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COMPARISON OF EFFICIENCY OF TWO TRAINING PROGRAMMES FOR DEVELOPING SELECTED MOTOR ABILITIES OF CHILDREN IN KINDERGARTEN

PRIMERJAVA UČINKOVITOSTI DVEH PROGRAMOV VADBE ZA RAZVOJ IZBRANIH GIBALNIH SPOSOBNOSTI OTROK V VRTCU

Abstract

The aim of the research was to establish the possible differences in developed motor abilities between two groups of five and a half year old kindergarten children. In case of the first group the physical education programme was developed and conducted by kindergarten teachers, in the second one the programme was developed jointly by a student of physical education and a kindergarten teacher. The research was based on studying 75 five and a half year old kindergarten children, among which 37 were classified in the control group and 38 in the experimental group. The sample of variables tested in this research was composed of five motor tests: standing board jump, sit-ups, walking through the hoops, running after rolling on the floor and a 300-metre run. The analysis of the data showed that the results from the experimental and the control groups were statistically significantly different in the final stage. The programme which was developed and conducted by a student of physical education and a kindergarten teacher in the experimental group proved to be more effective than the programme developed and conducted by a kindergarten teacher in the control group. Even though the children from the control group slightly improved their results, the values were lower and considered within the limits of a natural developmental dispositions.

Key words: physical education, pedagogical experiment, comparison, motor development, pre-school period

Izvleček

Namen študije je bil ugotoviti, ali obstajajo razlike v razvoju nekaterih motoričnih sposobnosti med otroki v vrtcu, ki so imeli športno vzgojo po programu in vodenju vzgojiteljice in otroki, ki so izvajali gibalne dejavnosti po programu in vodenju študenta Fakultete za šport in vzgojiteljice. V vzorec merjencev je bilo zajetih 75 pet- do šestletnih otrok, ki so obiskovali vrtec, od tega 37 otrok kontrolne in 38 otrok eksperimentalne skupine. Vzorec spremenljivk je sestavljalo 5 motoričnih testov: skok v daljino z mesta, dviganje trupa, hoja skozi obroče, tek po kotaljenju, tek na 300 metrov. Rezultati raziskave kažejo, da se kontrolna in eksperimentalna skupina v končnem stanju pomembno razlikujeta. Program, ki sta ga izvajala študent in vzgojiteljica v eksperimentalni skupini, je bil učinkovitejši od programa, ki ga je sestavila in izvajala vzgojiteljica v kontrolni skupini. Čeprav so merjenci kontrolne skupine svoje rezultate tudi nekoliko izboljšali, so te vrednosti nižje in ostajajo v mejah naravnih razvojnih tendenc. Strokovno načrtovana in kakovostno vodena športna vzgoja lahko torej pomembno vpliva na razvoj nekaterih motoričnih sposobnosti otrok, starih pet do šest let.

Ključne besede: športna vzgoja, primerjava, pedagoški eksperiment, motorični razvoj, predšolsko obdobje

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INTRODUCTION

In the pre-school period children learn about their body and the surrounding environment through movement activities, which is reflected not only in development of motor skills but also in the cognitive, affective and social development (Videmšek, 1996). The effects of individual activities are represented as a result of all developmental aspects that are closely related (Allen, 1997). Since the integration of various spheres of child's development is so vital, it is understandable that lack of, shortage or unprofessional motor skill learning process results in deficits that are counterproductive in all aspects of child's personal development. Highly professional motor skill learning programme and process can prevent or mitigate the effects of deficits resulting in other areas of child's development (Videmšek & Visinski, 2001). A professionally planned and conducted pre-school physical education represents a highly significant element in the process of child's development. Even though quite a few scientific researches have proved that the appropriate approaches and the quality designed programmes positively influence on all aspects of child's psychosomatic conditions, these findings progress into our minds rather slowly (Cone, Werner, Cone & Woods, 1998).

