

THE EFFECTS OF AN ADDITIONAL FORM OF METHODOLOGICAL WORK ON THE DEVELOPMENT OF ANTHROPOLOGICAL CHARACTERISTICS OF SCHOOL CHILDREN

Preliminary communication

Sandra Milanović

Pedagogical Faculty, University of Kragujevac, Jagodina, Serbia

Abstract

The main objective of research is to determine the effects of additional methodical forms of work on the development of morphological characteristics and motor abilities. Since the sample of defined population is in the intensive phase of growth and development, a separate objective is that the manifested variables are establishing the latent dimensionality that characterizes the population, both in morphology and in the mobility area of their capacities. We used the T-test. The results showed that at the end of the experimental period in the experimental group there was a statistically significant increase in the anthropological characteristics.

Keywords: *additional forms of work, school children, physical education classes, morphological characteristics of children, motor abilities, primary school students*

INTRODUCTION

A variety of teaching content, time planned for each special application of adequate methodical forms of work and loads, slowly lead to transformation of individual segments of anthropological status of the students, especially to improve their motor and functional abilities, which are the starting point for successful realization of the planned content of sports and technical education.

The level of development of anthropological characteristics and their relationship to each other depend on the number of endogenous and exogenous factors and the training stimulus. Exercise activates all systems of the body, particularly muscle, cardiovascular and respiratory systems. Enhanced functionality in terms of muscle work, with loads appropriate to the age, health status and the level of physical potential of the organism, stimulate numerous physiological processes and develop the organs, so they could work with a smaller load in everyday conditions. This organized process of impact on the anthropological characteristics of children and youth, the administration is enabled by physical education classes, with its adequate distribution of programs in different developmental periods.

The way in which the process conduct the exercise is an essential constituent of the programming work. Programmed exercise in physical education and sport to a large extent can influence the other dimensions of the anthropological area. If the activity is properly practiced, the effects are always positive and complex changes, because they also include a larger number of anthropological characteristics. An essential constituent of programming work is the way in which the process of exercise is conducted. Methodical organizational forms of work are ways of organizing the process of training and achieving the objectives of physical education.

Research shows that the use of stational methodical form of work and additional exercises effectively achieve a lot during the exercise with high training intensity, thereby significantly increasing the energy and information component of the exercise, that are essential in the transformation

of the anthropological dimension of students' space and motor skills learning acknowledgment (Findak, 1992).

The problem of the research is to investigate: Can the applied means, methods and loads in the process of realization of additional methodical forms of work, affect the development of statistically significant morphological characteristics and motor abilities at the end of the experimental period (in the final compared to the initial measurement) for experimental groups of the examinees?

The aim is to determine the difference in morphological characteristics and motor abilities between the experimental and control group at the end of the experiment. Based on the established objective of the research, it defines the following objectives:

1. To determine the initial state of morphological characteristics and motor abilities in the experimental and control groups.
2. To determine the final status of morphological characteristics and motor abilities in the experimental and control groups.
3. To determine changes between the initial and final state of morphological characteristics and motor abilities in the experimental and control groups.
4. To determine the differences between the experimental and control groups in the level of morphological characteristics and motor abilities on the final measurement.
5. To determine the level of latent dimensionality of space defined in the experimental group of examinees.

METHODS

The sample consists of 80 subjects, primary school students, aged 11 and 12 years in the region of Jagodina. The sample was divided into two groups: the first group consists of 40 subjects covered by the experimental program of supplementary exercises in a regular physical education (experimentally group). The second group consists of 40 subjects covered by the program content in a regular physical education (control group). The overall experiment was conducted in the second half of the 2012/13 sc-

chool year. All subjects of the experimental and control groups regularly attended physical education classes. In this research, the experimental group of respondents, followed by the impact (efficiency) of transformation induced by applying a stimulus of using additional exercises in regular physical education and their influence on the morphological characteristics and motor abilities of fifth and sixth grade children of primary schools in the region of Jagodina are examined. Experimental treatment lasted for 12 weeks, or 36 school hours. Based on the final status of variables and anthropometric measures tracked in this study, the efficiency of the transformation process was defined thus contemplated under the influence of methodical forms of work and the additional exercises. In each class, the students were divided into four groups, which simultaneously performed four jobs at various places. Complementary, the exercises in experimental process applied to all four positions - at the beginning, additional exercise was introduced only to one group, and then gradually over time to all the others. Since each workplace performed various major exercise, the complementary exercises at these workplaces were different too. All the additional exercises in the experimental program were structurally simple, and could be carried out immediately after the demonstration by examinees without special training and no the need for assistance or the risk of injury. These exercises were in line with the needs, interests and desire of students to increase their motivation to exercise. Performance of additional exercises lasted less than performing major exercise because of rationalization of time for its performance. The control group worked in the traditional manner when implementing the program of work proposed by the Ministry of Education of the Republic of Serbia, also with the same number of regular educational classes.

