Turkish Journal of Sport and Exercise
http://selcukbesyod.selcuk.edu.tr/sumbtd/index
Year: 2014 - Volume: 16 - Issue: 2 - Pages: 9-14
DOI: 10.15314/TJSE.201428099

ISSN: 2147-5652

The comparison of the effect of game and motion-based gross motor skills training programmes on the 4-5 year-old children's gross motor skills

Ozgur GUL[1], Kezban TEPELI[2], Nurcan KOCAK[3]

[1] *School of Physical Education and Sport, Selçuk University, Konya, Turkey.*
[2] *Faculty of Health Sciences, Selçuk University Konya, Turkey.*
[3] *School of Health Department of Child Development, Turgut Özal University, Ankara, Turkey.*
Address correspondence to Ozgur Gul, ozgurgul@selcuk.edu.tr
**PhD thesis with the same name are summarized.*

Abstract

The aim of the study was to analyze the effects of the large muscle skills-education programs based on game and movement on the large muscle skills in children aged between 4-5. The study group totally consisted of 65 children including 22 ones (game) for the experimental group 1, 22 ones (movement) for the experimental group 2 and 21 ones for the control group, who went to the kindergarten in this study process. The experimental model with pretest and final test control groups was used in the research. A 12-week education was given to the children in the experimental group 1 and the experimental group 2 for 45 minutes during two days on average, but the control group was not given any education. Skills determined in education given to the children were presented to the game group with an education programme based on game whereas these were given to the movement group with an education programme based on movement. The children's large muscle skills were evaluated by the Measurement Test for Large Muscle Skills (BÜKBÖT). BÜKBÖT regarded the children's large muscle skills as the overall point, their locomotor skills and object control skills as the subtest point. As a consequence, it was found that the applications regarding the Large Muscle Skill-Education Programs Based on Game and Movement developed children aged 4-5 in a positive way but the Large Muscle Skill-Education Program Based on Game was more effective on children in this age group.

Key Words: Education Based on game and movement, preschool education, large muscle development, skill education, game, movement, Measurement Test for Large Muscle Skill (BüKBÖT).

INTRODUCTION

One child involved in an age group of 4-5; has more balance in psychology, motor and behavioral balance and has a capacity of imitation and curiosity while observing what happens in one's environment (4). Among children, the large muscle development includes a continual development of basic movement abilities. In this period, children can move, apply force on objects and keep their balance in response to the gravity force. An effective development of movement gives an opportunity to children for moving in a freeway and controlling their bodies. Children are always involved in some activities of researching, analyzing, discovering, practicing and decision-making. While they learn to move, they move to learn as well (7).

According to Smith (11), a movement is not only an image of self-concept, but also an inevitable factor in the development of conscience. The means which clearly associates self-concept to an external reality, is not a thing except for a movement. Since a child grows up towards his movements, his physical movement is necessary for him like his own food. In this respect, it is essential to create a suitable environment for his running, climbing, jumping and hopping, and give him permission about doing these (6).

Towards the education science, the most effective way in children's education is a game. A child learns behaviors, information, skills, etc. necessary for life within a game by oneself. He realizes, internalizes and reinforces building relationships with people, talking, cooperating, obtaining information, taking habits, having experiences and understanding roles of life (like a mother-father, a female-male, a teacher-student) in a game. Furthermore, a child's characteristic shows itself in a game more specifically and flourishes in

full bloom as well. His abilities can be also observed in a game well, his development guide can be introduced (10). In supporting a child's large muscle development, game and movement are the most basic items. However, there is still a need about studies which deal with the effects of game and movement on large muscle skills in children.

From this point of view, this research was done to analyze the effects of large muscle skill-education with game and movement on the large muscle-motor skills of the children involved in an age group of 4-5.

MATERIAL & METHODS

The study group of the research consisted of children, aged 4-5, who went to the Prof. Dr. İhsan Doğramacı Application Kindergarten at the Vocational Education Faculty, Selçuk University and the Selçuklu Ayşah Private Kindergarten in Konya, depending on the Ministry of National Education.

The research was carried out by using the experimental model with a pretest and final test control groups. Within this model, the dependent variable was large muscle levels of the children aged 4-5, the independent variable was also "large muscle skill-education program based on game and movement".

For analyzing the children's large muscle skills, the Measurement Test for Large Muscle Skills (BÜKBÖT) which was developed as the Test of Gross Motor Development-Second Edition by Dale A. Ulrich 2000 and adapted to Turkish with its validity and reliability by Tepeli, Arı and Büyüköztürk (14), was used herein. The Measurement Test for Large Muscle Skills (BÜKBÖT) comprises of two subtests; a subtest for Locomotor Skills and subtest for Object Control Skills. In the subtest of Locomotor Skills; there are six skills including running, horse-walking, leaping on one foot, jumping by leaping, horizontal jumping, side-slipping. In the subtest of Object Control Skills; there are also six skills including kicking a dead ball, bouncing a ball, catching a ball, kicking a ball, launching a ball over hand, rolling a ball under hand (13).

