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Original article

INVESTIGATION OF THE EFFECT OF SPORTS-BASED PLAY PROGRAM IN CHILDREN ON DEPENDENCY LEVEL FOR COMPUTER GAMES

ERKAN YARIMKAYA¹, EKREM LEVENT İLHAN², EYLEM GENCER³

Abstract

Aim. The aim of this study was to investigate whether regularly applied sports-based play program affected dependency level of children for computer games or not.

Method. The research group was constituted of 80 students between 10-11 years old educating in Ankara Kecioren Hacı Sabancı Secondary School. The students were divided into two groups consisting of forty students in each with unbiased assignment approach (practice group n=40, control group n=40). Sports-based play program was applied to students in practice group for 2 hours and for 4 days a week throughout 12 weeks. The content of the program was constituted of paired and grouped educational play, traditional children's play, entertaining athletics activities and various sports computations. The research was designed as pretest-posttest control grouped test module. The data were obtained by "Computer Game Dependency Scale for Children" and "Personal Information Form". Computer Game Dependency Scale for Children was applied to the students who participated in the research before and after 12-week sports-based play program. Moreover, computer game dependency of research group was investigated in terms of different demographic properties (age, gender, perceived level of income).

Results. According to the findings of the research, it was determined that there was a decrease in the dependency levels of students in practice group for computer games. It was clarified that sports-based play program had a contribution to our hypothesis for providing a decrease in dependency level of students between 10-11 years old in computer games.

Conclusion. In this regard, it can be concluded that sports-based play activities with regular participation will have a positive effect in decreasing dependency level of children for computer games.

Key Words: child, play, computer game, dependency, education.

Introduction

The computers take an important place for the lives of children in association with the development of technology. The children are on the computer in most of their time during a day. Most of the time on the computer covers just computer games.

The studies in the literature indicated that the time spared for computer games by students was seriously increased (Reiterer, 2010; Onay, Hotomaroğlu, Çağıltay, 2005). Computer games have started to substitute the games of children in the past which were played with friends in a motion and interaction (Horzum, 2011).

Because the computers become sources for activities such as entertainment, resting, relaxation, wasting time, distancing from the current time, escaping from real world and being at liberty for children (Wan and Chiou, 2006; İnal and Çağıltay, 2005).

The computer games have advantages such as

hand-eye coordination, imagination, causes of shapes (Horzum, Ayaş, Çakır-Balta, 2008) as well as many disadvantages. The main disadvantage among these negative effects is game addiction (Reiterer, 2010).

As a result of this addiction, a number of physical, psychological and social detrimental effects, aggression and violence, anxiety and apprehension, as well as negativities such as social isolation, retardation in social talents and omission in school studies might be observed (Trudewind and Steckel, 2003; Hartmann, 2007; Grüsser and Thalemann, Griffiths, 2007; Griffiths and Davies, 2005; Wan and Chiou, 2006). All these situations might affect academic success and socialization of the child negatively (Horzum, 2011).

It is necessary to take all these negative effects of computer games into consideration by all trainers particularly by parents (Şahin and Tuğrul, 2012). From this point of view, orienting children towards alternative things which will reduce their game

¹ Hacı Sabancı Secondary School, Ankara, TURKEY

² Gazi University, School of Physical Education and Sports, Ankara, TURKEY

³ Ahi Evran University, School of Physical Education and Sports, Kırşehir, TURKEY

E-mail address: kuzzgun@mynet.com

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addiction has great importance.

Play and sports concepts that may be alternative to computer games and eliminate anti-social behaviours in children have significant effects. Sports-based plays are very effective in meeting movement need of children, discovering the environment they live, embracing this environment in their inner worlds, being happy and cheerful, providing mental relief and resting, being social and compatible individuals (İlhan and Gencer, 2010; Harmandar, 2004; Akandere, 2006; Ayan and Memiş, 2012; Güneş, 2003; Açak, 2006).

No matter how the sports actions are explained, those are the actions that make individuals addicted in terms of both psychologically and sociologically (İlhan and Gencer, 2010). Sportive activities both provide development of individuals in all their aspects as well as they form alternative mediums for harmful habits.

