

Article

Effect of Physical Education and Play Applications on School Social Behaviors of Mild-Level Intellectually Disabled Children

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Abstract: The aim of this study was to examine the influences of physical education and play practices on the school social behavior of mild-level intellectually disabled children. The quantitative research methods used were based on the pre-test, post-test, post-test-retention control group model and the general screening model. A simple random sampling type was used when constructing the sample group. To determine school social behavior, the School Social Behavior Scale (SSBS) was used. Physical education and play lessons were applied for two hours per week for 24 weeks with the purpose of obtaining data from these scales when applied to participants. The study sample group included 20 mild-level intellectually disabled children (14 boys, 6 girls), aged seven to nine years, who were trained at the Special Education and Rehabilitation Center that serves the County of Kocaeli, in the district of Izmit, Turkey. According to the results of the SSBS, we found a statistically significant difference ($p < 0.05$) between the social competence of present persons' interpersonal relations, self-control, and academic skills, and the aggressive-nervous persons in the sub-dimensions of negative social behaviors, in favor of the test group. However, no significant difference ($p > 0.05$) in the antisocial-aggressive and destructive-demanding sub-dimensions was observed. We found that 24-week physical education and playing practices applied to mild-level intellectually disabled children had effects on children's school social behavior.

Keywords: mild-level intellectual disabled children; school social behavior; physical education and play

1. Introduction

Socialization means preparation for the adult world by learning the unique cultural values of society and reaching a state where adult behavior styles and forms can be applied to one's own life [1–4]. Most educators, researchers, and psychologists agree that play is a form of social behavior in children [5–7]. Children with a mental deficiency are more limited in social skills than their peers with normal growth. These limitations create challenges for children with mental deficiency to communicate with their peers and other individuals in the community. In particular, the lack of opportunities to recognize and interact with each other, and the lack of communication skills of children with a mental deficiency are among the reasons for these difficulties. In addition, the limitations in communication skills create problems such as children not understanding the feelings of others, and not appropriately showing their feelings at the right time or the right place. In parallel, the quality of life of children with a mental disability is directly affected. Due to these deficiencies, the interaction of the student with their parents, friends, and teachers also negatively affects their professional life in adolescence. Using various physical exercises and sport tools has been shown to contribute to the development of

physical capacity, and improve social behavior and mental skills [8,9]. Therefore, supportive training is needed for learning and the use of social skills [10–12]. This support can be provided by physical education and playing applications. The environment in which games are played are a comfortable and free field for the child. Many behaviors and rules are tested and learned in this environment [13–19]. Having or participating in play as a team member improves emotions and behaviors, such as working with children, helping others, empathy, being respectful to teammates and friends, complying with play rules and rules, and being respectful [20,21]. Researchers have also stated that children's social and cognitive skills improved through their social role in play [22]. The aim of the study was to examine the effects of physical education and play practices on school social behavior in children who have mild mental deficiencies.

2. Materials and Methods

Our quantitative research methods were based on the pre-test, post-test, post-test-retention control group model and general screening model. A simple random sampling type was used when constructing the sample group [23,24].

2.1. Participants

The sample group of the study included 20 children with mild mental disabilities aged 7 to 9 (14 male, 6 female) who were educated at the Special Education and Rehabilitation Center, which is in the district of İzmit, Kocaeli county, Turkey. The sampled groups were divided into an experimental group (7 boys, 3 girls) and a control group (7 boys, 3 girls) in terms of number, sex, and age.

2.2. Data Collection Tools

A personal information form, developed by the researchers, was applied to determine the age, sex, and situations of the students.

2.3. School Social Behaviour Scales (SSBS)

In the study, the School Social Behavior Scale (SSRS) developed by Merrell and translated into Turkish by Yüksel (2009) was used. The SSBS measures teachers' observations of students, along with students' behavior in the social and academic environment. The scales were developed in accordance with the five-point Likert model, allowing pre-school, primary, and secondary school teachers to evaluate their students separately. In the A form of the scale, Social Competence, 32 items are divided into three sub-dimensions: interpersonal relations, self-regulation, and academic skills. The B form, Negative Social Behaviors, includes a total of 65 articles with 33 items that are divided into three sub-dimensions: aggressive-nervous, antisocial-aggressive, and destructive-demanding.

