

THE EFFECTS OF SPORT SKILLS COURSE PROGRAM ON THE BASIC MOTOR STATUS IN THE STUDENTS AT THE FACULTY OF SECURITY STUDIES

Original Scientific Paper

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Abstract: Using an experimental method, this study was conducted to determine, whether the program of physical training in the subject of Sports Skills in Security, under regular working conditions, can result in significant changes in the motor skills in the students at the Faculty of Security Studies in Banja Luka. The study was conducted during the 60-hour course in the 2018/2019 academic year, in a sample of 31 first-year male students aged between 19 and 20 at the Faculty of Security Sciences, with an initial measurement at the beginning and final measurement at the end of the first semester. The sample of variables consisted of seven motor skill tests used in candidate selection for admission to the Faculty of Security Studies. Using the Student's t-test for dependent samples, it was found that programed exercise resulted in statistically significant differences in the status of students' motor skills in the initial and final measurements, with the following variables: number of push-ups in 10 seconds (MSKL), stick agility (MOCP), somersault – backward somersault – running (MKNT), and hand tapping (MTAP), thus partially confirming the basic hypothesis. The research findings could be used as a valuable information in the further education of students, that is, to plan and program teaching contents of the subject Special Physical Education.

Keywords: students, sport skills, regular lessons/teaching, motor skills

INTRODUCTION

The subject of Sport Skills in Security, which was launched by the Faculty of Security Studies in Banja Luka, is aimed at developing and improving

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natural forms of movement which have been noted, through experience and practice, to have not been adopted in the earlier stage of child development, who are now students, to a level that would enabled them to adopt more complex forms of movement faster and more efficiently. Through the improvement of natural forms of movement, based on scientific findings, it is realistic to assume that this new program in the subject Sport Skills in Security, will also affect the development of motor skills and morphological characteristics, which are important for the further education of students or the acquisition of the contents of the subject Special Physical Education. This assumption is based on numerous scientific studies, which claim that the optimum level of motor skills and morphological characteristics contribute not only to faster learning and adoption of complex motor programs in Special Physical Education, but also to the possibility of their practical application in real life situations: (Milošević, 1985; Božić, Milošević and Zulić, 1990; Milošević et al., 1994; Blagojević et al., 1994; Mudrić, Jovanović, Milošević and Ćirković, 1994; Stojičić, 1994; Blagojević, 1996, 1997; Dopsaj, Milošević, Arlov, Blagojević and Stefanović, 1996; Milošević, Mudrić and Amanović, 2003; Dopsaj, Milošević, Blagojević and Mudrić; 2002; Amanović, Mudrić and Jovanović, 2002; Subotički; 2003; Amanović, Milošević and Mudrić, 2004; Gužvica, 2005; 2006; 2007; 2008; Paspalj, 2008; 2009; 2010; 2012; 2013; Janković, Vučković and Blagojević, 2014).

Thus, the Sport Skills in Security course is delivered as a part of the study program at the Faculty of Security Studies, which is an optional course aimed at developing morphological characteristics, motor and functional skills as well as other knowledge necessary for a successful performance of security jobs. This 15-week course, or a total of 60 teaching hours, is scheduled 4 times per week in the first year of studies. The objective of the course is to enable the students at the Faculty of Security Studies to develop and acquire motor skills important for successful learning, mastering and performing activities characteristic of prospect security personnel. Additionally, the aim is to familiarize the students with the ways of dealing with simple and complex situations and obstacles occurring under the spatially and temporally predictable conditions, as well as to improve their health, based on contemporary scientific, theoretical and practical knowledge.

The expected outcome of the course is that the students fully adopt biotic movements, develop motor and functional skills, improve morphological characteristics which will positively influence the easier mastering of specific knowledge and skills typical of performing complex motor problems that prospect security workers may encounter in their professional work. Through teaching contents, the students perform physical activities aimed at developing endurance, force, speed, coordination, flexibility, agility, reactivity and balance, while special attention is paid to the development of knowledge in order to overcome horizontal and vertical obstacles in laboratory and real conditions, as well as mastering deep and calm water surfaces by swimming and diving, and rescuing drowning persons in shallow and deep waters.

Of the 60 classes envisaged, 15 classes are held at the City Olympic Pool through the development of certain skills for mastering deep and calm surfaces by swimming and scuba-diving (aimed developing agility and feeling in space), while 30 classes are realized in the Athletic hangar at the Faculty of Physical Education and Sports, University of Banja Luka, with the aim of improving the

status of motor skills, primarily coordination, force and strength, speed, endurance, flexibility, agility, reactivity and balance.

