

## THE CONTRIBUTION OF FOOTBALL ELEMENTS TO THE ACTIVITIES OF PRESCHOOL CHILDREN IN THE PHYSICAL EDUCATION CLASS

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Miloš Nikolić<sup>1</sup>, Zlatko Ahmetović<sup>2</sup>, Zoran Đokić<sup>2</sup>

<sup>1</sup>Academy of Technical and Educational Professional Studies, Niš – Department Pirot, Serbia

<sup>2</sup>Faculty of Sport and Psychology, Novi Sad, Serbia

**Abstract.** *The goal of this research was to examine the contribution of an innovative program that contains football elements to the activity of preschool children in physical education classes. The research was carried out using a quasi-experimental design with two classes of children of preschool age at Preschool Institution "Cika Jova Zmaj" from Pirot, divided into an experimental (18 subjects) and a control group (16 subjects). The standard physical education program and the experimental football program were implemented over the course of 12 weeks, with a total of 36 hours of physical education or training. The results showed that there are statistically significant differences in the active time of the subjects in class in favor of the experimental group and that this difference was the largest in the seventh week. This research proposes the elements of the football game as one of the traditional forms of physical exercise that shall contribute to the comprehensive motor development of preschool children and additionally activate them in physical education classes.*

**Key words:** *children's activities, preschool age, football*

### 1. INTRODUCTION

One of the main factors that affects physical development is the preschool institution, namely: acquiring a rich motor experience, getting to know one's own body, developing lateralization, maintaining the normal condition of the apparatus for movement, developing motor skills (Živkov, 2013). By regularly applying physical activity in children, we develop a subsequent need for the same, and playing some sport is very important for a healthy lifestyle for a child, as well as for adult persons themselves. During the first six years of

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**Corresponding author:** Miloš Nikolić

Academy of Technical and Educational Professional Studies, Niš – Department Pirot, Beogradska 18, 18000 Niš, Serbia

Phone: +381 18 588 210 • E-mail: milosnikolic87@gmail.com

life, children explore themselves and the world around them through motion and movement. (Perić & Tišma, 2014). During the growth and development of a child, major and minor changes occur in the entire child's organism. Physical activities have an extremely large impact on the development of the child's personality as a whole, because the organism is in a "plastic" state during that period, when it is built morphologically and completes functionally (Ratković, 2015).

Directed activity in the physical education of preschool children represents a form of organization of the educational process through which the tasks of physical education are accomplished in the most comprehensive and complex manner (Blagajac, 1995). It is the main form of work that is used when organizing physical education classes in the institution, because it is defined by the plan and program, goals and tasks. (Ratković, 2015). During this activity, the work shall be focused on the development of motor skills, enrichment of movement patterns and motor skills, in addition, it shall have a positive effect on children's behavior, socialization, and health status. As such, it is still carried out through play, which is the most important issue for children.

Research has shown a significant positive correlation between motor development and the level of physical activity in preschool age children (Oliver, Schofield, & Kolt, 2007; Cliff, et al., 2009). It has been observed that the least physically active children show the poorest results on motor tests (Carroll & Loumidis 2001; Williams, et al., 2008; Barnett, et al., 2009; Barnett, et al., 2011; Fisher, et al., 2005; Cairney, et al., 2012 ).

The recommendations of the reference world health organization states that preschool children should have a minimum of 60 minutes of physical activity during the day, and the results of a survey results show that only 54% of them meet this requirement (Tucker, 2008).

In our region, there is not enough information about the physical activities of children in kindergartens. The average engagement of three-and-a-half-year-old children in directed activities is 7.29 minutes, and the duration is 20.46 minutes out of the predicted 25 (Findak, et al., 1996). A similar study was conducted with children with an average age of four and a half, where it was shown that out of the 30 minutes, the activities lasted 24, and the children were engaged for 9.46 in motor skills (Ružić, Marincel, & Runjić, 2006). In our environment, the directed activities of preschool groups usually last 29.55 of the 35 minutes. The largest part of that part is used for accomplishing the main part of the activity, a total of 49%, while 12% is used for the introductory part, 26% for the preparatory part and 13% for the final part. Children's engagement in activities is 17.04 minutes on average or 57.1% of the total duration (Janković, 2011). By assessing the engagement of children in each individual part of the structure of the activity, it was determined that the children who perform athletic exercises are the most engaged in the introductory part. The most significant difference is in the main part, where the most engaged children are those who do polygons with tasks, and the least engaged are the children who practice gymnastic content (Janković, 2011). By applying the SOFIT protocol to children aged 6, it was shown that about 77% of the time is spent in light physical activity, and the rest of the time in moderate and intense physical activity (Sharma, et al., 2011).

The goal of this research is to examine the contribution of an innovative program that contains football elements to the activity of preschool children in physical education classes.