When the researches about addiction to computer games were investigated, it was observed that they were generally performed for the aim of determining and describing the addiction levels of children and adolescents to computer games (Horzum, 2011; Güllü, Arslan, Dündar, Murathan, 2011; Şahin and Tuğrul, 2012; Griffiths and Davies, 2005; Gentile, 2009). This research was carried out in order to investigate the effect of 12-week sports-based plays on the addiction of children to computer games in terms of different variables (age, gender, perceived level of income).

Method

The research was figured as pre-test post-test control group test model. In this model which is one of the three test models having high scientific value, more than one group is used and the groups are formed via unbiased appointment approach. Practice and control groups are formed as two groups by this approach (Karasar, 1998).

In this study, sports-based play program, prepared by the opinions of three academicians who are experts in their fields, were applied to the practice group as 2 hours a day, for 4 days a week throughout 12 weeks except physical education and sports lecture hours. The control group, on the other hand, was continued to normal school education. "Computer Game Addiction Scale for Children" was applied to both groups before and after program (Horzum, Ayas, Çakır-Balta, 2008). The required permissions were taken from the parents of children.

Research group

The research was carried out in fall term of 2014-2015 education year. 80 students between 10-11 years old from Keçiören Hacı Sabancı Secondary School in Ankara participated in the research who were selected via random sampling method. 50% of the students participated in the research were female students (n=40) and 50% of them were male students (n=40). After evaluation of the results of data collecting tools applied to students (Personal Information Form and Computer Game Addiction Scale for Children), practice and control groups consisting of 40 individuals were formed by unbiased appointment method. The determination point for practice and control groups was to form two groups which have close properties and are equivalent numerically. The opinions of institution and classroom guidance teacher about students were taken during formation of groups.

Data collecting tools

In the research, "Computer Game Addiction Scale for Children" and "Personal Information Form" were used as data collecting tools. Personal Information Form was developed by the researcher and used to determine age, gender and perceived family level of income properties of students in the research group.

Computer Game Addiction Scale for Children was developed by Horzum, Ayas, Çakır-Balta (2008). The scale consisted of 21 items and had a four-factor structure. The first factor in the scale consisted of totally 10 items, was named as "not giving up playing computer games" and described 27% of the total variance. The internal consistency coefficient of this factor was .83. The second factor of the scale named as "regression of computer game with the real world" consisted of 4 items and described 6.5% of total variance. The internal consistency coefficient of this factor was .60. The third factor of the scale consisted of 3 items, was named as "negligence due to playing computer games" and described 6% of total variance. The internal consistency coefficient of this factor was .50. The last factor of the scale named as "preferring playing computer games to other activities" consisted of 4 items. This factor described 5.5% of total variance and the internal consistency coefficient of this factor was .50. When the whole scale consisting of 21 items was taken into consideration, it was found that it described 45% of total variance and its internal consistency coefficient was .85. The answerers of the scale scored at least 21 and maximum 105. All of these items were positive ones (Horzum, 2011).



Sports-based play application program

An education program including free exercises, paired and grouped educational plays, traditional children's plays, entertaining athleticism activities and various sportive competitions was applied to practice group 2 hours a day and 4 days a week. The program was shaped by the opinions and approvals of three academicians who were expert in their fields of Physical Education and Sports as well as Child Development. The program was continued for 12 weeks.

Analysis of the data

For the evaluation of the data and finding the calculated values, SPSS 15.0 statistical software

program was used. Whether the data had normal distribution or not was tested by One-Sample Kolmogorov-Smirnov test and it was determined that the data had normal distribution. Since the data had normal distribution, Independent Samples t test, Paired Samples t test and One-Way Anova test were used to determine the difference between groups. The error levels in this study were taken as 0.05 and 0.01.

Results

The findings obtained as a result of investigating the effect of sports-based plays on computer game addiction of children in terms of different variables (age, gender, perceived level of income) are given as tables.