For the assessment of morphological status following dimensions were used: circular dimensionality of the skeleton and body mass and subcutaneous.

For the assessment of motor abilities following motor skills were used: coordination, explosive strength, repetitive strength, sprint speed and segmentary speed. Measuring instruments for motor abilities were taken on the basis of Kurelić, (1975). Descriptive and comparative statistics data were used for processing procedures. From the area of descriptive statistics for each variable, calculated by the arithmetic mean, minimum value, maximum value by a T-test.

RESULTS

Analysis of the differences between the initial and final measurements of the subjects are tested by T-test.

Table 1. The significance of differences between means of the experimental group

Anthropometric measures	Mean(i)	Mean(f)	T-value	p
AOGK	69.92	73.60	5.78	.000
AOBU	40.10	45.35	5.45	.000
AOPK	25.40	29.24	4.54	.000
AMAS	46.80	49.85	6.75	.000
AKNT	13.82	8.12	7.58	.000
AKNN	10.57	6.14	8.85	.000
AKNP	7.36	5.25	5.93	.000
AKND	11.80	7.40	4.32	.000
AKNL	8.51	5.55	5.38	.000

(Note: abbreviations in tables left as in the Serbian original)

Table 1. contains the results of the T-test between the morphological characteristics of the initial and final measurements of the experimental groups.

After the analysis of the obtained results it is concluded that there is a statistically significant difference in all variables.

Table 2. The significance of differences between means in the control group

Anthropometric measures	Mean(i)	Mean(f)	T-value	p
AOGK	70.14	71.26	1.26	.246
AOBU	39.84	40.90	1.67	.252
AOPK	24.85	25.35	-1.72	.295
AMAS	46.95	47.50	-1.55	.152
AKNT	14.05	13.84	-1.36	.142
AKNN	10.34	9.74	-1.45	.205
AKNP	7.65	7.24	-1.44	.222
AKND	12.05	11.80	1.57	.153
AKNL	9.00	9.78	1.53	.124

Table 2. contains the results of a T-test between the morphological characteristics of the initial and final measurements of the control group. After analysis of the results it is concluded that there is no statistically significant difference in measures of morphological characteristics.

Table 3. The significance of differences between means of the experimental groups

Motor tests	Mean(i)	Mean(f)	T-value	p
MOKVZ	15.34	12.35	8.03	.000
MKOPL	5.46	3.70	5.05	.000
MOKNT	6.61	4.48	7.00	.000
MSKDM	155.20	182.40	6.25	.000
MTRSK	446.62	495.60	11.77	.000
MBMS	3828.35	462.55	11.54	.000
MDTŠK	10.45	15.10	10.94	.000
MMZGB	13.54	18.65	13.81	.000
MČUČN	16.75	22.25	10.57	.000
M20VS	4.65	3.65	5.81	.000
M40VS	7.84	6.24	8.52	.000
M60VS	10.45	9.20	7.56	.000
MTAPR	23.24	29.95	6.75	.000
MTAPN	32.22	37.38	9.54	.000
MTAPZ	20.68	26.56	7.91	.000

Table 3. shows the results of a T-test of motor abilities between the initial and final measurements of the experimental groups. After the analysis of the obtained results it is concluded that there is a statistically significant difference in all tests.

