CONTRIBUTION OF THE EXPERIMENTAL PHYSICAL EDUCATION CURRICULA TO THE FUNCTIONAL ABILITIES DEVELOPMENT

(Research note)

Nevenka Zrnzević¹, Ljubiša Lilić² and Jovana Zrnzević³

¹University of Priština - Kosovska Mitrovica, Faculty of Teacher’s, Prizrenu-Leposavić, Kosovo and Metohija, Serbia

²University of Priština - Kosovska Mitrovica, Faculty of sport and physical education, Leposavić, Kosovo and Metohija, Serbia

³University of Niš, Faculty of sport and physical education, student, Niš, Serbia

Abstract

The purpose of this research is to determine how much is the specially programed performance of physical education, with increased demands and application of additional exercises, influencing the functional abilities. Research had a longitudinal character, and experimental program was carried out on the sample of 185 first-grade pupils of the elementary school, age of 7 years ± 6 months. The sample is divided into two groups: experimental group 106 and control one 79 pupils. Six metrical instruments were used for evaluation of functional abilities of pupils. Final data processing included only the examinees that participated at initial and final measurement. Basic statistic parameters were calculated by processing of data during initial and final measuring. The multivariate analysis of covariance (MANCOVA) and univariate analysis of covariance (ANCOVA) were applied in order to determine the effects of the experimental program. Based on retrieved results it could be concluded that specially programed performance of physical education had a significant influence on changing the most functional abilities of pupils.

Keywords: boys, girls, experimental group, control group, additional exercises, athletics, sports games, sports gymnastics and floor exercises, rhythmics and dance, multivariate analysis of covariance

INTRODUCTION

Recently it has been widely claimed that children are less and less physically active which results in inadequate development of motor and functional abilities. This refers first of all to the younger pupils as one of the most important chains in the process of education. If one aspires to act more significantly on the anthropological status of children it is necessary to apply high intensity exercising which is hard to find in the real pedagogical work. Inadequate volume of load will not contribute to the systematic changes of motor abilities and especially functional abilities which are the research topic of this paper. There is a need for more modern and more efficient physical education with contents that will enhance more opportunities for the holistic development of children. To successfully manage the process of physical exercising in the physical education teachers should excel in their expertise knowledge directed at the application of adequate teaching methods, exercising, dosing of exercises, choice of exercises and methods to assess the obtained results. All this will inevitably put more demands on the teachers and pupils as well and will call for more qualitative realization of the abovementioned contents.

SUBJECT AND GOAL OF THE RESEARCH

Having in mind that classical physical education curricula does not provide sufficient opportunities for functional abilities development in pupils, our purpose was to determine the effects of a specially designed physical education curricula with emphasized contents in athletics, sports games, sports gymnastic both with requisites and on the ground, as well as rhythmics and dance with use of suplementary exercises.
The basic aim was to determine whether application of the proposed physical education curricula would provide for positive changes of functional abilities of the experimental group of pupils. Besides, the research aim was also to determine the influence of the existing physical education curricula and the changes its implementation brings about in the functional abilities of the control group of pupils.

The influence of the experimental programs were observed and monitored by comparing the results of the initial and the final measurements of the functional abilities of the pupils.

**SAMPLE OF EXAMINEES**

The sample of examinees consists of the first grade elementary school pupils. The pupils attend and undergo regular physical education curricula envisaged by the PE Curricula of the Republic of Serbia. The research sample comprised 185 subjects divided into two groups: experimental group of 106 and control group of 79 pupils.

**TESTS FOR THE FUNCTIONAL ABILITIES ASSESSMENT**

- **a.** for assessment of the cardiovascular system functions and general functional capacity:
  - vital capacity (FVKAP) cm³;
  - systolic blood pressure at rest (FTASI) mmHg;
  - diastolic blood pressure at rest (FTADI) mmHg;
  - heart beat at rest (FPUMI) beat/min;
  - heart beat after loading (FPPOP) beat/min;
- **b.** for assessment of the cardiovascular system adaptability to physical efforts:
  - modified Harvard step-test (FHAST) in index points (Mazure version).