## 2. METHODS

This research was conducted as an empirical research of longitudinal type. A quasi-experimental design was used with two classes of pre-school children of Preschool Institution "Cika Jova Zmaj" from Pirot divided into experimental and control groups. The standard physical education program and the experimental football program were implemented over the course of 12 weeks, with a total of 36 hours of physical education or training. The research was conducted on 34 subjects (18 subjects of the experimental and 16 subjects of the control group). The active time in the class was measured once every week, in such a manner that 3 subjects of the control and the experimental groups were randomly selected, and their active time was monitored during the implementation of the activity by the person who measures the process.

The collected data were processed using the procedures of descriptive and comparative statistics. IBM SPSS v.19 application programs were used for statistical processing. Most of the conclusions were drawn at a significance level of 0.05 ( $p \leq .05$  and in cases where Levene's Test of Equality of Error Variances (Levene's Test of Equality of Error Variances) showed that the homogeneity of variances in the dependent variable was violated, a stricter conclusion criterion was applied, i.e. the level of significance of 0.01 ( $p \leq .01$ ). Out of the comparative procedures, a statistical procedure was used to test differences between arithmetic means (combined analysis of variance).

## 3. RESULTS

This research was conducted as an empirical research of longitudinal type. A quasi-experimental design was used with two classes of pre-school children of Preschool Institution "Cika Jova Zmaj" from Pirot divided into experimental and control groups. The standard physical education program and the experimental football program were implemented over the course of 12 weeks, with a total of 36 hours of physical education or training. The research was conducted on 34 subjects (18 subjects of the experimental and 16 subjects of the control group). The active time in the class was measured once every week, in such a manner that 3 subjects of the control and the experimental groups were randomly selected, and their active time was monitored during the implementation of the activity by the person who measures the process.

**Table 1** Differences in the subject's active time in class

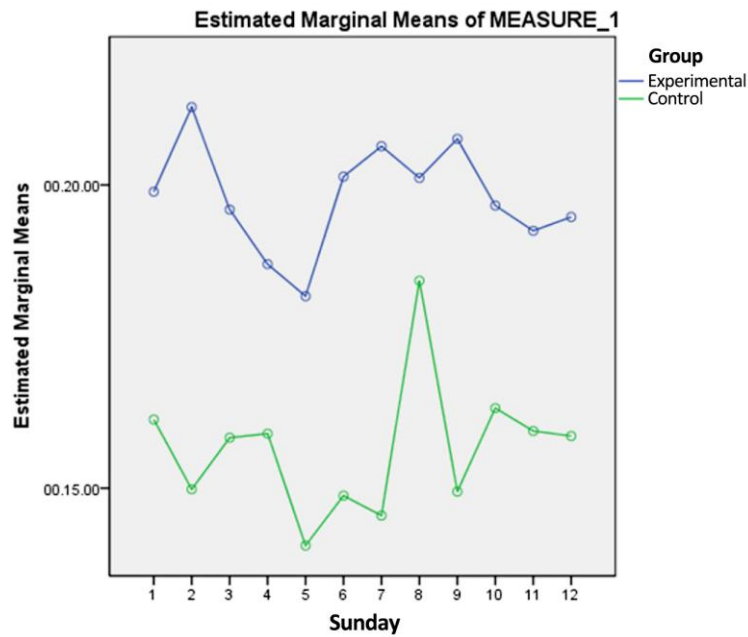
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	81468357.556	1	81468357.556	36528.346	0.000	1.000
Group	1117512.500	1	1117512.500	501.064	<b>0.000</b>	0.992
Error	8921.111	4	2230.278			

Table 1 determines the existence of statistically significant differences in the active time of the subject in class (Sig. = 0.000). The significance of these differences is extremely great (Partial Eta Squared = 0.992).

**Table 2** Descriptive statistics with Leven test of homogeneity of variables between the experimental and control groups

Week	Group	Mean	Std.Dev.	N	F	df1	df2	Sig.
I	Experimental	00:19:53	00:01:19.827	3	2.954	1	4	0.161
	Control	00:16:08	00:00:19.000	3				
	Total	00:18:00	00:02:13.888	6				
II	Experimental	00:21:17	00:00:28.513	3	0.462	1	4	0.534
	Control	00:14:59	00:00:16.643	3				
	Total	00:18:08	00:03:28.089	6				
III	Experimental	00:19:35	00:00:41.789	3	0.620	1	4	0.475
	Control	00:15:50	00:00:55.651	3				
	Total	00:17:42	00:02:11.206	6				
IV	Experimental	00:18:41	00:00:31.660	3	0.069	1	4	0.806
	Control	00:15:54	00:00:25.710	3				
	Total	00:17:17	00:01:35.389	6				
V	Experimental	00:18:10	00:00:24.062	3	1.519	1	4	0.285
	Control	00:14:03	00:00:51.013	3				
	Total	00:16:06	00:02:19.735	6				
VI	Experimental	00:20:08	00:00:57.047	3	4.830	1	4	0.093
	Control	00:14:52	00:00:22.301	3				
	Total	00:17:30	00:02:57.184	6				
VII	Experimental	00:20:38	00:01:14.849	3	8.482	1	4	0.044
	Control	00:14:33	00:00:18.028	3				
	Total	00:17:35	00:03:25.940	6				
VIII	Experimental	00:20:07	00:01:20.169	3	2.355	1	4	0.200
	Control	00:18:25	00:02:44.664	3				
	Total	00:19:16	00:02:08.520	6				
IX	Experimental	00:20:45	00:00:32.192	3	0.293	1	4	0.617
	Control	00:14:56	00:00:24.194	3				
	Total	00:17:51	00:03:12.844	6				
X	Experimental	00:19:39	00:01:19.211	3	3.009	1	4	0.158
	Control	00:16:19	00:00:34.429	3				
	Total	00:17:59	00:02:02.572	6				
XI	Experimental	00:19:14	00:00:33.606	3	0.115	1	4	0.752
	Control	00:15:56	00:00:27.429	3				
	Total	00:17:35	00:01:51.865	6				
XII	Experimental	00:19:28	00:00:53.966	3	0.289	1	4	0.619
	Control	00:15:51	00:00:43.016	3				
	Total	00:17:40	00:02:06.445	6				