The Pearson Moments Multiplication Correlation Coefficient (r) was used to examine the reliability of the scale in the studies we completed. The results were positive at $p < 0.001$ ($r = 0.83$ to 0.99). These analyses were also performed separately for the subscales of the two scales and the results demonstrated that the Turkish scale was as reliable as the original English form. Cronbach, Spearman Brown, and Guttman tests determined that results of the scale using Split-Half techniques were highly internally consistent with reliability values between $r = 0.91$ and 0.98 . We determined that the reliability levels of the scales adapted to Turkish were as high as the original scales [25].

2.4. Data Collection

The study was performed for 2 days per week for 24 weeks, by arranging 2 h in the form of a play lesson and physical education, according to the situation of children attending the institution. A session was structured in the form of warm-up movements (15 min), group play events (25 min, balance, hand-eye coordination, hand-foot coordination, and rhythmic movements), and stretching events (5 min). The SSBS was completed by the teachers of the children before application. Over the 24 weeks,

physical education and play lessons were provided and the SSBS was completed for a second time by the teachers of the children during the 25th week. The same evaluation was completed a third time by the teachers and the researcher 16 weeks after recording measurements to evaluate the permanence of the work.

2.5. Data Analysis

In addition to descriptive statistics used in the study, such as mean and standard deviation, the Mann-Whitney U-test was used to compare two independent groups, the Wilcoxon test was used to compare two dependent group averages, and the Friedman test was used to determine the differences between three or more dependent group averages. Statistical significance level was considered at $p \leq 0.05$ (95% confidence interval) when comparing all data.

3. Results

As shown in Table 1, the age characteristics of the experimental and control groups were as follows: three participants (30%) of the experimental group were seven years old, four participants (40%) were eight years old, and three participants (30%) were nine years old. In terms of the sex characteristics of the experimental and control group, three participants (30%) were girls and seven (70%) were boys.

As seen in Table 2, we determined that there was no statistical difference between the subscales of social behavior, negative behavior, and social competence in terms of experimental or control groups in school ($p \geq 0.05$).

Table 1. The age and sex characteristics of participants and control group.

	Experimental Group		Control Group	
	No.	%	No.	%
Age				
7	3	30	4	40
8	4	40	4	40
9	3	30	2	20
Sex				
Girls	3	30	3	30
Boys	7	70	7	70

Table 2. Social behavior scale experiment control group pre-test Mann Whitney U comparative statistic.

	Exp. Control	No.	Mean Rank	Sum of Rank	U	Z	P
Interpersonal relationships	Exp.	10	10.25	102.50	47.500	−0.190	0.849
	Control	10	10.75	107.50			
Self-control	Exp.	10	7.90	79.00	24.000	−1.974	0.052
	Control	10	13.10	131.00			
Academic skills	Exp.	10	10.50	105.00	50.000	0.000	1.000
	Control	10	10.50	105.00			
Aggressive-nervous	Exp.	10	11.55	115.50	39.500	−0.800	0.424
	Control	10	9.45	94.50			
Antisocial-aggressive	Exp.	10	10.95	109.50	45.500	−0.364	0.716
	Control	10	10.05	100.50			
Destructive-demanding	Exp.	10	10.20	102.00	47.000	−0.229	0.819
	Control	10	10.80	108.00			

Table 3 shows that for the SSBS and social competence form, statistically significant differences were determined between pre- and post-test scores of the sub-dimensions of interpersonal relationships ($Z = -2.805$, $p < 0.01$), self-control ($Z = -2.818$, $p < 0.01$), and academic skills ($Z = -2.809$, $p < 0.01$).

In the negative social behavior form subscales, whereas there was no statistically significant difference between the pre- and post-test groups of the antisocial aggressive and destructive-demanding dimension scores, ($p > 0.05$), there was a significant difference in the aggressive-nervous ($Z = -2.524$, $p < 0.05$) sub-dimension.