Table 4. The significance of differences between means in the control group

Motor tests	Mean(i)	Mean(f)	T-value	p
MOKVZ	15.90	15.20	1.25	.233
MKOPL	6.02	5.80	1.24	.183
MOKNT	7.74	6.35	-1.39	.226
MSKDM	160.00	164.10	-1.36	.265
MTRSK	425.26	435.42	-1.27	.276
MBMS	379.56	389.56	-1.42	.215
MDTŠK	11.05	12.25	1.45	.217
MMZGB	14.15	15.60	1.18	.256
MČUČN	17.37	18.73	-1.77	.275
M20VS	4.52	4.37	-1.48	.138
M40VS	8.00	7.83	-1.25	.178
M60VS	11.28	10.76	-1.84	.148
MTAPR	24.00	25.00	-1.15	.255
MTAPN	32.00	33.00	-1.73	.254
MTAPZ	21.10	23.00	-1.25	.157

Table 4. shows the results of a T-test of motor abilities between the initial and final measurements of the control group. After the analysis of the obtained results it is concluded that there is a statistically significant difference in the tests of motor skills.

CONCLUSION

Based on the results, we can conclude the following:

1. The results indicate that at the final measurement, compared to the initial in the experimental groups, there was a statistically significant change of the morphological characteristics. The control group showed no statistically significant differences in morphological characteristics.

2. The results indicate that at the final measurement, compared to the initial in the experimental groups, there was a statistically significant change of motor skills. The control group showed no statistically significant differences.

The results obtained in this study related to the impact of the additional exercises model on the adaptive processes of some anthropological characteristics of students of secondary school age, are also of practical importance in the use of collected data for the selection process in sport.

Also, the effects of physical education classes in schools can be seen and ways and guidelines for innovating the teaching process, may be proposed.

The results will also be used for more efficient process of planning, optimization, rationalization and individualization of work in the field of regular physical education classes in the population of primary school students.

REFERENCES

- Arunović, D., Berković, L., Bokan, B., Krsmanović, G., Madić, B., Matić, M.,... Višnjčić, D. (1992). *Fizičko vaspitanje, Teorijsko-metodičke osnove stručnog rada* [Physical education, theoretical and methodological bases of professional work. In Serbian.] Niš: »Sirius«.
- Branković, N., Stojilković, D. & Živković, M. (2010). Kanoničke relacije morfoloških karakteristika sa repetitivnom snagom kod učenika osnovnih škola [Canonical relations between morphological characteristics with the repetitive power of school children. In Serbian.] In Stanković, R. (Ed.), *Proceedings, XIV International Scientific Conference "Fis Communications 2010"* Niš, 2010, (pp. 587-593). Niš: Fakultet sporta i fizičkog vaspitanja.
- Findak, V. (1992). *Metodički organizacijski oblici rada u edukaciji, sportu i sportskoj rekreaciji* [Methodological organizational work forms in education, sport and sport recreation. In Croatian.] Zagreb: Hrvatski savez za sportsku rekreaciju, MENTOREX.
- Findak, V. (1998). *Metodički organizacioni oblici rada* [Methodological organizational forms of work. In Croatian.] Zagreb: "Mentorex" d.o.o.
- Findak, V., Fang, Z., Mraković, M., & Neljak, B.. (1996). Razvoj antropometrijskih obilježja učenika osnovnih i srednjih škola [Development of anthropometric characteristics of students in primary and secondary schools. In Croatian.] *Napredak*, 137(3), 279-284.
- Kurelić, N., Momirović, K., Stojanović, M., Radojević, Đ., & Viskić-Štalec, N. (1975). *Struktura i razvoj morfoloških i motoričkih dimenzija omladine* [Structure and development of morphological and motor dimensions of youth. In Serbian.] Beograd: Institut za naučna istraživanja Fakulteta za fizičko vaspitanje Univerziteta u Beogradu.
- Milanovic, S., Markovic, Z., & Ignjatović, A. (2010). Uticaj različitih oblika rada u nastavi fizičkog vaspitanja na motoričke sposobnosti učenika [The influence of different forms of work in physical education on the motor skills of students. In Serbian]. *Физичка култура* (Скопје), 38(2), 71-73.
- Višnjčić, D. (1979). *Obrazovne vrednosti nastave fizičkog vaspitanja organizovane kržnim treningom i radom sa stanicama* [Educational value of physical education classes organized circular training and working with the cells. In Serbian.], (Unpublished Masters' thesis, University of Belgrade: Beograd: Fakultet za fizičko vaspitanje.

Correspondence:

Sandra Milanović

University of Kragujevac

Faculty of Education

Milana Mijalkovića 14, 35000 Jagodina, Republic of Serbia

E-mail: Sandra.milanovic@pefja.kg.ac.rs