After the BÜKBÖT pretest was applied to the children in Trial -1 (game) and Trial -2 (movement) groups, the large muscle skill-education programs based on game and movement were performed among them by the researcher for 2 days in a week and during 12 weeks. Considering the educational purposes for developing skills with games in the large muscle skill-education program based on game and with movements in the large muscle skill-education program based on movement, games and movements building each skill were included in this study. The control group was not given any education, the group was subjected to a natural process.

Statistical Analysis

To compare all points which the children participating in the relevant experimental and control groups took from BÜKBÖT as a pretest and final test, the Kruskal Wallis Test was done, and the Wilcoxon Signed Ranks Test was also done to test whether there were differences between the pretest and final test points of the children in the experimental and control groups. The significance level was found to be 0.05. For determination of differences between the groups, the Mann-Whitney U test was performed.

RESULTS

When examined at Table 1, there was no statistically significant difference in the rank means of pretest points from the overall test among the children involved in the experimental and control groups [$X^2_{(sd=2,\ n=65)} = .998$, $p > 0.05$].

Looking at Table 2, in each different final test point (Locomotor, Object Control and Large Muscle Skill Overall Point), the children participating in the Large Muscle Skill-Education Program Based on Game had higher rank means. Following this group, the children participating in the Large Muscle Skill-Education Program Based on Movement had the second highest rank means. The lowest rank mean was seen in the children of the control group. For finding what the group differences resulted from, the relevant Mann-Whitney U test was done, thus the results of pairwise comparisons showed that the group (game, movement, control) differences between the rank means were statistically significant in three different final test points ($p<0.05$).

Table 1. In accordance with the Kruskal Wallis Test pretest results, the subtest points and overall points from the Large Muscle Skill-Measurement Test on children involved in Experimental and Control Groups.

Group		N	Mean	SD	Rank Mean	sd	X^2	P
	Game	22	32.45	5.12	38.14			
Locomotor	Movement	22	29.64	7.74	30.73	2	2.481	.289
	Control	21	30.33	6.84	30.00			
	Game	22	24.04	5.30	31.95			
Object Control	Movement	22	25.45	4.69	37.23	2	1.832	.400
	Control	21	22.62	6.03	29.67			
	Game	22	56.50	8.38	35.52			
Large Muscle Skill	Movement	22	55.09	10.05	33.50	2	.998	.607
	Control	21	52.95	11.75	29.83			

Table 2. In accordance with the Kruskal Wallis Test final test results, the subtest points and overall points from the Large Muscle Skill-Measurement Test on children involved in Experimental and Control Groups.

Group		n	Mean	SD	Rank Mean	Sd	X^2	P
	Game	22	43.18	2.06	50.98[a]			
Locomotor	Movement	22	36.36	6.86	31.27[b]	2	37.25	.000*
	Control	21	30.33	5.35	15.98[c]			
	Game	22	33.32	6.45	45.30[a]			
Object Control	Movement	22	28.86	4.49	34.45[b]	2	21.71	.000*
	Control	21	23.38	5.53	18.60[c]			
	Game	22	76.50	7.46	50.25[a]			
Large Muscle Skill	Movement	22	65.23	9.03	32.43[b]	2	36.34	.000*
	Control	21	53.76	9.34	15.52[c]			

abc: The difference between the rank means of the groups carrying different letters is significant (P<0.05).

Table 3. Results of Wilcoxon Signed Rank Test for pretest-final test points on locomotor, object control and large muscle skill in children of experimental group having gross motor skill education based on game.

Pretest – Final Test		N	Rank Mean	Rank Sum	Z	P
	Negative	0	.00	.00		
Locomotor	Positive	22	11.50	253.00	-4.112*	.000
	Equal	0				
	Negative	3	3.33	10.00		
Object Control	Positive	17	11.76	200.00	-3.552*	.000
	Equal	2				
	Negative	1	1.50	1.50		
Large Muscle Skill	Positive	21	11.98	251.50	-4.061*	.000
	Equal	0				

* Based on negative ranks

As can be seen at Table 3, a statistically significant difference was found between the pretest and final test points of the subtest for the Locomotor Skills within the Measurement Test for Large Muscle Skills in the children of the experimental group having large muscle skill-education based on game (z=-4.112, p<0.05). Similarly, a significant difference was also found between the pretest-final test points upon object control (z=-3.552, p<0.05) and large muscle skills (z=-4.061, p<0.05). Given the rank means and rank sums of the difference points for the three separate points (Locomotor, Object Control and Large Muscle Skill), this difference seemed to be favourable for the positive ranks, that is, the final test point.