**METHODS AND DATA PROCESSING**

The obtained data in the initial and final measurements were processed with the adequate methods envisaged to provide complete information on the research problem.

In order to evaluate the effects of the experimental programme on functional abilities of the pupils it is necessary to determine if there are possible differences between the abilities of the pupils of the experimental and control groups in the initial measurement, therefore a multivariate analysis of variance (MANOVA) was applied, and to obtain the data in which variables possible differences occur a univariate analysis of variance (ANOVA) was applied.

In order to determine the effects of the proposed experimental program MANCOVA and ANCOVA were applied to neutralize the possible differences between the groups in the initial measures.

**RESEARCH RESULTS**

**Differences between the experimental and control groups of students at the initial measurement**

As seen in Table 1, which shows the results of the multivariate analysis of covariance in functional abilities between the experimental and control groups of the schoolboys it can be concluded that there is statistically significant intergroup difference on the level of \( p = .045 \).

Statistically significant differences on the univariate level (Table 2) were registered in favour of the experimental group of schoolboys in variables: vital capacity (FVKAP) and heart beat after loading (FPPOP) and the variable of the modified Harvard step-test (FHAST), heart beat at rest (FPUMI). Statistically significant differences were not registered in systole blood pressure at rest (FTASI) and dyastol blood pressure at rest (FTADI).

As seen in Table 3, which shows the results of the multivariate analysis of covariance in functional abilities between the experimental and control groups of the schoolgirls in the final measurement, it can be concluded that there is statistically significant intergroup difference on the level of \( p = .000 \).

Table 4., shows the results of the univariate analysis of the covariance in the applied variables of the functional abilities between the experimental and control groups of the schoolgirls in the final measurement.

Statistically significant differences on the univariate level were registered in favour of the experimental group of schoolboys in variables: vital capacity (FVKAP) and heart beat after loading (FPPOP) and the variable of the modified Harvard step-test (FHAST), heart beat at rest (FPUMI). Statistically significant differences were not registered in systole blood pressure at rest (FTASI) and dyastol blood pressure at rest (FTADI).

**DISCUSSION**

Reality of the obtained data of the functional variables on the initial measurement is based on the previous research and the experience of the national researchers (Stojanović, 1977; Zrnzević, 1984; Krsmanović, 1985; Djurasković, 2002). Considering these data it can be said that the obtained values are real and expected ones.

The initial measurement analyses show that the pupils of experimental and control groups differ in their functional abilities.

Values of the arithmetic means states that there was positive increase or decrease in all measured variables on the final in relation to the initial measurement and that the changes in the experimental group are more substantial than the changes in control group of pupils.

Results have shown that changes occurring during the experimental period are statistically significant in both groups and are significantly bigger in
the experimental group.

On the final measurement values of vital capacity (FVKAP) were bigger by 316 cm³. Significant increase in the vital capacity (FVKAP) is possible to explain by the increased physical activity, foremost by the application of the exercises for endurance (repetitive power exercises). They are meant to increase the frequency of breathing, to widen the muscles of the chest, to increase the elasticity of the interrib muscles, to widen the respiratory system so as to enhance the breathing. All these contribute to the better adaptedness of the respiratory system to the physical strains which results the increased vital capacity of the lungs. The more frequent and more intensive the activities the better results are achieved.

Bearing in mind that pupils of this age exhibit overwhelming reactions to some testings there is a possibility that values of systole and dyastol blood pressure at rest of some pupils were increased. Level of blood pressure is affected also by the emotional states such as excitement and it can cause its increase.

Final measurement showed decreased values of the heart beat at rest (FPUMI) and heart beat after load (FPPOP), which is considered positive. Regular physical activities enhance decreased values of heart beat at rest and values of heart beat after load. Heart beat rate at rest is difficult to determine precisely because physical exertion of the body and emotional unrests are hard to control. Lower pulse at rest gives rise to better adaptedness to increased bodily strains and efforts which was confirmed after the implementation of the experimental treatment resulting in decreased pulse after the overload.

