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INFLUENCE OF PHYSICAL BODY EXERCISES ON PUPILS

Introduction

In Kosova education system, frequent changes that have occurred in past 14 years have given indication that the education system has strived to adjust to social, economic and cultural changes, etc. These changes, as they were not studied well, have affected and have continued to affect organization of the physical education in schools, its quality and quantity. These changes have not yielded necessary results and have often been regarded as experiments. Proposed reforms have been oriented in decrease of the number of study hours from two hours per week of physical activity and one hour of theory in health and wellbeing.

Commencing from social conditions of pupils in Kosova, primary schools and secondary are the only possibility for children to engage in physical activities. We need to understand that physical education in schools is based on learning and developing basic motoric skills that are fundamental for regular and harmonized development of children's bodies based on the natural shape of movements and game. In diverse activities knowing better its motoric skills, children develop and upgrade new motoric abilities and all of these happen during regular physical education. Therefore, enhancement of quality and quantity of physical activities in schools is very important obligation.

Selection of tools for development of physical activities of children during execution of programs of physical education in schools is manly determined based on the research studies of various authors that have chosen to deal with issues of valuing physical activities in relation to psychosomatic status of children and adults. Specific value has research carried out by Klojcnik (1977) (as cited by Madić, 2000) which treated the issue of selection of exercises for children and adults. Some of the general conclusions of this research have to do with selection of tools within the program of physical education. Author has underlined the importance of the use of gymnastics exercises and athletics exercises in this very sensitive period of child's development, and in particular their positive influences on body position, development of anthropometric characteristics and motoric skills and also influence on cognitive skills and conative characteristics of children.

Starting from the fact that the growth of quality and quantity of physical activities influences strongly in a harmonized and normal body development and motoric development of children and youth is basic goals of this research. Goal of this research is to determine influence of one additional hour of physical education, in total three hours during a week for anthropometric and motoric development of pupils.

Methods

In conditions of defining time, this study has longitudinal empirical character and is composed of two measures of morphological indicators and motoric of pupil of the primary and lower secondary school from urban locality. The study covered in total 26 pupils, aged 15 years. Measurements have been executed at the end of the school year.

We have applied 6 anthropometric variables and 4 motoric variables (Kurelić et al., 1975). **Anthropometric variables:**

- Body height (ATV),
- Foot length (ADS),
- Body mass (ATT),
- Size of upper arm in released position (AONL),
- Size of upper leg (AONK).
- Size of lower leg (AOPK) and

Motoric variables:

- Long jump from standing position (MESDM),
- Running from 30 meters (MTR30V),
- Bench bending (MFLPRK), and
- Press-ups (MSKLEK).

In order to analyze the data we have used T-test analysis for dependent sample.

Results

The first table below contains results of descriptive basic parameters and of distribution for analyzed variables in the sample. In the table, the columns present number of sample involved in study (N), minimal result (Min), maxi result (Skew) mal (Maks), arithmetic mean (Mean), standard deviation (Std. Dev), measures of asymmetric distribution (Skew), measures of length of distribution (Kurt) and variation coefficient (KV).

Results obtained indicate that all morphologic and motoric variables applied do not have highlighted asymmetry and have normal distribution of results. In a big number of variables, asymmetry coefficient indicated that results tend to lower values given that the arithmetic mean has higher value from medium and mod. In three variables asymmetry tests are hipokurtic (negative), meaning that results tend toward higher ones given that arithmetic mean has lower values.

Table 2 presents basic parameters of descriptive statistics of distribution in pupils after one year of treatment in the school with 3 hours of physical education, and all morphologic and motoric variables indicate a normal distribution of results. Based on the values of asymmetry (Skew) and coefficient of the distribution curve (Kurt.) in the applied variables confirm that there is no significant asymmetry. With majority of variables (7 variables) asymmetry of coefficient indicates that their arithmetic mean values tend toward higher results (epikurtic) and applied results tend toward lower

values. Variation coefficient indicates that pupils were at the beginning and at the end of the experiment a heterogeneous group in the execution of motoric test of flexibility.

