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RESEARCH ARTICLE

A COMPARİSON OF THE BASİC MOTORİC CHARACTERİSTİCS OF CHİLDREN AGED BETWEEN 6 AND 12 CHOSEN AFTER 24 WEEKS OF EDUCATİONAL GAMES

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ABSTRACT

The aim of this study is to compare the basic motoric characteristics of children aged between 6 and12 after 24 weeks of educational games. 430 students who study in the 1st stage of primary education voluntarily participated in the study by attending to the study 6 hours a week regularly. Features such as balance, vertical jump, flexibility, reaction time and claw force are measured which are among the basic motoric characteristics that are chosen by physical measurements from the volunteers participating in the study. The population of the study consists of students studying in TuncayArtun Primary School, Kıraç Primary School, ÜmraniyeBirlik Primary School, SüleymanÇelebi Primary School and RagıpKutmangil Primary School which are all active in İstanbul, and the sample of the study consists of 430 students determined by random sampling. Although, after the statistical processes, it is determined that there was a significant statistical discrepancy between the pretests and posttests of vertical jump, balance and right-left claw force; it is determined that there was no significant statistical discrepancy between the pretest and posttest measurements of flexibility. The acquired data were saved to IBMM SPSS 22 packaged software. As a statistical process Wilcoxon analysis was carried out for the comparison of the data which showed nonparametric distribution. Consequently, it is thought that the acquirement and development of motor skills and a healthy physical development which are among the main goals of educational games, depend both on educational games applied regularly in a week and on the qualified physical education teachers who will make these games applied.

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INTRODUCTION

Educational games consist of different activities which continue from past to present. Although game has a very old past on the history of humanity, its effects on both psychological and physical development of human are not yet explained in detail. A lot of scientific explanations are given on this subject and different theories are grounded, and in addition to those it is a field which requires consideration and scientific research. Opinions related to games, which are especially seen as activities covering childhood, gained importance with scientific findings and scientific studies carried out on the field of early childhood, and these also directed some scientist to that field. The fact that scientists are headed for this field revealed that games have great importance in the development and education of the child. The child learns a lot of behaviors and skills that are required in social life thanks to games (Kocyigit and Tugluk, 2007) The importance of games in the development and education of the child is massive. The child learns a lot of behaviors, information and skills that are required for his life in game environment. Games consist of activities which help the child express himself differently, which help him to learn information and skills with his own experiences that he would not learn from others, and which help him to prepare for grownup life. (Ormanlıoglu, 1997)During the games the children will speed up their decision-making abilities, their cognitive features the game requires and their great and small muscle developments by frequently and practically doing the movements. The child engages in staying in balance, running, jumping etc. activities throughout the game and this will help for the physical and psychological development. It is thought that the educational games will be effective in leveling up the motor skills of the children. (Ulas, 2014)

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Method

The Creation of Volunteer Groups: A total of 430 students studying in TuncayArtun Primary School, Kıraç Primary School, ÜmraniyeBirlik Primary School, SüleymanÇelebi

Primary School and RagıpKutmangil Primary School that are situated in İstanbul voluntarily participated in the study.

Measurements

Features such as balance, vertical jump, flexibility, reaction time and claw force are measured which are among the basic motoric characteristics that are chosen by physical measurements from the volunteers participating in the study. (Sipal, 1989)Identity information is predicated in the determination of the ages of the volunteers. The tall stature measurement was recorded in terms of centimeters by 1 mm sensitively measuring the distance between the head vertex and the sole with a Rodi Super Quality brand meter following a deep inspiration barefooted, head upright positioned, head frankort planed, and measurement platform positioned as coming to the vertex of the head. The bodyweight measurement was recorded in terms of kilograms by measuring the students in their sports outfits (t-shirts and shorts) with a Premier brand electronic scale with 100 grams of error margin. (Mackenzie, 2005) The balance measurement of the children was measured by Flaming Balance Test (FBT). The test subjects stayed in balance by stepping on wooden balancing equipment which was 50cms long, 4cms high and 3cms wide. The test subject held his foot with his same-sided hand by bending his other feet from his knees and pulling it to his hips. While the research group was in balance with one foot like this, the time was started and the test subjects tried to stay in balance like this for 1 minute. When the balance was broken the time-span was stopped. The time was resumed when the research group redressed their balances by stepping on the balancing equipment. The test continued in this way for a period of one minute. When the time was finished, all the balancing attempts of the research group (after falling down) were counted and this count was recorded as the score of the research group after the one minute period was finished at the end of the test. (Altınkok and Olcucu, 2012) The vertical jump measurements of the students were determined by marking the highest spots athletes could reach standing and by marking the highest spots athletes could reach jumping. After that the gap between those two spots were recorded in terms of centimeters. After the jumping test was practiced with the athletes for five times, the best and the worst values were subtracted and average of the remaining three values were taken and those values were recorded in terms of centimeters. (Gunay at al, 2006) The flexibility measurement of the subjects were carried out by sit and lie flexibility test. The subjects pushed forward the ruler on the trestle by leaning their bare soles against the test trestle while sitting on the ground and by leaning forward without bending their knees, and their stretching distance were recorded provided that they stay on the remotest point they reached for 2 seconds. (Gunay at al, 2006)