Pre-school physical education is generally taught by kindergarten teachers (Logsdon, 1997). Knowing that their education is rather general, it is hard to expect them to be as successful and effective as the professional physical education teachers or a student of physical education. Moreover, everyday practice has shown that children love to participate in dynamic and well organized activities. Battelino (1986) ascertained that physical education (PE) designed and conducted by kindergarten teachers is less successful compared to PE designed and conducted by professional physical education teachers. An activity programme developed and conducted by a professional PE teacher is more effective in developing some motor skills of five to six year old children. These motor skills include movement coordination, agility, speed of movement frequency, explosive strength. Carefully planned physical education programme has some positive effects on improving the explosive strength, movement coordination, and repetitive strength with five to seven year old children (Karpljuk, Videmšek, Kondrič & Štihec, 2000). Professionally planned and conducted physical education influences the development of some motor skills of five to seven year old children to a higher extent (Šušteršič-Kravanja, 1984). The experimental physical education programme for eight-year-old school children, professionally designed to develop some motor skills and morphological characteristics, indicated the improvement of some movement coordination aspects. It is necessary to point out that professional PE teachers with their programmes are much more successful and effective than class teachers (Kovač & Štihec, 1988).

Regarding the research problems, the following aim was to ascertain whether there are distinctions in motor skill development between kindergarten children participating in a physical education activity programme developed and conducted by kindergarten teachers and children participating in a physical education activity programme developed jointly by a student of physical education and a kindergarten teacher.

METHOD

Participants

The subject sample was formed of 75 five and a half year old (SD = 3 months) pre-school children (boys and girls), among whom 37 were in the control group and were given physical education developed and conducted by a kindergarten teacher, and 38 children were in the experimental group and were physical education developed and conducted jointly by a student of physical education and a kindergarten teacher. The children in both groups attended two kindergartens offering basically equal or similar learning conditions (a sports activity room visited twice a week, a playroom covering an area of 40 m^2 and an equipped outdoor playground). The children who have missed five or more lesson units (due to illness or other objective reasons) were excluded from the final research evaluation.

Instruments

The research variables were obtained on the basis of a set of five motor tests chosen according to the research by Videmšek and Cemič (1991): standing board jump, sit-ups, walking through the hoops, running after rolling on the floor, a 300-metre run. The measuring methods applied in this research had the required metrical characteristics (Videmšek & Cemič, 1991). The measuring methods for evaluating motor skills have been hypothetically divided into the following groups of latent dimensions:

a) body movement coordination: HOBR - walking through the hoops (0.1 sec);
TKOT – running after rolling on the floor (0.1 sec)

b) explosive strength: SDM – standing board jump (cm)

c) muscular endurance of upper body: DT – sit-ups (frequency)

d) endurance: T300 – 300-metre run (sec)

Procedure

Physical education programme in experimental group

The programme in the experimental group has been developed jointly by a student of physical education and a kindergarten teacher. The programme constitutes four lessons a week in four different places: gym, playroom, hall and outdoor playground. In this research, two lessons a week took place in the gym, and two lessons in other places depending on the weather but with the goal to spend as much time outdoors as possible. Each lesson took 45 minutes of exercising. The programme was designed to continue for two months of practice, i.e. 23 lessons. The goals and the contents of the programme were clearly defined and were developmentally appropriate for five to six year old children.

The fundamental goal of the programme is that children acquire as many and as various movement experiences as possible. The emphasis is on developing motor skills, acquiring some movement concepts or schemas, acquiring the basics of various sports, and learning various elementary games. The contents of the programme emphasize the methodical aspects in natural movements, basic gymnastics, basic motor skills using sport equipment, basic athletics, and the basics of rhythmics and dance. The lesson units are designed in a way that each unit systematically builds upon and leads to mastering a higher level of acquired knowledge and skills.

The prevailing programme components in the experimental group included the components for developing movement coordination of the entire body, balance, strength and endurance.

The control group worked according to the usual programme, which is developed by a kindergarten teacher. The authors of this research have not influenced the programme of the control group in any way. Regarding the equipment and places where lessons took place, both groups worked in basically similar conditions. Both groups carried out the programme (conducted by kindergarten teachers) entirely and within the time period after the initial and before the final evaluation. The control group was not informed about the programme of the experimental group.

The basic statistic parameters were calculated for all variables. With an analysis of variance we tried to determine differences between the experimental and control groups at the initial and final stages.