Table 1. Basic statistical parameters of motoric variables at the beginning

| | N | Min | Max | Mean | Std. Dev | Skew | Kurt | Kv |
|--------|----|--------|--------|----------|----------|-------|--------|--------|
| ATV | 26 | 157.00 | 184.00 | 171.6692 | 8.86064 | -.186 | -1.019 | 5.164 |
| ADS | 26 | 24.00 | 30.00 | 26.7308 | 1.59519 | .535 | .002 | 5.967 |
| ATT | 26 | 44.50 | 93.00 | 63.7308 | 15.54042 | .696 | -.656 | 24.384 |
| AONL | 26 | 20.50 | 30.00 | 24.9231 | 3.15497 | -.017 | -1.326 | 12.658 |
| AONK | 26 | 44.50 | 63.00 | 52.2692 | 5.88087 | .625 | -.468 | 11.251 |
| AOPK | 26 | 30.00 | 42.00 | 35.3077 | 3.54140 | .474 | -.674 | 10.030 |
| MESDM | 26 | 160.00 | 230.00 | 195.8462 | 22.08654 | -.024 | -.920 | 11.277 |
| MTR30V | 26 | 4.84 | 5.75 | 5.2562 | .26295 | .353 | -.376 | 5.002 |
| MFLPRK | 26 | 10.00 | 71.00 | 38.0769 | 18.92918 | .104 | -1.218 | 49.713 |
| MSKLEK | 26 | 9.00 | 40.00 | 21.9231 | 11.28866 | .682 | -1.222 | 51.492 |

Table 2. Basic statistical parameters of motoric variables at the end

| | N | Min | Max | Mean | Std. Dev | Skew | Kurt | KV |
|--------|----|--------|--------|----------|----------|-------|--------|--------|
| ATV | 26 | 161.00 | 188.20 | 175.3231 | 8.93928 | -.200 | -1.194 | 5.098 |
| ADS | 26 | 24.00 | 31.00 | 27.1923 | 1.87124 | .516 | -.106 | 6.881 |
| ATT | 26 | 47.50 | 99.00 | 67.6923 | 15.03268 | .668 | -.250 | 22.207 |
| AONL | 26 | 21.00 | 32.00 | 25.8846 | 3.01432 | .149 | -.314 | 11.645 |
| AONK | 26 | 44.50 | 63.00 | 53.1538 | 5.34933 | .321 | -.009 | 10.060 |
| AOPK | 26 | 30.00 | 43.00 | 36.7308 | 3.30221 | .070 | .157 | 8.990 |
| MESDM | 26 | 171.00 | 232.00 | 203.4615 | 19.96643 | -.024 | -1.364 | 9.813 |
| MTR30V | 26 | 4.56 | 5.70 | 5.0992 | .30354 | .336 | -.115 | 5.952 |
| MFLPRK | 26 | 15.00 | 75.00 | 53.6154 | 20.03412 | -.770 | -.714 | 37.366 |
| MSKLEK | 26 | 10.00 | 49.00 | 28.3846 | 12.73445 | .236 | -1.147 | 44.863 |

Third table contains all data related to T-test procedure for dependent sample. For each variable results are indicated primarily based on assumption of the equality of group's variance and results, and second, the inequality of the variance is not presented due to the size of the table.

Table 3. Test of arithmetic mean differences with dependent sample

| | Std. | | Std. Error | | T | Df | Sig. (2-tailed) | |
|----------|-----------|-----------|------------|----------|---------|---------|-----------------|-------|
| | Mean | Deviation | Mean | Lower | | | | Upper |
| ATVIF | -3.65385 | 1.67791 | .32907 | -4.331 | -2.976 | -11.104 | 25 | .000 |
| ADSIF | -.46154 | .50839 | .09970 | -.666 | -.256 | -4.629 | 25 | .000 |
| ATTIF | -3.96154 | 3.10781 | .60949 | -5.2168 | -2.706 | -6.500 | 25 | .000 |
| AONLIF | -.96154 | 1.00919 | .19792 | -1.36916 | -.55392 | -4.858 | 25 | .000 |
| AONKIF | -.88462 | 2.07030 | .40602 | -1.72083 | -.04840 | -2.179 | 25 | .039 |
| AOPKIF | -1.42308 | 1.32433 | .25972 | -1.95798 | -.88817 | -5.479 | 25 | .000 |
| MESDMIF | -7.61538 | 8.78670 | 1.72321 | -11.164 | -4.066 | -4.419 | 25 | .000 |
| MTR30VIF | .15692 | .30409 | .05964 | .0340 | .279 | 2.631 | 25 | .014 |
| MFLPRKIF | -15.53846 | 10.94433 | 2.14636 | -19.958 | -11.117 | -7.239 | 25 | .000 |
| MSKLEKIF | -6.46154 | 9.01213 | 1.76742 | -10.101 | -2.821 | -3.656 | 25 | .001 |

Data analysis indicates that pupils tested at the end of 2013/2014 schools year aged 15 years have best results in all morphologic and motoric variables. Results gained indicate that physical activities and physical exercises applied three times per week influence strongly on development of morphologic and motoric parameters of pupils. Differences gained based on the analysis of T-test indicate significant statistical difference for all applied anthropometric and motoric variables for value of $p < 0.05$. The age of the sample represents a phase when pupils did not finalize their anthropometric and motoric aspects and this may be a reason for the gained difference of the applied variables. This is in compliance with the research of various authors where it is said that the time frame of child development is more intensive from the age of 13 to 16 (Medved et al., 1987.).