The reaction test was determined by the La Fayette multi-option reaction time scale. This device performs a measurement with a millisecond (1/1000) precision. The subject holds his dominant hand's index finger softly above the four button center. He tries to touch the button from which light comes out in the shortest amount of time. The person who applies the experiment should choose the colors randomly and different. After the ready control is given, he should push the warning button waiting between 1 to 3 seconds. Every subject is made to do 10 repetitions and the average of the last five repetitions is recorded as the reaction time. (Gunay at al, 2006) The right hand and left hand claw forces of the subjects were measured by Takkei brand hand dynamometer. After five minutes of warming up, the measurement was taken with a 45 degree angle of the arm to the body while the subject was standing and not bending the measured arm and not touching it to the body. This situation was repeated 3 times for the dominant hand the best value was recorded. (Zorba, 1999) The acquired data were saved to IBMM SPSS 22 packaged software. As a statistical process Wilcoxon analysis was carried out for the comparison of the data which showed nonparametric distribution.

RESULTS

When Table 1 is analyzed it is confirmed that the height scores of the sample group are (129,49±8,88), the weight scores are (30,61±8,49) and the age scores are (8,93±1,07).

Table 1. Statistical distribution regarding the physical characteristics of all the students who participated in our study

	N	X±SD
Height	430	129,49±8,88
Weight	430	30,61±8,49
Age	430	8,93±1,07

Table 2. Descriptive statistics of the basic motoric characteristics of the participators

Pretest	Variables	N	X±SD
	Balance Test	430	4,02±4,15
	Vertical Jump	430	14,79±3,90
	Flexibility	430	19,33±6,45
	Reaction	430	0,94±0,79
	Right Hand	430	12,08±3,48
	Left Hand	430	11,61±3,40

When Table 2 is analyzed it is determined that in the pretest basic motoric characteristics the balance score is 4,02±4,15, the vertical jump score is 14,79±3,90, the flexibility score is 19,33±6,45, the reaction time score is 0,94±0,79, the right hand claw force score is 12,08±3,48 and the left hand claw force score is 11,61±3,40.

Table 3. Descriptive statistics of the basic motoric characteristics of the participators

Posttest	Variables	N	X±SD
	Balance Test	430	6,46±5,56
	Vertical Jump	430	17,41±3,56
	Flexibility	430	18,89±6,36
	Reaction	430	0,65±0,24
	Right Hand	430	13,07±3,47
	Left Hand	430	12,56±3,52

When Table 3 is analyzed it is seen that in the posttest basic motoric characteristics the balance score is 6,46±5,56, the vertical jump score is 17,41±3,56, the flexibility score is 18,89±6,36, the reaction time score is 0,65±0,24, the right hand claw force score is 13,07±3,47 and the left hand claw force score is 12,56±3,52.

Table 4. Comparison of the basic motoric characteristics of the participators

Parameter	Groups	*n*	*Median*	min	max	Z	*P*
Vertical Jump	Pretest	430	14,59	4,81	28,49	-9,335	,000
	Posttest	430	16,89	8,29	31,63		

Comparison of the vertical jump pretest and posttest scores of the participators is seen on Table 4. A significant statistical discrepancy is determined between the vertical jump pretest and posttest scores of the participators (p<0.001).

Table 5. Comparison of the basic motoric characteristics of the participators

Parameter	Groups	*n*	*Median*	min	max	Z	*P*
Flexibility	Pretest	430	19,50	-3,00	35,00	-,830	,407
	Posttest	430	19,25	,00	33,50		

Comparison of the flexibility pretest and posttest scores of the participators is seen on Table 5. It is determined that there is no significant statistical discrepancy between the flexibility pretest and posttest scores of the participators (p>0.05).

Table 6. Comparison of the basic motoric characteristics of the participators

Parameter	Groups	*n*	*Median*	min	max	Z	*P*
Reaction	Pretest	430	0,79	,01	8,90	-8,580	,000
Time	Posttest	430	0,66	,02	1,59		

Comparison of the reaction time pretest and posttest scores of the participators is seen on Table 6. A significant statistical discrepancy is determined between the reaction time pretest and posttest scores of the participators (p<0.001).

Table 7. Comparison of the basic motoric characteristics of the participators

Parameter	Groups	*n*	*Median*	min	max	Z	*P*
Balance	Pretest	430	3,00	,00	15,00	-6,923	,000
	Posttest	430	5,00	,00	15,00		

Comparison of the balance pretest and posttest scores of the participators is seen on Table 7. A significant statistical discrepancy is determined between the balance pretest and posttest scores of the participators (p<0.001).