The program encompasses those kinesiological activities that are represented in the regular program. These are natural forms of movement with specific tasks and different forms of movement, and a set of body-sculpting exercises – individually and in pairs. The training process for the development of basic motor skills was realized through exercises using an individual's own bodyweight and training paraphernalia, whereby circuit training and stations were used, as well as the obstacle course. Overcoming obstacles was performed through natural forms of movement, meaning that the students had to overcome a number of obstacles indoors without stopping in the shortest possible time. In the implementation of the aforementioned contents, simple and then complex methodological and organizational forms of work were applied first. Tests and measurements were not encompassed by the program but were performed prior to and after the application of the program.

The subject and aim of the study

The subject of this study are motor skills in the first-year students at the Faculty of Security Studies. The main objective of this research is to identify differences in basic motor space between first-year students at the beginning and end of the first semester of the 2018/2019 academic year, that is, to determine whether activities in Sport Skills in Security classes impact the basic motor status in the students at the Faculty of Security Studies. In this way, by measuring the initial and final status of the motor skills status, the conditions for monitoring, control, comparison with the results achieved in the previous measurements, improving the existing battery of tests during the selection process for admission to schooling, as well as improving the existing Sport Skills in Security course curriculum have been created. This research has one general hypothesis with the basic assumption that, after the performance of exercises, the basic motor status in the respondents will improve.

Thus, the assumption is that the implemented program within the contents of the Sport Skills in Security course will have a significant positive impact on the transformation of the students' motor skills and that a statistically significant difference between the initial and final measurements will be obtained.

RESEARCH METHODS

This study is of an experimental nature, in which the initial and final measurements of motor skills were made. The initial measurement was made at the beginning of the first semester of the 2018/2019 academic year and the final measurement was performed at the end of the first semester. The study was conducted in the athletic hall within the Faculty of Physical Education and Sports in Banja Luka and the FC Borac Athletic Stadium in Banja Luka. The testing was conducted by the teachers of Special Physical Education, Faculty of Security Studies.

Sampling

The sample consisted of 31 first-year male students aged 19-20 at the Faculty of Security Studies, who were clinically healthy with no visible physical defects or morphological aberrations and nearly completing morphological and motor development. It should be noted that all respondents had successfully passed the medical examination and psychological tests required for admission to the Faculty of Security Sciences.

Variable sampling

The sample of variables consists of a battery of seven motor skills tests used in the selection process for admission to the Faculty of Security Studies: standing long jump (MSDM), the number of push-ups in 10 seconds (MSKL), the number of trunk lifts in 30 seconds (MPTR), stick agility (MOKP), somersault – backward somersault – running (MKNT), hand tapping (MTAP) and the Cooper 12-minute run test (MKUP). The first variable was used to assess the explosive power of the leg extensors, the second and third to assess the repetitive upper limb and trunk strength, the fourth to assess body coordination, the fifth to assess agility, the sixth to assess the frequency of arm movement, while the seventh variable used to assess the respondents' aerobic energy potential. A detailed description, the method of implementation, measurement conditions and the norms of the assessment of motor skills are contained in the Rulebook on the implementation of the selection process of candidates for admission to the Faculty of Security Studies.

METHODS OF DATA PROCESSING

The data obtained in this study were processed by descriptive and comparative statistical procedures. Their mathematical processing was performed using the SPSS program – version 20.00. Using the method of primary data processing, information on the distribution of variables within the space studied was obtained, with the arithmetic mean being determined as a measure of the average of the result values and standard deviation as an indicator of the deviation of the results from the arithmetic mean of the results. The Kolmogorov-Smirnov test was used to test the correctness of the data distribution, while the dependent-samples Student's t-test was used to test the difference of the average values for each variable in the initial and final measurements. In addition to the numerical indicators, a qualitative assessment of the results achieved in the initial and final measurements was conducted.

RESULTS AND DISCUSSION

Table 1. Results of the initial and final measurements of motor skills

Variables	Results of the initial measurement				Results of the final measurement			
	Number of respondents	Mean	The mean deviation	Significance of K-S test	Number of respondents	Mean	The mean deviation	Significance of K-S test
MSDM	31	245.96	13.84	.625	31	249.00	16.31	.605
MSKL	31	13.48	2.29	.159	31	15.38	1.81	.094
MPTR	31	31.90	3.36	.517	31	33.03	2.76	.490
MOKP	31	5.84	.94	.968	31	4.99	.62	.890
MKNT	31	5.94	.57	.600	31	5.44	.36	.509
MTAP	31	52.12	3.87	.748	31	54.32	4.57	.575
MKUP	31	2854.19	284.61	.646	31	2749.35	274.41	.743
NUMBER OF RESPONDENTS	31				31			

Table 1 shows the basic central and dispersion results of the initial and final measurements of basic motor skills. As it can be seen in Table 1, the measures of variability indicate a small dispersion of the respondents' individual results in relation to their average values, on the basis of which we can accept the hypothesis that the distribution in all variables is normal, which indicates the fact that it is a very homogeneous set. An examination of the arithmetic mean of the results achieved in the initial and final measurements shows that in the final measurement, in the variables observed, except the Cooper 12-minute run test variable, there was a certain improvement of the results compared to the results achieved in the initial measurement.

