THEINFLUENCE OF PHYSICAL EDUCATION CLASSES ON THE CHANGES IN MOTOR AND SPECIFIC-MOTOR SKILLS AMONG ELEMENTARY SCHOOL STUDENTS

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(Research note)

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Abstract

The specimen of 25 examinees is provided by primary school male population of the city of Niš, aged 11 to 12 years, which is engaged in the regular physical education classes. Their motor skills were evaluated by tests of the Mechanism for regulation of the movement structuring: agility on the ground (MOTL). foot tapping (MTAN). and hand tapping (MTAP) and the Mechanism for regulation of the excitation duration: the hanging pull-up (MVIS), torso lifts on the Swedish vaulting box (MDTK), and mixed pull-ups (MM2G). The evaluation of the results for the specific-motor skills was realized by means of the following tests: the high jump with a running start (SKVIS) and the 50m run with a high start (TR50M). There were two recordings of performances (initial and final). The central and dispersion parameters were calculated followed by a canonic discriminating analysis. The data have been processed using the statistical packages » SPSS8« and Statistika 6. The results of canonic discriminating analysis are taking into account the final performances compared toward the initial recorded values, show statistically important changes in both motor and specific-motor abilities. The greatest contribution to this discrimination was provided by the variables determining the mechanism of motion structure.

Keywords*: experiment, programs, motor tests, initial measurement, final measurement, mechanism of movement structuring, mechanism of excitation duration, discriminating analysis*

INTRODUCTION

The developmeent of the anthropological characteristics of students as a part of physical education classes, represents a dynamic and wave-like process which is characterized by the appropriate quantitative and qualitative indicators. This process should have an individualized character, and should be dependent on the abilities and features of each individual student *(Nićin 1996. Željaskov 2004, Višnjić 2007)*. Students respond differently during the performance of certain exercises, irrespective of how individualized the classes are, and thus, the individual dynamics of the development of the students is different. As a result. the teacher has to know how to determine the model of the development of the anthropological charactcristics of each student, which would be appropriate for his individual characteristics, age, gender and the conditions under which the classes are being carried out *(Bompa 2006, Višnjić 2007)*. The subject matter of the research was the study of wheter, at the end of a six-month physical education program, a statistically significant increases will be occurrcd in the level of motor and specific-motor abilities of the subjects, in relation to their initial state. The aim of the research was to determine the effects of the application of program contents as part of physical education

classes on the changes in motor and specific-motor skills of elementary school students.

METHODS

The population from which the sample of 25 subjects was extracted, was made up of elementary school students from Niš, all male, chronologically aged 11 and 12, participated only in their regular physical education classes. Their motor skills were evaluated with the help of tests of the Mechanism for the regulation of movement structuring: agility on the ground (MOTL). foot tapping (MTAN). and hand tapping (MTAP) and the Mechanism for the regulation of excitation duration: the hanging pull-up (MVIS), torso lifts on the Swedish vaulting box (MDTK), and mixed pull-ups (MM2G). The evaluation of the results for the specific-motor skills was realized by means of the following tests: the high jump with a running start (SKVIS) and the 50m run with a high start (TR50M). The applied group of motor and specific-motor variables was taken from the research of *Kurelić et al.. (1975).* The central and dispersion parameters and a canonic discriminating analysis were calculated. The data were processed with the help of the »SPSS8« and Statistica 6 programs.

The experimenlal program as part of the physical education classes

Two measurings were carried out (the initial and the final one). The monitoring of the physical education classes was carried out over a period of six months during the 2008/09 school year. The program contents of the classes were organized toward the developmcnt of the anthropological characteristics of students and toward the increase in the level of motor knowledge in handball, athletics. and sports gymnastics. During the classes, special attention was paid to the fact that the development of skills and abilities and the increase in the level of motor knowledge should be in the function of load intensity so that positive adaptive measures could be enabled within the bodies of the students. As a part of the program tasks, attention was paid to the developmcnt of motor skills: strength, speed, endurance, coordination, flexibility and precision, with the help of modern forms, work methods so that the load should be in accordance with the individual characteristics of the subjects.

RESULTS

The canonical discriminant analysis of the motor skills of the subjects

Table 1. shows that a significant discriminant function of high intensity (CR .489) has been obtained, which indicates the correlation of the group of data on the basis of which the discriminant analysis of the obtained results was carried out. The results for the discriminant force of the motor variables, obtained by
means of the Wilks‘ Lambda test which has a high value (.682), indicate that the differences between the initial and the final measuring in the area of motor skills of the subjects are statistically significant (p-level -.000).

Table 1. The significance of the isolated discriminant function of the subjects

Eingenvalue	Canonicl R	Wilks Lambda	Chi- Sqr	df	p-level
.371	.489	.682	56.412	6	.000*

Table 2. The factor structure of the isolated discriminant function of the subjects

Variables	Root 1
MOTL	.489*
MTAN	.47!’
MTAP	.465-
MMZG	-.458’
MVIS	-.205
MDTK	-.188

The obtained results indicate that there are statistically significant global differences

between the motor tests of the mechanisms for movement structuring and the duration of excitation between the initial and final measuring of the subjects.

