t.	16,75	1,00	15,83	1,47	15,42	1,88	3,06	0,06
Push ups	22,44	7,76	24,33	10,5	31,75	4,96	5,52	0,01
Sit and reach	7,25	5,54	10,33	5,39	4,83	12,1	0,87	0,43
Long jump	231,25	22,77	242,50	18,10	227,70	72,50	0,21	0,82
20 m. run	3,68	0,23	3,70	0,16	3,48	0,18	4,00	0,03
Risin.the torso 30s	26,38	3,14	27,83	3,43	29,83	3,54	3,69	0,04
BD2R	2,50	0,26	2,43	0,23	2,73	0,19	4,52	0,02
BD1RN	4,43	0,71	5,17	0,99	4,47	0,44	2,75	0,08
TMS	7,65	0,52	7,93	0,49	7,72	0,39	0,80	0,46
VTMS	8,26	0,48	8,38	0,36	8,21	0,38	0,32	0,73
BVSIINPSR	6,36	0,31	6,23	0,23	6,13	0,21	2,43	0,11
BVSIINPDR	6,25	0,34	6,28	0,25	6,03	0,17	2,81	0,08
DSNNLDR	18,75	1,81	18,00	3,41	20,67	2,19	3,63	0,04
SHKLSF	7,81	1,11	7,17	0,98	8,00	1,65	0,83	0,45
TMSKIP - 1'	3,63	1,54	3,00	2,00	5,00	2,70	2,31	0,12
TMSKIP - 2'	3,94	1,73	3,67	1,37	4,58	1,08	1,00	0,38
TMSKIP - 3'	2,69	1,62	3,33	1,63	4,75	1,66	5,50	0,01

Table 8. Analysis of variance of the variables studied in female student basketball players from all three years

Variables	I year		II year		III year		F	Sig.
	Mean	SD	Mean	SD	Mean	SD		
Initial measurement								
Legert	7,48	1,31	6,76	0,82	7,92	0,90	2,44	0,11
Illinois a.t.	18,86	1,17	18,92	1,11	17,98	0,95	1,36	0,28
Push ups	36,33	27,88	47,45	12,89	50,60	16,35	0,97	0,40
Sit and reach	5,67	7,06	9,82	6,69	11,20	3,77	1,24	0,31
Long jump	198,60	12,34	181,27	17,22	201,00	21,95	2,97	0,08
20 m. run	3,53	0,23	3,64	0,25	3,50	0,24	0,68	0,52
Risi.the torso 30s.	24,17	2,56	22,82	5,86	28,00	2,45	2,20	0,14
BD2R	3,71	0,33	3,28	0,13	3,19	0,24	10,30	0,00
BD1RN	5,81	0,98	5,33	0,42	4,95	0,40	2,76	0,09
TMS	6,84	0,47	6,47	0,42	6,28	0,59	2,50	0,11
VTMS	7,54	0,55	6,88	0,31	6,88	0,25	7,27	0,00
BVSIINPSR	6,96	0,57	6,49	0,34	6,45	0,40	3,19	0,06
BVSIINPDR	6,68	0,43	6,58	0,22	6,53	0,29	0,42	0,66
DSNNLDR	13,25	2,60	14,91	2,43	14,60	3,65	0,88	0,43
SHKLSF	5,63	2,00	7,00	1,55	7,00	1,41	1,77	0,20
TMSKIP - 1'	2,88	1,13	4,18	1,99	2,80	1,30	2,02	0,16
TMSKIP - 2'	2,88	2,36	2,82	1,33	3,00	1,87	0,02	0,98
TMSKIP - 3'	2,38	1,19	2,91	2,12	3,00	1,41	0,29	0,75
final measurement								
Legert	6,63	2,20	6,79	1,52	8,83	1,60	1,64	0,23
Illinois a.t.	17,50	1,31	18,14	1,07	20,00	0,00	5,43	0,02
Push ups	35,25	16,63	38,14	16,63	48,00	8,00	0,72	0,50
Sit and reach	0,88	13,07	5,57	14,89	16,00	0,00	1,49	0,26
Long jump	179,66	72,51	168,11	74,71	196,67	15,28	0,19	0,83
20 m. run	3,82	0,23	4,03	0,27	4,06	0,03	2,05	0,16
Risin.the torso 30s	26,50	3,25	27,14	4,45	21,33	3,21	2,68	0,10
BD2R	2,96	0,35	2,91	0,33	3,19	0,25	0,79	0,47
BD1RN	5,63	0,98	5,54	1,23	5,09	0,25	0,30	0,75
TMS	7,87	0,50	8,34	0,61	8,39	0,96	1,32	0,30
VTMS	8,74	0,48	9,13	0,63	8,76	0,38	1,11	0,36
BVSIINPSR	6,84	0,48	6,90	0,24	6,77	0,25	0,14	0,87
BVSIINPDR	6,73	0,33	6,70	0,43	6,87	0,12	0,24	0,79
DSNNLDR	14,88	2,30	12,71	3,50	17,33	0,58	3,21	0,07
SHKLSF	6,25	2,38	7,29	1,38	7,33	2,08	0,62	0,55
TMSKIP - 1'	2,88	1,89	2,57	1,13	4,00	2,00	0,81	0,47
TMSKIP - 2'	2,38	1,19	2,86	1,77	3,33	2,31	0,42	0,66
TMSKIP - 3'	2,63	1,51	3,57	1,81	3,67	3,06	0,59	0,57