Table 8.Comparison of the basic motoric characteristics of the participators

Parameter	Groups	*n*	*Median*	min	max	Z	*P*
Right	Pretest	430	11,90	3,20	23,70	-4,529	,000
Hand Claw	Posttest	430	12,55	5,00	32,80		
Left Hand	Pretest	430	11,15	1,10	26,20	-4,116	,000
Claw	Posttest	430	12,10	5,00	29,60		

Comparison of the right and left hand claw force pretest and posttest scores of the participators is seen on Table 8. A significant statistical discrepancy is determined between the right and left hand claw force pretest and posttest scores of the participators (p<0.001).

DISCUSSION AND CONCLUSION

The data we acquired as a result of this study which was carried out for the purpose of comparing the Basic Motoric Characteristics of Children Aged between 6 and 12 Chosen after 24 weeks of Educational Games show parallelism with different studies carried out in this field. Akın applied game programs for 8, 10 and 12 weeks in his study he carried out for the purpose of researching the effects of educational games in the development of the basic motors of the pre-school 60-72 months children. According to the test results he acquired, he determined that there is no statistically significant discrepancy between the control group measurements (p>0.05) while there is a statistically significant discrepancy between the study groups (p<0.05). (Akın, 2015) In another study, Demiral investigated the effects of judo educational games on the motor skills of children aged between 7 and 12 for 12 months. In this study that he carried out for the purpose of investigating the effects of judo educational games on the development of motor skills of children (male-female) aged between 7 and 12 practicing judo, he took the practice group as n=40 and the control group as n=40. He confirmed that there are significant (p<0.05) and very significant (p<0.01) discrepancies on the parameter levels between the practice and the control group pretests and posttests. As a result of this study he revealed the effects of educational games on the development of the motor skills. (Demiral, 2010) When other studies are examined, the height averages of the students are determined as 129,49±8,88cms and the weight averages of the students are determined as 30,61±8,49kgs which are among their anthropometric characteristics. In some other studies, Ayan in his study he carried out for the purpose of investigating some performance features, anthropometrics and somatotypes of the girls aged from 8 to 10, he determined their height averages as 131,86± 6,33cms and their weight averages as 29,54± 6,48kgs. Findings acquired as a result of Ayan's study which investigate some performance features, anthropometrics and somatotypes of the girls aged from 8 to 10 published in the Journal of New World Sciences Academy 2008:3(2) show parallelism with our findings. (Ayan, 2008)

A statistically significant discrepancy is determined between the vertical jump pretest and posttest scores of the participators. Saygın et al researched the Effect of Movement Education in Children on Physical Fitness Characteristics. In the study they carried out for 16 weeks on the boys aged from 10 to 12 for the purpose of investigating the effect of movement education on physical fitness parameters, they confirmed that there are significant discrepancies between the vertical jump pretest and posttest scores. This study they carried out shows similarities with our findings. (Saygın at al, 2010)No statistically significant discrepancy is determined between the flexibility pretest and posttest scores of the participators (p>0.05). When we look at other studies; in the study HaticeSelçuk carried out on Boy Swimmers aged from 11 to 13 for the purpose of investigating the Effect of 12-week Teraband Training on Some Motoric Characteristics and Swimming Performance, she did not determine a significant discrepancy between flexibility pretest and posttest scores. The results are in line with our study. (Selcuk, 2013) A statistically significant discrepancy is determined between the reaction time pretest and posttest scores of the participators (p<0.001). In the study Çankaya et al carried out for the purpose of investigating the Effect of Balance Improving Special Training Practices on Reaction Times and Body Mass Indexes of Young Boys aged 11, they determined significant discrepancies between the visual reaction right hand and the visual reaction left hand values of the subjects. This study is in line with our findings. It is thought that this significant discrepancy stems from the educational games included in training programs, fast decision-making and the effect of this decision in the practice. (Cankaya at al, 2014) A statistically significant discrepancy is determined between the balance pretest and posttest scores of the participators (p<0.001). In the study Günebakan et al carried out for the purpose of investigating the Effect of 8-

week Movement Education in Children aged from 3 to 4 on Their Motor Performances, they determined significant discrepancies between the pretest and posttest balance parameters of the subjects. In the study they carried out, they revealed that the regularly performed movement education programs have effects on motor performance. The findings are in line with our study. We think that this situation happens as a result of the different and sudden deflections while the body is in upright position during the game and movement education. (Gunebakan at al, 2002)

A statistically significant discrepancy is determined between the right hand and left hand claw force pretest and posttest scores of the participators (p<0.001). In the study HaticeSelçuk carried out on Boy Swimmers aged from 11 to 13 for the purpose of investigating the Effect of 12-week Terab and Training on Some Motoric Characteristics and Swimming Performance, she confirmed that there are significant discrepancies between the left hand grasping pretest and posttest results and the right hand grasping pretest and posttest results. These results show parallelism with our study. (Şipal, 1989)In conclusion, according to the acquired data, the educational game program and the working time practiced on children have a positive effect on the development of their basic motor skills. The rightly intensified and rightly timed studies that will be carried out in the period of basic movements will positively affect the individual to reach the masters level in basic skills. As a result of the literature review it is found out that the educational games are effective on basic motoric characteristics. Other studies support our findings.

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