Table 1. Comparison of pre-test game addiction average grades belonging to practice and control groups

Factors	Variable	Group	N	X	S	Sd	t	p
Not giving up playing games	Pre-Test	Practice	40	21.03	4.45			
		Control	40	22.58	3.92	78	-1.651	0.130
Regression of game with the real world	Pre-Test	Practice	40	11.15	3.82			
		Control	40	12.68	3.75	78	-1.801	0.075
Negligence due to playing games	Pre-Test	Practice	40	7.93	2.95			
		Control	40	9.00	2.58	78	-1.732	0.087
Preferring playing games to other activities	Pre-Test	Practice	40	11.15	3.71			
		Control	40	12.50	3.34	78	-1.708	0.092

Before starting 12-week practice program, it was determined that there was no statistically significant difference between pre-test values of practice and control groups according to the average grades of all sub-factors belonging to computer game addiction scale of students participated in the research

($p > 0.05$). In sub-factors, not giving up playing games ($t: -1.651, p > 0.05$), regression of game with the real world ($t: -1.801, p > 0.05$), negligence due to playing games ($t: -1.732, p > 0.05$), preferring playing games to other activities ($t: -1.708, p > 0.05$) were found.

Table 2. Comparison of post-test game addiction average grades belonging to practice and control groups

Factors	Variable	Group	N	X	S	Sd	t	p
Not giving up playing games	Post-Test	Practice	40	20.75	4.36			
		Control	40	22.68	3.98	78	-2.061	0.043*
Regression of game with the real world	Post-Test	Practice	40	11.15	3.82			
		Control	40	12.68	3.75	78	-2.138	0.036*
Negligence due to playing games	Post-Test	Practice	40	7.60	3.02			
		Control	40	8.95	2.66	78	-2.115	0.038*
Preferring playing games to other activities	Post-Test	Practice	40	10.90	3.76			
		Control	40	12.63	3.37	78	-2.158	0.034*

* ($p < 0.05$)

After practice program, it was determined that there was statistically significant difference between post-test values of practice and control groups according to the average grades of all sub-factors

belonging to computer game addiction scale of students participated in the research ($p < 0.05$). In sub-factors, not giving up playing games ($t: -2.061, p < 0.05$), regression of game with the real world ($t:$

2.138, $p < 0.05$), negligence due to playing games (t:-2.115, $p < 0.05$), preferring playing games to other activities (t:-2.158, $p < 0.05$) were found.

Table 3. Comparison of pre-test and post-test computer game addiction average grades belonging to practice group

Factors	Group	Variable	N	X	S	Sd	t	p
Not giving up playing games	Practice	Pre-Test	40	21.03	4.45			
		Post-Test	40	20.75	4.36	39	2.095	0.006**
Regression of game with the real world	Practice	Pre-Test	40	11.15	3.82			
		Post-Test	40	10.95	3.85	39	2.449	0.019*
Negligence due to playing games	Practice	Pre-Test	40	7.93	2.95			
		Post-Test	40	7.60	3.02	39	2.481	0.018*
Preferring playing games to other activities	Practice	Pre-Test	40	11.15	3.71			
		Post-Test	40	10.90	3.76	39	2.687	0.011*

* ($p < 0.05$)

** ($p < 0.01$)

It was determined that there was statistically significant difference between pre-test and post-test values of practice group in all sub-factors belonging to computer game addiction scale ($p < 0.05$, $p < 0.01$). In sub-factors, not giving up playing games (t:2.095,

$p < 0.01$), regression of game with the real world (t:2.449, $p < 0.05$), negligence due to playing games (t:2.481, $p < 0.05$), preferring playing games to other activities (t:2.687, $p < 0.05$) were found.

Table 4. Comparison of pre-test and post-test computer game addiction average grades belonging to control group

Factors	Group	Variable	N	X	S	Sd	t	p
Not giving up playing games	Control	Pre-Test	40	22.58	3.922			
		Post-Test	40	22.68	3.983	39	-1.669	0.103
Regression of game with the real world	Control	Pre-Test	40	12.68	3.751			
		Post-Test	40	12.80	3.884	39	-1.533	0.133
Negligence due to playing games	Control	Pre-Test	40	9.00	2.582			
		Post-Test	40	8.95	2.669	39	0.298	0.767
Preferring playing games to other activities	Control	Pre-Test	40	12.50	3.344			
		Post-Test	40	12.63	3.372	39	-1.094	0.281

It was determined that there was no statistically significant difference between pre-test and post-test values of control group in all sub-factors belonging to computer game addiction scale before and after program ($p > 0.05$). In sub-factors, not giving up

playing games (t:-1.669, $p > 0.05$), regression of game with the real world (t:-1.533, $p > 0.05$), negligence due to playing games (t:-0.298, $p > 0.05$), preferring playing games to other activities (t:-1.094, $p > 0.05$) were found.