Table 2. shows the structure of the discriminant function for the participation of the variables of motor skills in the forming of the significant discriminant functions. The shown group centroids represent the means from the initial and final measuring.

The displayed results indicate that the greatest contribution to the discriminant function is made by the tests of Movement structuring (agility on the ground MOTL .489. foot tapping MTAN .471. and hand tapping MTAP .465) and the Mechanism for the duration of excitation (mixed pull-ups MMZG -.458). The remaining tests of the mechanism for the duration of excitation (the hanging pull-ups • MVIS and the torso lifts on the Swedish vaulting box - MDTK) give no statistically significant explanation for the isolated discriminant functions.

Table 3. The measuring centroids for the experimental group

Mesuring	Root 1
Initial	-490
Final	.490

The results shown in Table 3. represent the discriminant centriod function on the basis of all of the motor tests. and which has a value of -.490 and .490. The significance of the shown measuring centroids, tested by means of the significance of the discriminant function, indicates that their distance (discrimination) is statistically significant.

The canonical discriminant analysis of the situational-motor skills of the subjects

Table 4. shows the obtained discriminant function of mid-high intensity which indicates the correlation of the group of data on the basis of which the discriminant analysis was performed.

Table 4. The significance of the isolated discriminant function for the experimental group

Eingenvalue	Canonicl R	Wilks Lambda	Chi- Sqr	df	p-level
.2002	.4306	.593	33.323	2	.012*

The results of the discriminant force of the specific-motor tests, obtained by means of the Wilks‘ Lambda test, whose value is high (.593), indicate that the differences betweeen the initial and final measuring in the area of specific-motor skills during the course of the physical education classes in the case of these subjects, is statistically significant (p-level = .012).

The obtained results indicate that there are statisticaly significant global difefrences between specific-motor skills defined by thee mechanissm for movement structuring and the duration of excitation in the final, in relation to the initial measuring of the subjects.

Table 5. shows the structure of the discriminant function of the participation of the tests of specific-motor skills in the forming of significant discriminant functions. The shown group centroids represent the means of the results from the initial and final measuring.

Table 5. The factor structure of the isolated discriminant function for the experimental group

Variables	Root 1
SKVIS	.322*
TR50V	-198

The results indicate that the greatest contribution to the discriminant function came from the specific-motor test of the high jump with a running start (SKVIS .322), while the test for the 50m run with a running start (TR50V .198), did not make a significant contribution to the discriminant function.

The results in Table 6. represent the discriminant function of the centriods on the basis of all of the tests of situational-motor

Table 6. The measuring centroids for the experimental group

Measuring	Root 1
Initial	-.394
Final	.394

skills, which has a value of -.394 and .394. The significance of the shown centroids, which was tested by means of the significance of the discriminant function, indicates that their distance (discrimination) is significant.

CONCLUSION

The results of the discriminant analysis indicate that at the end of the experimental period, under the influence of exercise during the physical education classes, a statistically significant increase in the results for the motor and specific-motor skills was determined. We can assume that a proper creation of the educational program (physical exercise, the methods for the development of motor skills, the shapes and forms of work, dosing the extent and intensity of the load, and the like) has contributed to the optimum work regime of certain systems of organs and the body as a whole, which has enabled the rational and effective process of their adaptation to the applied loads.

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ВЛИЈАНИЕТО НА НАСТАВАТА ПО ФИЗИЧКО ВОСПИТУВАЊЕ ВРЗ ПРОМЕНИТЕ НА МОТОРНИТЕ И СПЕЦИФИЧНО-МОТОРНИТЕ СПОСОБНОСТИ КАЈ УЧЕНИЦИТЕ ОД ОСНОВНИТЕ УЧИЛИШТА

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(Истражувачка белешка)

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Апстракт

Популацијата од која е земен примерок од 25 испитаници, претставена е од учениците на основните училишта во Ниш, од машки пол, со хронолошка возраст од 11 и 12 години. Учениците беа опфатени само со редовна настава по физичко воспитување. Моторните способности беа проценувани со тестови за Механизмот за регулација на структурирање на движењата: подвижност на тло (MOTL), тапинг со нога (MTAN), тапинг со рака (MTAP) и за механизмот за регулација на траењето на ексцитацијата: висење во згиб (MVIS), подигнување на трупот на шведска клупа (MDTK) и мешани згибови (MMZG). За проценување на специфично-моторните способности, применети се тестовите: скок во височина од залетување (SKVIS) и трчање на 50 метри од висок старт (TR50M). Реализирани се две мерења: иницијално и финално. Пресметани се централните дисперзивни параметриц, како и каноничката дискриминатива анализа. Податоците се обработени со статистичките пакети: SPSS8 и Statistika 6. Добиените резултати од каноничката дискриминативна анализа покажаа дека во финалното, во однос на иницијалното мерење, се појавија статистички значајни промени на моторните и специфично-моторните спсособности. Најголем придонес кон тие промени дадоа варијаблите за проценување на механизмот за структурирање на движењата.

Клучни зборови: *експеримент, моторни тестови, иницијално мерење, финално мерење, механизам за стркturирање на движењето, механизам за траење на ексцитацијата, дискриминативна анализа*

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