By analyzing figure 2, which shows the active time in the class of the subjects of the experimental and control groups per each week, it can be noted that statistically significant differences occurred only in the seventh week of the experimental treatment, but that the active time in class was always higher in favor of the experimental group.



**Graph 1** Graphic presentation of the differences in active time in class between the experimental and control group

#### 4. DISCUSSION

Taking into account that previous studies have shown a significant positive correlation between the development of motor skills and the level of physical activity in preschool age (Oliver, Schofield & Kolt, 2007; Cliff, et al., 2009; Jaksic et al., 2020), as well as that the least physically active children show the poorest results on motor skills tests (Carroll & Loumidis 2001; Williams, et al., 2008; Barnett, et al., 2009; Barnett, et al., 2011; Fisher et al., 2005; Cairney, et al., 2012), the acquired results of this research on the activities of preschool children in physical education class are in accordance with these findings.

Bearing in mind that the preschool age is an extremely sensitive period for the development of motor skills and the acquisition of motor skills (Hamza, 1999) this is the age when it is necessary to start forming habits for physical exercise (Višnjić, Jovanović & Miletić, 2004; Perić i Tišma, 2014), which is directly related to better health status (Binkley & Specker, 2004; Saakslanti, et al., 2004; Goldfield, et al., 2012; Timmons, et al., 2012). As the World Health Organization (2010) and a large number of researchers (Tucker, 2008; Bull, 2010; Barnett, et al., 2016) recommend a minimum of 60 minutes of daily physical activity for children at this age, when in reality children in preschool institutions spend the day mostly by sitting (Barbosa & Oliveira, 2016) this research recommends elements of the football game as one of the additional forms of physical exercise that shall contribute to the comprehensive motor development of preschool children and increase their activity in physical education classes.

## 5. CONCLUSION

Research on the contribution of the innovative program that contains elements of football to the activity of preschool children in physical education was conducted on a sample of 34 subjects (18 subjects in the experimental group and 16 subjects in the control group), and the program was implemented over the course of 12 weeks. The results showed that there are statistically significant differences in the active time of the subjects in class (Sig. = 0.000) in favor of the experimental group and that this difference was the largest in the seventh week. This research recommends the elements of the football game as one of the additional forms of physical exercise that shall contribute to the comprehensive motor development of preschool children and additionally activate them in physical education classes.

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## DOPRINOS ELEMENATA FUDBALA NA AKTIVNOST DECE PREDŠKOLSKOG UZRASTA NA ČASU FIZIČKOG VASPITANJA

*Cilj ovog istraživanja bio je da se ispita doprinos inoviranog programa koji u sebi sadrži elemente fudbala na aktivnost dece predškolskog uzrasta na času fizičkog vaspitanja. Istraživanje je realizovano pomoću kvazi-eksperimentalni dizajn sa dva odeljenja dece predškolskog uzrasta PU „Čika Jova Zmaj“ iz Pirota podeljeni kao eksperimentalna (18 ispitanika) i kontrolna grupa (16 ispitanika). Standardni program fizičkog vaspitanja i eksperimentalni program iz fudbala realizovani su u toku 12 nedelja, sa ukupno 36 časa fizičkog vaspitanja odnosno treninga. Rezultati su pokazali da postoje statistički značajne razlike u aktivnom vremenu ispitanika na času u korist eksperimentalne grupe i da je ta razlika bila najveća u sedmoj nedelji. Ovo istraživanje preporučuje elemente fudbalske igre kao jedan od dodatnih oblika fizičkog vežbanja koji će doprineti svestranom motoričkom razvoju dece pretškolskog uzrasta i dodatno ih aktivirati na časovima fizičkog vaspitanja.*

Ključne reči: *aktivnost dece, predškolski uzrast, fudbal*