Table 4. Results of Wilcoxon Signed Rank Test for pretest-final test points on locomotor, object control and large muscle skill in children of experimental group having gross motor skill education based on movement.

Pretest – Final Test		N	Rank Mean	Rank Sum	Z	P
Locomotor	Negative	2	11.25	22.50	-3.237*	.001
	Positive	19	10.97	208.50		
	Equal	1				
Object Control	Negative	0	.00	.00	-3.415*	.001
	Positive	15	10.97	120.00		
	Equal	7				
Large Muscle Skill	Negative	1	6.50	6.50	-3.898*	.000
	Positive	21	11.74	246.50		
	Equal	0				

* Based on negative ranks

Table 5: Results of Wilcoxon Signed Rank Test for pretest-final test points on locomotor, object control and large muscle skill in children of control group.

Pretest – Final Test		N	Rank Mean	Rank Sum	Z	P
Locomotor	Negative	7	7.86	55.00	-.289*	.773
	Pozitive	8	8.13	65.00		
	Equal	6				
Object Control	Negative	5	7.80	39.00	-1.793*	.073
	Pozitive	12	9.50	114.00		
	Equal	4				
Large Muscle Skill	Negative	6	10.33	62.00	-1.341*	.180
	Pozitive	13	9.85	128.00		
	Equal	2				

* Based on negative ranks

As can be understood from Table 4, there was a significant difference between the prestest and final test points of the subtest for Locomotor Skills within the Measurement Test for Large Muscle Skills in children having large muscle skill education based on movement as an experimental group ($z=-3.237$, $p<0.05$). In a similar way, there was also a significant difference in their pretest-final test points upon object control ($z=-3.415$, $p<0.05$) and large muscle skills ($z=-3.898$, $p<0.05$). Taking the rank means and rank sums of the difference points into consideration for the three difference points (Locomotor, Object Control and Large Muscle Skill), this difference seemed to be favourable for the positive ranks, that is, the final test point. According to these results, it has been observed that a movement education for children has an important effect on children's large muscle developments.

Looking at Table 5, there were not any statistically significant differences between the pretest-final test points of the subtest for Locomotor Skills within the Measurement Test for Large Muscle Skills among the children of the control group having no education ($z=-.289$, $p>0.05$). Similarly, there were not also any significant differences between the pretest-final test points on object control ($z=-1.793$, $p>0.05$) and large muscle skills ($z=-1.341$, $p>0.05$). Considering the rank means and rank sums of the difference points for the three separate points (Locomotor, Object Control and Large Muscle Skill), there were no differences in these ones, that's why, the negative ranks were favourable for the final test point. Since any education was not given to these children, it was concluded that the children's large muscle skills did not develop in the process of normal development for three months.

DISCUSSION

The results of the study show that this education supports children's large muscle skills. Before starting the education program (pretest), the data results make clear that each group has equal levels. The reason for this is that each group is equal to each other and does not take any education.

In pretest-final test comparisons of the groups, a significant difference was observed in the pretest-

final test average points of the Large Muscle Skill Education (trial) groups based on Game and Movement subjected to the skill education programs based on Game and Movement whereas there was no difference in the control group.

After the programs were applied in the experimental groups (final test), the comparisons of each group showed significant differences in the average points of the children involved in the group of Large Muscle Skill Education based on Game and Movement from the average points of the children included in the control group. The Skill Education programs based on Game and Movement made positive contributions to the children's large muscle skills in the group of Large Muscle Skill Education based on Game and Movement, this also affected the average points. In another study focused on the physical fitness of the children living in America, when the high activity levels were ignored in the children, the cardiovascular problems occurred in their adulthood periods, that's why, the activity programs must be given importance in childhood (3).

Altınkök (1) investigated the effect of a 16-week program design of physical education on the development of the basic motor skills in the children by practising the program among the children, aged 5-6, in the period of pre-school. He explained that the programme design of physical education affected the basic motor skills in the children aged 5-6 in a positive way, as mentioned in our study.

Özkan et al. (9) suggested that there were some differences in the final test values of the experimental and control groups consisted of females-males in accordance with their studies on standing in balance on one foot, moving quickly, catching, long-jumping steadily, launching and running values. They observed that the values of the experimental group were higher than ones in the control group. Within another different study, it was reported that the achievement was 30% in terms of their abilities for throwing a ball, it was 20% in catching it among the children aged 4. This situation indicated that the hand-eye coordinations had a starting level in the age of 4 and went on developing from the age of 5 rapidly. So the development of hand-eye coordinations can be supported by the special programs held in kindergartens (2).

In a different study, Sökezoğu (12) aimed to analyze the social developments for the children, aged 7-11, staying in the nursery schools and having musical education based on rhythm, movement and song teaching, and their behavioral changes owing to this education, found that the musical education based on rhythm, movement and song teaching had positive effects on the "Social Developments" of the children, aged 7-11, in the nursery school.