RESULTS

Differences between the control and the experimental groups at the initial and final stages

Based on the initial evaluation results, the analysis of variance (see Table 1) was used to establish whether the two groups statistically significantly differed in motor skills. Different results at the initial stage may influence the final evaluation results in various ways – they may lessen or increase the actual effects of transformative procedures.

Table 1: Comparison of control end experimental group at the initial stage

Variable	*Group*	*M*	*SD*	*F*	*p (F)*
SDM-I	E	89.79	14.74	1.48	0.18
	C	87.79	14.56		
DT-I	E	13.00	5.59	0.02	0.81
	C	12.77	5.79		
HOBR-I	E	17.97	5.11	1.41	0.37
	C	19.00	5.16		
TKOT-I	E	7.31	1.08	0.04	0.84
	C	7.36	1.22		
T300-I	E	122.89	12.97	10.09	0.07
	C	122.41	12.24		

Legend:

E experimental group
C control group
SDM-I long jump from a standing position (cm) - Initial stage result
DT-I sit-ups (number of sit ups repetition) - Initial stage result
HOBR-I walking through the hoop (tenth of seconds) - Initial stage result
TKOT-I running after rolling (tenth of seconds) - Initial stage result
T300-I 300 m run (seconds) - Initial stage result

The results of the initial evaluation have shown that the experimental group was slightly better in all of the aspects tested; however the difference was not statistically significant. The analysis of covariance would be used to analyse the final stage result, if this difference was statistically significant. As it was not, we used the analysis of variance.

Differences between the control and the experimental groups at the final stage after levelling the initial evaluation results

The results of all variables measured in the control and the experimental groups were characteristically different in the final evaluation (see Table 2). The experimental group programme proved to be more effective than the control group programme.

Table 2: Comparison of the control end experimental groups at the final stage

Variable	*Group*	*M*	*SD*	*F*	*p (F)*
SDM-F	E	101.02	12.79	11.38	0.001
	C	91.05	13.12		
DT-F	E	19.71	5.74	19.01	0.000
	C	14.23	5.11		
HOBR-F	E	12.96	3.27	18.22	0.000
	C	16.09	4.93		
TKOT-F	E	6.00	0.98	10.29	0.004
	C	6.56	1.83		
T300-F	E	109.22	11.79	04.12	0.003
	C	116.11	12.94		

Legend:

E	experimental group
C	control group
SDM-F	long jump from a standing position (cm) - Final stage result
DT-F	sit-ups (number of sit ups repetition) - Final stage result
HOBR-F	walking through the hoop (tenth of seconds) - Final stage result
TKOT-F	running after rolling (tenth of seconds) - Final stage result
T300-F	300 m run (seconds) - Final stage result

DISCUSSION

The analysis of variance has unquestionably confirmed the quality characteristics of the experimental PE programme. Thanks to this programme, children in the experimental group have improved their movement coordination, explosive strength, abdominal muscle endurance as well as their endurance.

Such improvement in motor skills was expected from the very start, since the programme of the experimental group had been carefully prepared and it consisted of developmentally appropriate

activity lessons. The main advantage for the experimental group teachers was in the fact that the goals and contents of the programme were clearly defined. Each of the lesson units was designed in a way to systematically build upon and lead to mastering a higher level of acquired knowledge and skills. Although both groups improved their motor test results, the control group improved to a far lesser extent.

A number of factors contributed to such positive motor skills transformation in the experimental group children. Inevitably, the most important of them were a professionally planned sport activity programme and close interaction between a physical education teacher and a kindergarten teacher. Outside the kindergarten, children from both groups continued their normal active life, they were lively and they did not attend any other sport activity programmes that could interfere with the final evaluation results.

Even though children in the control group have improved their results as well, the values of their improvement results are less significant. A comparison of the results of both groups after the final evaluation showed that the results were statistically significantly different. Of course, the sample of the subjects included in this research is rather small to make a generalization of the research results for the entire population of pre-school children. However, the results of this research do imply that a special and particularly additional attention has to be paid to PE education in kindergartens. A professionally planned and conducted pre-school physical education is a highly significant element in the process of child's integral development, with the versatile influences on children's development at their earliest ages (Schmidt & Lee, 1999). We should therefore be well aware that failing to take the advantage of developing some psychosomatic dimensions at children's earliest age is hard to make up for at a later time.

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