Compared to intensive physical development in this group age, physical activities should be increased in quality and quantity. It is well familiar that the physical activity has positive influence on the health condition of pupils and it represents important factor for health improvement. Therefore it is necessary to use diverse types of possibilities so that the bigger number of pupils can find their interest and voluntarily engage in some form of body activity (Rusch and Weineck 1998).

Discussion

Results obtained based on the testing of differences of arithmetic means at the beginning and at the end of school year 2013/2014 in some anthropometric and motoric variables of pupils of 15 years of age, have indicated that the results at the end of school year have undergone positive changes and that these changes are manifested in a significant statistical difference in all variables applied, those anthropometric and motoric. However these changes can be attributed with a great certainty to additional hour of physical education having in mind the growth of pupils in this period of their life. Thus, it is certain that for obtaining a real picture of influence of additional

physical education hour on motoric and physical development in this group age, it is necessary to involve in the research control group compared to experimental group. Influence of physical activities on transformation and success at the end of the school year cannot be negated.

It was learned in this study that program applied and its content, selection and distribution of exercises for three times per week during school year result in a condition that was desired for anthropometric and motoric development of pupils in this age. In this way, with a certainty, we can conclude that increase of number of hours for physical education in schools of various levels in Kosova is necessary for proper and harmonized development of all anthropological aspect of youth.

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In the education system of Kosova, frequent changes that have occurred in last 14 years, have demonstrated that the education system has tried to adjust to economic, social and cultural changes, etc. As these changes have not been studied well, they have influenced and are still influencing organization of physical education in schools as regards their quality and quantity. These changes have not provided desired results and are often regarded as experiments. Methods: When defining the time, this study has longitudinal empirical character and consists of two measures, the morphological and motoric indicators in the pupils of primary school and lower secondary school

“Faik Konica”. This study involved 26 pupils in the age group of 15 years. 6 anthropometric and 4 motoric variables have been applied (Kurelić et al, 1975). Anthropometric variables included: body height (ATV), length of foot (ADS), body mass (ATT), volume of upper arm in down position (AONL), volume of thigh (AONK), volume of lower leg (AOPK). Motoric variables included: standing distance jump (MFESDM), 30 meters distance running (MTR30V), bench bending (MFLPRK) and push-ups (MSKLEK). For data analysis t-test for dependent sample has been used. Results: Basic statistical parameters of the obtained results before and after the application of additional class of physical education indicate that the results have normal distribution, have no visible asymmetry and have tendency toward higher values of distribution (epikurtic). T-test analysis for dependent variable demonstrates that the obtained differences within all variables in the groups are statistically significant. Discussion: Physical activities and body exercises during sport education classes of three times per week have visible influence in development of morphologic parameters and motoric skills of pupils. Differences obtained based on the t-test analysis demonstrate a strong statistical difference for all variables applied, anthropometric and motoric for the value of $p < 0.05$. It is well known that body activity has positive influence on health of pupils and represents significant factor for improvement of health. Therefore it is necessary to use different possibilities that sport offers so that the biggest number of pupils can find interest and motivation for voluntary involvement in some type of physical activity (Rusch and Weineck 1998).

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ЦРНОГОРСКА СПОРТСКА АКАДЕМИЈА

Признање Олимпијског покрета

Следећа, 12. Међународна научна конференција Црногорске спортске академије, која се традиционално одржава у првој недељи априла, већ је нашла место на званичној страници Олимпијског покрета. Тема конференције је „Трансформациони процеси у спорту“, а одржаће се под мотом „Спортска достигнућа“.

Тај догађај је сврстан међу 49 научних конференција у спорту, које је ова реномирана организација признала као најзначајније научне догађаје у предстојећих 12 месеци и објавила их на званичном сајту.

- Велико је признање за нашу научну конференцију. Препознат је квалитет рада и радова који се презентују, чак и ван европског континента. На последњој конференцији имали смо преко стотину стручњака и научника из европских земаља, али и ауторе радова из Азије - Јапана, Тајланда и Тајвана. Стандарди су пооштрени, постављен је највиши научни праг за рецензију, па смо добили високи ранг квалитета - рекао је проф. др Душко Бјелица, председник научног одбора и оснивач Црногорске спортске академије.

Б. Ђукановић