Table 2 demonstrates the numerical data of the grades achieved on the motor skill test between the initial and final measurements.

Table 2. Evaluation of the results in the initial and final measurements of motor skills

Grades	Grades for the initial measurement results							Grades for the final measurement results						
	0	1	2	3	4	5	AG	0	1	2	3	4	5	AG
MSDM	0	3	10	4	5	9	3.22	0	4	5	7	4	11	3.41
MSKL	0	1	4	6	7	13	3.87	0	1	0	0	5	25	4.70
MPTR	0	0	1	4	7	19	4.41	0	0	0	2	7	22	4.64
MOKP	0	1	6	10	11	3	3.29	0	0	0	4	15	12	4.25
MKNT	0	0	5	11	14	1	3.35	0	0	0	5	17	9	4.12
MTAP	0	0	5	13	6	7	3.48	0	1	0	11	6	13	3.96
MKUP	3	4	9	7	5	3	2.51	6	6	10	5	3	1	1.87
NUMBER OF GRADES	3	9	40	55	55	55	3.44	6	12	15	34	57	93	3.85

Key: MSDM – standing long jump, MSKL – the number of push-ups in 10 seconds, MPTR – the number of trunk lifts in 30 seconds, MOKP – stick agility, MKNT –

somersault – backward somersault – running, MTAP – hand tapping, MKUP – the Cooper 12-minute run test, AG – average grade

As shown in Table 2, regarding the first variable (MSDM) – standing long jump, none of the respondents received 0 points in the initial and final measurements. The mean value of the grades in the initial measurement amounts to 3.22, while in the final amounts to 3.41.

Concerning the MSKL variable – number of push-ups in 10 seconds, none of the respondents received 0 points in the initial and final measurements. The mean value of the grades in the initial measurement amounts to 3.87, while in the final amounts to 4.70.

Regarding the MPTR variable (number of carcasses performed in 30 seconds), all respondents received positive grades. The mean value of the grades in the initial measurement amounts to 4.41, while in the final is 4.64.

In the case of the MOKP variable (stick agility), none of the respondents received 0 points in the initial and final measurements. The mean value of the grades in the initial measurement amounts to 3.29, while in the final amounts to 4.25

For the MKNT variable (somersault – backward somersault – running), none of the respondents were awarded 0 and 1 grades. The mean value of the grades in the initial measurement amounts to 3.35, while in the final amounts to 4.12.

With the MTAR variable (hand tapping), none of the respondents were awarded 0 points in the initial and final measurements. The mean value of the grades in the initial measurement is 3.48, while in the final is 3.96.

Considering the results of many previous studies that have dealt with similar issues, this result is to be expected. In this case, too, under the influence of the appropriate kinesiological operators envisaged by the Sports Skills course program, positive transformations have occurred. The data obtained indicate that a number of respondents, after completion of the program, have made significant progress regarding the quality of motor skills. Specifically, it was observed that the respondents who had worse results in the initial measurement made more progress than the respondents who achieved excellent results in the initial measurement. It is believed that the respondents who had worse results in the initial measurement contributed a great deal to the statistically significant differences between the initial and final measurements.

In the final measurement, lower values of the results were found for the MCUP variable (Cooper 12-minute run test) than those achieved by the respondents in the initial measurement. The mean value of the grades in the initial measurement amounted to 2.51, while in the final one was 1.87. A large number of respondents were reported to have performed poorly on this test. Specifically, 3 respondents received 0 points in the initial measurement and 6 respondents in the final measurement. This phenomenon can be explained by a small number of classes pertaining to the development of students' functional skills. Kinesiological operators which were predominantly represented by the program did not significantly impact the development of functional skills, so their stagnation was also expected, at best.

Thus, comparing the mean of the grades of the whole system of the variables applied, it is evident that the final measurement, as a result of the implemented program, with the exception of functional skills, the mean values of the results achieved compared to the initial measurement increased.

Table 3 shows the results of the Student's paired samples t-test for the motor skills variables observed after the initial and final measurements.