Harvard step-test (FHAST) is meant to estimate the efficiency of the cardio-vascular system to adapt to the physical strains. Improvement of results for four index points in experimental group is extremely
important in physical education curricula and especially while planning the loading at this age.

Experimental program has shown that systematic exercising and optimal physical exercising bring about increase of the vital capacity and decrease of the pulse at rest even after load. Cardiovascular and respiratory systems are gradually adapted to the strains and efforts which contributes to the economy of their functioning. During experimental treatment it was insisted on more frequent performance of some activities whereby special role was assigned to “supplementary exercises”, resulting in more effective development of the functional abilities of the experimental group of pupils.

When checking the effects of the implementation of both programs between the initial and the final measurements it was determined that both programs influenced the occurrence of statistically significant changes in the functional abilities of the pupils, but these results are much bigger within the experimental group.

CONCLUSION

After the performed analyses and on the basis of the obtained results it can be concluded that the experimental program of physical education with the emphasis on the athletics, sports games, requisite games and floor exercises, rhythms and dance and some additional exercises during the main part of the class did statistically significantly influence and cause changes in the functional abilities of the experimental group pupils. In order to achieve positive results it was necessary to increase the demands and to increase the motivation for the work. Additional exercises had contributed to the density of the class, had increased the intensity of the exercises and had enhanced more substantial engagement and independence on the side of the pupils and more rational use of the requisites and apparatus in PE classes.

When checking the influence of the implementation of both programs between the initial and the final measurements it was determined that both programs influenced the occurrence of statistically significant changes in the functional abilities of the pupils, but these results are much bigger within the experimental group.

The results of this paper can be used by PE teachers giving them the information on adequate planning and programming of the classes.

REFERENCES


ПРИДОНЕС НА ПОСЕБНО ПРИМЕНЕТА ЕКСПЕРИМЕНТАЛНА ПРОГРАМА НА НАСТАВА ПО ФИЗИЧКО ВОСПИТУВАЊЕ ВРЗ РАЗВОЈОТ НА ФУНКЦИОНАЛНИТЕ СПОСОБНОСТИ

(Исиражуваачка белешка)

Невенка Зрenzeвић¹, Љубица Лилић² и Јована Зрenzeвић³

¹Универзитет во Приштина, Косовска Митровица, Учитељски факултет во Призрен – Лепосавић, Косово и Метохија, Србија
²Универзитет во Приштина, Косовска Митровица, Факултет за спорти и физичко воспитување, Лепосавић, Косово и Метохија, Србија
³Универзитет во Ниш, Факултет за спорти и физичко воспитување, Ниш, Србија

Апстракт
Целта на трудот беше да се утврди во која мера посебно програмитаната настава по физичко воспитување со зголемени барања на применети дополнителни вежби влијае врз развојот на функционалните способности на училиште. Истражувањето има лонгитудинален карактер со експериментална програма која е спроведена на примерок од 185 ученици од прво одделение на основното училиште со хронолошка возраст од 7 години ± 6 месеци. Примерокот беше поделен во две групи: експериментална од 106, и контролна група од 79 ученици. За проценување на функционалните способности на училиште беше применети шест мерни инструменти. Обработката на резултатите беше извршена на училиште кои беа уклучени во иницијалното и финалното мерење. За утврдување на ефектите на експерименталната програма, применета е мултиваријантната анализа на варијанса (МАНКОВА) и униваријантната анализа на варијанса (АНКОВА). Добиените резултати укажаа дека посебно програмиранията настава по физичко воспитување значајно влијаела врз промените на повеќето истражувани функционални способности на училиште.

Ключни зборови: ученици, ученички, експериментална група, контролна група, дополнителни вежби, айлейкиа, вежби на справи и јарийер, ријимика и йианци, сиоријски иѓери, мултиваријантина анализа на варијанса

Correspondence:
Nevenka Zrnzevic
University of Pristina - Kosovska Mitrovica
Faculty of Teacher's, Prizren – Leposavic
Str.Nemanjina bb., 38218 Leposavic
Kosovo and Metohija, Serbia
E-mail: nevenka zrnzevic@gmail.com