Table 5. Comparison of game addiction levels of students of practice and control groups participated in the research in terms of gender variable

Factors	Gender	N	X	S	Sd	t	p
Not giving up playing games	Female	40	20.15	3.906			
	Male	40	23.45	3.955	39	-3.755	0.000**
Regression of game with the real world	Female	40	10.90	3.855			
	Male	40	12.93	3.590	39	-2.431	0.017*
Negligence due to playing games	Female	40	7.98	2.966			
	Male	40	8.95	2.591	39	-1.566	0.121
Preferring playing games to other activities	Female	40	10.85	3.648			
	Male	40	12.80	3.268	39	-2.518	0.014*

* ($p < 0.05$)

** ($p < 0.01$)



When game addiction of students participated in the research was investigated in terms of gender variable, a statistically significant difference was found between female and male students in not giving up playing games, regression of game with the real world, negligence due to playing games and preferring playing games to other activities sub-factors of computer game addiction scale ($p < 0.05$, $p < 0.01$). Among these sub-factors, not giving up

playing games ($t: -3.755$, $p < 0.01$), regression of game with the real world ($t: -2.431$, $p < 0.05$), preferring playing games to other activities ($t: -2.518$, $p < 0.05$) were found. On the contrary, in the sub-factor of negligence due to playing games of computer game addiction scale, a statistically significant difference was not determined between female and male students ($p > 0.05$). In this sub-factor, negligence due to playing games ($t: -1.566$, $p > 0.05$) was found.

Table 6. Comparison of game addiction levels of students of practice and control groups participated in the research in terms of perceived level of family income variable

Factors	LIF	N	X	S	Source of variation	Sum of squares	Sd	Mean of square	F	p
Not giving up playing games	Low	27	18.04	2.261	Intergroup	974.0	2	487.0	83.5	.00*
	Medium	32	21.50	2.688	In groups	448.7	77	5.8		
	High	21	27.10	2.143	Total	1422.	79			
	Total	80	21.80	4.244						
Regression of game with the real world	Low	27	8.26	1.745	Intergroup	835.0	2	417.5	97.6	.00*
	Medium	32	11.88	2.338	In groups	329.3	77	4.2		
	High	21	16.67	2.008	Total	1164.	79			
	Total	80	11.91	3.839						
Negligence due to playing games	Low	27	6.11	1.847	Intergroup	378.9	2	189.4	59.5	.00*
	Medium	32	8.28	1.871	In groups	244.9	77	3.1		
	High	21	11.76	1.546	Total	623.8	79			
	Total	80	8.46	2.810						
Preferring playing games to other activities	Low	27	8.33	1.901	Intergroup	696.5	2	348.2	85.1	.00*
	Medium	32	12.03	2.321	In groups	314.9	77	4.0		
	High	21	16.00	1.643	Total	1011.	79			
	Total	80	11.83	3.578						

When game addiction of students participated in the research was investigated in terms of level of family income variable, a statistically significant difference was found between low, medium and high income groups in sub-factors of computer game addiction scale ($p < 0.01$). Among these sub-factors,

not giving up playing games ($F: 83.5$, $p < 0.01$), regression of game with the real world ($F: 97.6$, $p < 0.01$), negligence due to playing games ($F: 59.5$, $p < 0.01$), preferring playing games to other activities ($F: 85.1$, $p < 0.01$) were found.

Table 7. Comparison of game addiction levels of students of practice and control groups participated in the research in terms of age variable

Factors	Age	N	X	S	Sd	t	p
Not giving up playing games	10	40	20.41	4.075	39	-2.260	0.027*
	11	40	22.59	4.172			
Regression of game with the real world	10	40	10.48	3.377	39	-2.602	0.011*
	11	40	12.73	3.879			
Negligence due to playing games	10	40	7.48	2.487	39	-2.423	0.18*
	11	40	9.02	2.853			
Preferring playing games to other activities	10	40	10.55	3.429	39	-2.477	0.015*
	11	40	12.55	3.489			

* ($p < 0.05$)



When computer game addiction of students participated in the research was investigated in terms age variable, a statistically significant difference was found between age groups in sub-factors of computer game addiction scale ($p < 0.05$). Among these sub-

Discussion

This research was carried out in order to investigate whether regular sports-based play program applied to 80 students (female $n: 40$, male $n: 40$) between 10-11 years old has an effect on the computer game addiction of children or not.