Table 3. School Social Behavior Scale (SSBS) experimental group pre-test and post-test Wilcoxon comparative statistic.

			N	Mean Ranks	Sum of Ranks	Z	P
Interpersonal relationships	Post-test Pre-test	Negative Ranks	0	0.00	0.00	-2.805	0.005 *
		Positive Ranks	10	5.50	55.00		
		No Difference	0				
Self-control	Post-test Pre-test	Negative Ranks	0	0.00	0.00	-2.818	0.005 *
		Positive Ranks	10	5.50	55.00		
		No Difference	0				
Academic skills	Post-test Pre-test	Negative Ranks	0	0.00	0.00	-2.809	0.005 *
		Positive Ranks	10	5.50	55.00		
		No Difference	0				
Aggressive-nervous	Post-test Pre-test	Negative Ranks	8	4.50	36.00	-2.524	0.012 *
		Positive Ranks	0	0.00	0.00		
		No Difference	2				
Antisocial-aggressive	Post-test Pre-test	Negative Ranks	4	2.50	10.00	-1.826	0.068
		Positive Ranks	0	0.00	0.00		
		No Difference	6				
Destructive-demanding	Post-test Pre-test	Negative Ranks	4	5.38	21.50	-0.119	0.905
		Positive Ranks	5	4.70	23.50		
		No Difference	1				

* $p \leq 0.005$.

Table 4 shows no statistically significant difference between the pre- and post-test groups of the aggressive-aggressive, antisocial aggressive, and destructive-demanding dimension scores from the sub-dimensions of the negative social behavior form ($p > 0.05$). However, according to sub-scores of the social competence form, statistically significant differences exist in the experimental group between the pre- and post-test scores between the dimensions of interpersonal relationship ($Z = -3.599$, $p < 0.01$), self-control ($Z = -2.176$, $p < 0.05$), and academic skills ($Z = -2.962$, $p < 0.05$).

Table 4. Social behavior scale in school, test, and control group post-test comparative statistic.

	Experimental Control	N	Mean Ranks	Sum of Ranks	U	Z	P
Interpersonal relationships	Exp.	10	15.25	152.50	2.500	-3.599	0.000 *
	Control	10	5.75	57.50			
Self-control	Exp.	10	13.35	133.50	21.500	-2.176	0.030 *
	Control	10	7.65	76.50			
Academic skills	Exp.	10	14.40	144.00	11.000	-2.962	0.003 *
	Control	10	6.60	66.00			
Aggressive-nervous	Exp.	10	8.75	87.50	32.500	-1.330	0.184
	Control	10	12.25	122.50			
Antisocial-aggressive	Exp.	10	10.05	100.50	45.500	-0.373	0.709
	Control	10	10.95	109.50			
Destructive-demanding	Exp.	10	11.15	111.50	43.500	-0.501	0.616
	Control	10	9.85	98.50			

* $p \leq 0.005$.

Table 5 shows statistically significant differences were determined between the pre-test, post-test, and retention test values in the subscales of SSBS, and social competence ($p \leq 0.01$) and negative social behaviors ($p \leq 0.05$). However, no significant difference was found in terms of negative social behavior and destructive demanding sub-dimension ($p > 0.05$). When rank average and standard deviation scores were evaluated, retention test scores were found to be lower than pre-test scores.

Table 5. SSBS experimental group, pre-test, post-test, and retention test values comparison.

Parameter	\bar{X}	Std. S.	Mean Ranks	χ^2	Sd.	p
Academic skills						
Pre-test	21.300	5.417	1.05			
Post-test	27.000	2.943	2.90	18.541	2	0.000 *
Retention test	25.000	2.905	2.05			
Interpersonal relationships						
Pre-test	26.300	7.513	1.00			
Post-test	46.300	5.143	3.00	18.667	2	0.000 *
Retention test	40.300	2.830	2.00			
Self-control						
Pre-test	29.700	6.896	1.00			
Post-test	41.000	4.830	3.00	20.000	2	0.000 *
Retention test	38.900	5.216	2.00			
Aggressive-nervous						
Pre-test	26.100	8.265	2.90			
Post-test	21.000	4.876	1.30	14.105	2	0.001 *
Retention test	22.500	5.338	1.80			
Antisocial- aggressive						
Pre-test	14.200	7.036	2.40			
Post-test	11.500	2.677	1.70	7.538	2	0.000 *
Retention test	11.600	2.875	1.85			
Düz mekik						
Pre-test	14.100	7.233	1.00			
Post-test	19.300	7.196	2.10	19.158	2	0.023 *
Retention test	20.200	6.941	2.90			
Destructive-demanding						
Pre-test	15.500	3.979	2.05			
Post-test	15.600	1.646	2.40	4.056	2	0.132
Retention test	14.400	1.712	1.55			