When we compared the final test points between the group with the skill education program based on game and the group with the skill education programme based on movement, we determined that there were some differences between them. In this regard, the points of the children participating in the skill education program based on game were higher in comparison to the others. This suggests us that a game leaves more effects in children's large muscle developments.

Öğretir (8) carried out a research in order to assess the situations children were involved in, learn how they felt and have information about topics such as importance of game and characteristics of game therapy. Her study reported that one child's ability for expressing himself developed via a game, depending on the complete development principles in game therapy.

Kaya (5) researched how melody dramas affected the children's social and cognitive developments in her master thesis titled with the Effect of Melody Dramas on the Development of the Children Aged 0-5. As a result of this study, she expressed that noises, free dance figures, imitations, imaginative games in melody drama gave opportunities to the children for discovering themselves and their environments. Ulutaş (15) also focused on drama, importance of drama, game, importance of game and drama-game relation in pre-school education within her descriptive study with a screening model. Dealing with the drama and game concepts, the drama-game relation in pre-school period was paid so much attention. She stated that drama and game were indispensable fields in pre-school education under today's education system.

From the literature studies in this field, however experimental these studies were or however descriptive these ones were, it was observed that a game-directed teaching was more superior than a movement-directed teaching. There were no significant differences between the average points in the children of the control group (pretest-final test). When it was remembered that the children only applied the activities included in the curriculum at school, it was clear that the education programmes had positive effects, this could not be ignored. A

game contributes to all aspects of development. Therefore, the usage of game increasingly becomes an indispensable requirement to build children's skills in education environments.

Game-weighted teaching methods are more effective than other teaching methods, the reason is for that a child reflects his life in a game, interprets them in a game environment whatever he perceives in an external world, expresses himself easily while enacting roles and feels more free and creative in a game environment.

REFERENCES

1. Altınkök M. Development of basic Motor Movements that contains Special physical education Program on of the Motor Development 5-6 years old children investigation of effect of the basic movements. Marmara Universty Institute of Education Sciences Master's Thesis, İstanbul. 2006.

2. Bird PJ. Activities for Preschool Children. Column 300 B, 1993.

3. Chatrath R, Shenoy R, Serratto M, Thoele DG. Physical fitness of urban American children, Pediatric Cardiol, 2002; 23(6): 608-12.

4. Günsel AM. Okul Öncesinde Beden Eğitimi ve Uygulamaları. Ankara: Anı Yayıncılık, 2004.

5. Kaya ND. The Effect of Musıcal plays on 0-5 Years Chıld Development. Master Thesis, Istanbul Technical University Social Sciences. Istanbul, 2011.

6. Kırıcı HM. Pre-school education institutions 4-6 years old children 8-week Movement of Motor Performances Effect. Master's Thesis, Muğla Universty Institute of Social Sciences Department of Physical Education and Sport. Muğla, 2008.

7. Mengütay S. Çocuklarda Hareket Gelisimi ve Spor. İstanbul: Morpa Kültür Yayınları, 2005.

8. Öğretir AD. Play and Plat Therapy. Gazı Universty Faculty of Industurial Arts Education Journal, 2008; (22): 94-100.

9. Özkan H, Afyon YA, Çelebi B. The Effects of Movement Education on Physical and Motor Development in Children 5-6 Years Old. 11. International Sports Science Congress (10-12 November 2010), Antalya.

10. Seyrek H, Sun M. Okul Öncesi Eğitiminde Oyun. 5. Baskı, İzmir; Müzik Eserleri Yayınları, 1999.

11. Smith A. İnsan, Beyni ve Yasamı. Çev. Ebcioglu Nejat, İnkılap Kitabevi, Anka Ofset A.S. İstanbul, 1986.

12. Sökezoğlu D. The Influence of Music Education with Rhythm, Action and Song Teaching on the Social Development of the Orphanage Students between the Age 7-11 (The Sample of Afyonkarahisar). Afyon Kocatepe University Social Sciences Journal 2010; 12(2): 161-182.

13. Tepeli K. Standardization of Test of Gross Motor Skills (BüKBÖT) for Turkey. Unpublished Doctoral Thesis. Selçuk University Institute of Social Sciences. Konya, 2007.

14. Tepeli K, Arı R, Büyüköztürk Ş. Test of Gross Motor Skills (BüKBÖT). International Conference on Educational Science, Department of Educational Sciences, Faculty of Education, Eastern Mediterranean University. Famagusta North Cyprus, 2008; 1907-1922.

15. Ulutaş A. The Importance of Drama and Game in Preschool Period. Adıyaman Universty Journal of the Institute of Social Sciences, 2011; 4(6): 233-242.