In specific motor variables of the final measurement statistically significant differences are determined in the following variables: BD2R - basketball players achieved the best results of the second year; DSNNLDR - basketball players achieved the best results of the second year and TMSKIP - in the third minute basketball players achieved the best results of the third year.

The results confirmed the expectations, with the exception of the ability to rule the ball in place and in motion, where students from the second year achieved the best results. This result is no surprise, knowing that in this generation most of the basketball players in their clubs play on positions 1, 2 and 3.

Table 8 presents the results of the analysis of variance which determines in which of the applied tests is a statistically significant difference between female student basketball players from all three years.

From the inspection of the table it can be seen that statistically significant differences between the arithmetic middle in the initial measurement was determined in the following variables: BD2R - the best results achieved by the female student basketball players from third year; VTMS - best results achieved female basketball players of the third year.

At the final measure statistically significant differences between female student basketball players from different years are determined in the variables: Illinois test - the best results achieved the female students basketball players from first year.

In other tests there are certain differences between the arithmetic middles between all three different years, but they are not statistically significant.

Conclusion

The research was conducted at the Sports Academy in Skopje, with student basketball players from all three years. Based on the research results, their interpretation and discussion, the following conclusions arise.

- For male and female student basketball players, basketball players from all three years, the applied training model caused positive transformations in motor skills area.

- For male and female student basketball players from all three years, the applied training model caused positive transformations in the specific motor area.

- Best results in motor and the specific motor skills achieved by male and male student basketball players from third year.

- Weaker results from the final measuring in variables associated with agility, speed and manipulation with the ball, should be taken with a certain reserve, because students are in intensive puberty period, with a pronounced acceleration of their growth.

This causes the disproportion between the development of muscle and bone growth, causing a reduction in their motor skills.

In the further training process a special attention to basketball technique with the ball should be paid, because a large proportion of student basketball players concluded that it was not at the expected level.

Given that these students have been selected as the most talented in our country, the results obtained did not fully met expectations.

The professional teams that carry out the selection of these student basketball players in the future need to sharpen the criteria for the selection of future student basketball players at the Sports Academy.

Literature

- Naumovski M., Petrov Lj. (2003): *Vlijanienekoimorfološkikarakteristikivrsposobnostanamladiteigračizamanipulacija so topka*. Medunarodnanaučnakonferencija "Optimiziranenapedagogičeskijaprocespo "Basketbol", "Volejbol", "Handbal". HCA, Sofija.
- Dežman, B. & G. Jeras (2003): *AnalizaigralneučinkovitostireprezentancnaEvropskemkošarkarskemprvenstvuzamladinkeleta 2002. vŠkofji Loki*. Trener-Košarka, 2 (4), 83-96.
- Наумовски М., Величковска А. Л., Петров Љ. & Даскаловски Б. (2007): *Влијание на програмираниот тренажен процес врз подобрување на кошаркарската прецизност*. Кинезиологија, Велико Трново.
- Наумовски М., Величковска А. Л. & Даскаловски, Б. (2007): *Разликимеѓу некои ситуациони – моторни способности кај млади кошаркари кои играат на различни играчки позиции* " (Diferences between some ones situation motorical abilities at theyangbasketballplyers). Физичка култура 35 (1), 107-110.
- Кочић, М (2007). *Утицај програмираног тренажног процеса на развој моторичких и ситуационо-моторичких способности младих кошаркаша*. Докторска дисертација: Факултет спорта и физичког васпитања у Нишу, Универзитет у Нишу.
- Наумовски М., Величковска А. Л., Реджепагиќ А. & Петров Љ. (2010): *Влияние на някои морфологични характеристики върху точноста при изпълнение на наказателни удари при елитни баскетболисти*. "Спорт и Наука", изв.бр. 4 - II част, с. 99. София.
- Daskalovski B., Naumovski M. (2011): *Latent structure on applied situational-motor variables at young basketball players from Republic of Macedonia*". 1st International conference on "Sport science and health", no1/305-313. Banja Luka.