When Table 1 was investigated, it was determined that there was no statistically significant difference between pre-test values of application and control groups in all sub-factors belonging to computer game addiction scale before starting application program ($p > 0.05$).

When Table 2 was investigated, it was determined that there was statistically significant difference between post-test values of application and control groups in all sub-factors belonging to computer game addiction scale after regular sports-based play program ($p < 0.05$).

It was considered that significant difference observed between application and control group in terms of computer game addiction levels after sports-based play program was due to application of regular play program.

In the study of Gullu (2011), computer game addiction of students was investigated in terms of different variables and as a result, it was emphasized that it was necessary to orient students to social and sportive activities.

Clements (2004) mentioned in his study that children spent less time for physical activities and plays, the reason of this was indicated as television and computer, and moreover, it was necessary for parents and teachers to encourage children for plays.

When Table 3 was investigated, it was determined that there was statistically significant difference between pre-test and post-test values of application group in all sub-factors belonging to computer game addiction scale ($p < 0.05$, $p < 0.01$). On the other hand, when Table 4 was investigated, it was determined that there was no statistically significant difference between pre-test and post-test values of control group in all sub-factors belonging to computer game addiction scale before and after program ($p > 0.05$).

Cengizhan (2005) defined for children the importance of allowing more time to sports activities in his study on computer and internet usage.

factors, not giving up playing games ($t: -2.260$, $p < 0.05$), regression of game with the real world ($t: -2.602$, $p < 0.05$), negligence due to playing games ($t: -2.423$, $p < 0.05$), preferring playing games to other activities ($t: -2.477$, $p < 0.05$) were found.

When the responsibilities of children as the grown-ups of the future were taken into consideration in the years ahead, the importance of sports started in the childhood might be observed for gaining communication skills between individuals and societies. Orientation of children towards sports activities early in the childhood is very affective on them to gain good habits (İlhan et al., 2011).

In the research, the effect of sports-based play program on computer game addiction level of children was investigated as well as game addiction level of children was also investigated in terms of variables such as gender, age and perceived level of family income.

In this regard, when Table 5 is investigated and computer game addiction of children was evaluated in terms of gender variable, it was observed that males had higher computer game addiction grades than females except negligence due to playing games sub-factor of the scale ($p < 0.05$).

In the studies performed, the game addiction levels of males were found to be higher than those of females (Sahin and Tugrul, 2012; Griffiths and Davies, 2005; İnal and Cagiltay, 2005; Onay et al., 2005; Gentile, 2009; Yılmaz, 2010; Horzum, 2011).

When Table 6 is investigated, a statistically significant difference was found between low, medium and high income groups in sub-factors of computer game addiction scale in terms of level of family income variable for students participated in the research ($p < 0.01$).

The students having high level of income own computers and use them more frequently and this might be effective in obtaining such a result (Horzum, 2011). The game addiction grades of children who have their own computer at home were found higher than those of children who do not have computers at home (Onay et al., 2005; Yılmaz, 2010).

When game addiction of students participated in the research was investigated in terms of age variable, a statistically significant difference was found between age groups in sub-factors of computer game addiction scale ($p < 0.05$).

Horzum (2011) determined in his study that there was a statistically significant difference in not giving up playing games sub-factor of the scale for computer



game addiction levels of 3-4-5th classes participated in his research.

In the study of Gullu (2011), it was concluded that there was a significant difference between 6-7th and 6-8th classes in terms of not giving up playing games in computers and being annoyed when disturbed. In this regard, it was revealed that the game addiction levels of children were affected because of variables such as age, gender and level of income.

In the light of findings of the research, it was observed that sports-based play program positively affected computer game addiction of children. It was also determined that the students participated in sports-based play program increased the time allowed for sports and they oriented themselves more towards sports in their spare time.

Conclusion

Form this point of view; it was found that sports-based play program decreased computer game addiction of children. When it is considered that the computer game addiction of children who will be the adults of the future might affect their future lives, the importance of prevention of game addiction and the importance of development of alternative programs were presented. Therefore, sports-based play program may be considered as an alternative program for computer game addiction of children.

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