Table 3. Results of the Student's paired samples t-test concerning motor skills

Motor skills variables		Paired differences of results				T-test statistics	Number of degrees of freedom	Significance (two-way)	
		Mean value	The mean deviation	Standard error of the mean	95% trust interval				
					Lower limit				Upper limit
Pair 1	МСДМ1 - МСДМ2	-3.03226	8.43202	1.51444	-6.12515	.06063	-2.002	30	.054
Pair 2	МСКЛ1 - МСКЛ2	-1.90323	2.07131	.37202	-2.66299	-1.14346	-5.116	30	.000
Pair 3	МПТР1 - МПТР2	-1.12903	3.25312	.58428	-2.32229	.06422	-1.932	30	.063
Pair 4	МОКП1 - МОКП2	.84935	.76309	.13705	.56945	1.12926	6.197	30	.000
Pair 5	МКНТ1 - МКНТ2	.50161	.47523	.08535	.32730	.67593	5.877	30	.000
Pair 6	МТАР1 - МТАР2	-2.19355	3.60943	.64827	-3.51750	-.86960	-3.384	30	.002
Pair 7	МКУП1 - МКУП2	104.83871	159.16178	28.58630	46.45770	163.21972	3.667	30	.001

Key: MSDM1-MSDM2 – standing long jump in the initial and final measurements, MSKL1-MSKL2 – the number of push-ups in 10 seconds in the initial and final measurements, MPTR1-MPTR2 – the number of trunk lifts in 30 seconds in the initial and final measurements, MOKP1-MOKP2 – stick agility in the initial and final measurements, MKNT1-MKNT2 – somersault – backward somersault – running in the initial and final measurements, MTAP1-MTAP2 – hand tapping in the initial and final measurements, MKUP1-MKUP2 – the Cooper 12-minute run test in the initial and final measurements.

The analysis of the results obtained by comparing the difference between the mean values of the results of the motor skill tests on the initial and final testing demonstrated statistically significant differences between the initial and final measurements for the following variables: number of push-ups in 10 seconds (MSKL), stick agility (MOCP), somersault – backward somersault – running (MKNT), and hand tapping (MTAP), which is also evident in a higher grade for the score achieved, which resulted in an increase in value by one grade. Quantitative or qualitative changes in favor of the results obtained in the final measurement were also found in the variables used to assess motor skills, in which no statistically significant differences were observed, with the exception of the results obtained on the Cooper 12-minute run test variable (MCI) in which the respondents achieved worse results in the final measurement by one grade.

The analysis of the results obtained indicates that the quantitative changes occurred within motor skills such as strength, coordination, agility, and the frequency of movement, which is largely due to the structuring movement

mechanism, which can be explained by a larger portion of teaching contents, whose movement structure and execution efficiency is based on these motor skills.

Based on the review of the studies dealing with the transformation of motor characteristics in a similar population of respondents, it may be concluded that similar results were obtained: (Kopaš, 1994; Rodić, 1994; Blagojević, 1997; Mudrić, Božić, Subotički and Baltić, 1998; Amanović, Jovanović and Mudrić, 1999; Arlov, 1999; Blagojević, 2002; Janković et al., 2008), who investigated the effects of motor treatments of the Special Physical Education program on changes in motor skills and the dynamics of their transformation.

CONCLUSION

The aim of this paper was to determine changes in the basic motor status in the first-year students at the Faculty of Security Studies, influenced by systematic exercise as part of the implementation of teaching contents of the Sport Skills in Security course, during the 60-hour course, during the first semester of the 2018/2019 academic year. In the research of motor skills development during the process of regular teaching, seven motor skill tests were used, which are usually used during the selection of candidates for admission to the Faculty of Security Studies.

An experimental longitudinal research method with one group and initial and final measurements was used as the main method in this study. For the purposes of this paper, changes in the given characteristics were examined in a sample of 31 male subjects, aged between 19 and 20, with the assumption that the program contents encompassed by the Sport Skills in Security course will have significant positive impact on the motor skills status in the students at the Faculty of Security science, which was confirmed by this research.

The analysis of the results obtained indicated that the improvement of motor skills was achieved in the following variables: the number of push-ups in 10 seconds (MSKL), stick agility (MOKP), somersault – backward somersault – running (MKNT), and hand tapping (MTAP). Other variables used to assess motor skills, in which no statistically significant differences were observed, also showed quantitative or qualitative changes in favor of the results obtained at the final measurement, with the exception of the results obtained on the Cooper 12-minute run test (MCI), which the respondents scored worse in the final measurement. Considering that the classes were held indoors during the winter semester, which is why the contents aimed at developing functional skills could not be sufficiently practiced, it was not possible to significantly influence the development of this skill.

Finally, it can be noted that owing to the systematic work through the teaching of Sports Skills in Security, there was a significant improvement in the status of basic motor skills in the first-year students at the Faculty of Security Studies in Banja Luka.

Considering the fact that the basic role of the Sport Skills in Security course is to prepare the students at the Faculty of Security Studies for the acquisition and realization of the content of the subject of Special Physical Education in the further education of students, as well as the fact that a number

of previously published studies found that the effectiveness of acquiring the content of the subject Special Physical Education depends, to a great extent, on students' motor skills, our research findings could be used as useful data in the further education of students when planning and programing teaching contents of the subject Special Physical Education.

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