N = 10, * $p \leq 0.001$.

4. Discussion

Within the scope of this research, physical education and play lessons were systematically and regularly applied over 24 weeks to children aged seven to nine with mild mental deficiency, and analyses were completed on the SSBS, negative social behavior, and social competence forms subscales (Table 2). No statistical differences were found between the pre-test scores of the experimental and control groups ($p > 0.05$). Conversely, for the experimental group pre- to post-test (Table 3) SSBS social competence form, there were statistically significant differences between the pre-test and post-test scores of the sub-dimensions of interpersonal relationships ($Z = -2.805$, $p < 0.01$), self-control ($Z = -2.818$, $p < 0.01$), and academic skills ($Z = -2.809$, $p < 0.01$). Whereas no statistically significant difference was found between the pre- and post-test scores of the negative social behavior form subscales and antisocial aggressive and destructive-demanding dimension scores ($p > 0.05$), a significant difference was recorded in the aggressive-nervous ($Z = -2.524$; $p < 0.05$) sub-dimension. As such, we can say that the practice had positive effects on the aggressive-nervous behaviors in the sub-dimensions of children's social competence levels and negative social behaviors. However, although there was no significant result in the antisocial aggressive and destructive demanding sub-dimensions of negative social behavior sub-dimensions, a positive decrease occurred in the rank average scores for the experimental group (antisocial aggressive, post-test: 2.50, pre-test: 0.00), (destructive demand: post-test: 5.38, pre-test: 4.70). Furthermore, in the analyses performed between the post-test scores of the test and control groups (Table 4), a statistically significant difference between the final test scores of the dimensions of interpersonal relationships ($Z = -3.599$, $p < 0.01$), self-control ($Z = -2.176$, $p < 0.05$), and academic skills ($Z = -2.962$, $p < 0.05$) in the social competence form sub-dimensions. No significant difference was found in the scores of the negative social behaviors form, and the aggressive-aggressive, antisocial-aggressive, and destructive-demanding sub-dimensions

($p > 0.05$). However, the experimental group favorably showed a decrease in negative social behavior dimensions at the rank average level.

The literature states that regular physical activity studies conducted with individuals with mental deficiencies had positive effects on the characteristics of individuals including socialization, communication, effects on negative behaviors, daily life skills, healthy relationships, self-expression, academic skills, self-esteem, and quality of life [26–38]. These results support the findings of our study. Based on these findings, regular physical education and playing practices have an impact on social competence and negative social behavior of individuals with mild mental deficiency. According to the retention test results made after 16 weeks to determine if the physical education and playing practices applied within the scope of the research continued to have effects on the participants, in the experimental group SSBS, social competence and negative social behavior sub dimensions, a significant difference was found between the Friedman test result comparison statistic scores ($p \leq 0.001$) regarding the difference between pre-test, post-test, and retention test ($p \leq 0.001$). Conversely, negative social behaviors did not show a significant difference in the destructive-demanding subscale ($p > 0.001$), and the mean and standard deviation scores increased according to test scores (Table 5).

5. Conclusions

As a result of this research, the 24-week physical education and play interventions performed with children aged seven to nine years old with mental deficiency positively affected school social behaviors and, in addition, were positively correlated between social behaviors and retention tests. Future work should investigate the effect in different groups of disabilities. In particular, the literature should contribute toward increasing adapted physical education and play, and enabling all disability segments of society to benefit from these activities.

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