



Enhancing school social behaviors in mildly intellectually disabled children through physical education and play initiatives

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Abstract

The primary objective of this study was to investigate the impact of physical education and play activities on the school social behavior of children with mild-level intellectual disabilities. Quantitative research methods were employed, utilizing the pre-test, post-test, post-test-retention control group model, as well as the general screening model. A sample group was formed using a simple random sampling approach. The School Social Behavior Scale (SSBS) was employed to assess school social behavior. Over a 24-week period, physical education and play sessions were conducted for two hours each week, and data were collected from the participants using these scales. The study comprised 20 children with mild-level intellectual disabilities (14 boys and 6 girls), aged seven to nine years, who attended Asha Kiran Special Needs School, Bengaluru, Karnataka. The results of the SSBS indicated a statistically significant difference ($p < 0.05$) in the subdimensions of social competence, including interpersonal relations, self-control, and academic skills, favoring the test group over individuals exhibiting aggressive or nervous behaviors. However, no significant difference ($p > 0.05$) was observed in the sub-dimensions related to antisocial-aggressive and destructive-demanding behaviors. This study demonstrated that the 24-week physical education and play interventions for children with mild-level intellectual disabilities had a discernible impact on their school social behavior.

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

Introduction

Socialization involves acquiring the cultural values of society to prepare for adulthood, enabling the application of adult behavior styles to one's own life. Most educators, researchers, and psychologists concur that play constitutes a form of social behavior in children. Children with mild intellectual disabilities have more limited social skills compared to their typically developing peers. These limitations pose challenges for them to engage with peers and other community members effectively. Notably, the difficulties stem from the lack of opportunities to recognize and interact with others, and the communication skills deficit among children with intellectual disabilities. Additionally, these communication limitations lead to issues such as difficulty understanding the feelings of others and expressing their own emotions appropriately in terms of timing and context. Consequently, the overall quality of life for children with intellectual disabilities is directly impacted. These limitations also negatively influence their interactions with parents, friends, and teachers, ultimately affecting their future professional lives during adolescence. Utilizing various physical exercises and sports equipment has been shown to enhance physical capacity, improve social behavior, and enhance mental skills. Therefore, there is a need for training that supports the acquisition and application of social skills, a need that can be met through physical education and play programs. The environment in which children engage in play offers a comfortable and unrestricted space. Many behaviors and rules are tested and learned in this environment. Participating in or having play experiences as part of a team fosters emotions and behaviors such as collaboration, helping others, empathy, respecting teammates and friends, adhering to play rules, and being respectful. Researcher has also asserted that children's social and cognitive skills improve through their social roles in play. The study aimed to investigate the effects of physical education and play interventions on school social behavior in children with mild intellectual disabilities.

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 method was used to select the study participants.

Participants

The study's sample group comprised 20 children with mild intellectual disabilities, aged 7 to 9 (14 males and 6 females), who attended the Asha Kiran Special Needs School, Bengaluru, Karnataka. The sample group was

divided into an Experimental Group (7 boys and 3 girls) and a Control Group (7 boys and 3 girls) based on matching numbers, gender, and age.

Data Collection Tools

A researcher- developed personal information form was used to gather data on the students' age, sex, and specific circumstances.

School Social Behavior Scale (SSBS)

The School Social Behavior Scale (SSBS), adapted from the Social Skills Rating System (SSRS) developed by Merrell was utilized in the study. The SSBS assessed teachers' observations of students, encompassing their behavior in social and academic settings. The scale employed a five-point Likert model, allowing preschool, primary, and secondary school teachers to assess their students separately. The 'A' form of the scale measured Social Competence, comprising 32 items divided into three subdimensions: interpersonal relations, self-regulation, and academic skills. The B form, Negative Social Behaviors, included a total of 65 items with 33 items divided into three sub-dimensions: aggressive-nervous, antisocial-aggressive, and destructive-demanding. To determine the reliability of the scale, we employed the Pearson Moments Multiplication Correlation Coefficient (r). The results were consistently positive at $p < 0.001$ ($r = 0.83$ to 0.99). These analyses were also conducted separately for the subscales of the two scales, affirming that the scale's reliability matched as the original English form. Cronbach, Spearman Brown, and Guttman tests indicated highly consistent internal reliability, with values between $r = 0.91$ and 0.98 . The researcher ascertained that the scales exhibited commensurate levels of reliability.

Data Collection

The study was conducted twice a week for 24 weeks, with each session comprising a 2-hour play lesson and physical education, tailored to the children's needs at the institution. Sessions were structured to include warm-up exercises (15 minutes), group play activities (25 minutes, involving balance, hand-eye coordination, hand-foot coordination, and rhythmic movements), and stretching exercises (5 minutes). The SSBS was administered by the teachers before the intervention began. Over the 24-week period, physical education and play lessons were implemented, and the SSBS was administered a second time by the teachers in the 25th week. A third evaluation was conducted by the teachers and the researcher 16 weeks after recording measurements to assess the durability of the intervention.

Data Analysis

In addition to basic descriptive statistics such as mean and standard deviation, we used the Mann-Whitney U-test for comparing two independent groups, the Wilcoxon test for comparing the means of two dependent groups, and the Friedman test for assessing differences among three or more dependent group means. We considered a statistical significance level at $p \leq 0.05$ (95% confidence interval) when analyzing all the data.

Results

Table 1 illustrates the age and gender characteristics of the Experimental and Control Groups. In terms of age, three participants (30%) in the Experimental Group were seven years old, four (40%) were eight years old, and three (30%) were nine years old. Regarding gender, three participants (30%) were girls, and seven (70%) were boys in both the Experimental and Control Groups.

In Table 2, our analysis revealed that, with regard to school settings, there exists no statistically significant distinction between the subdomains of social behavior, negative behavior, and social competence when comparing the experimental and control groups ($p \geq 0.05$).

Table 1: The Age and Sex Characteristics of Participants and Control Group

Age	Experimental Group		Control Group	
	No.	%	No.	%
7	3	30	4	40
8	4	40	4	40
9	3	30	2	20
Sex	No.	%	No.	%
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	10.25	102.50			

	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 reveals that, concerning the SSBS and the social competence component, statistically noteworthy disparities were discerned within the pre- and post-test scores of the sub-dimensions encompassing interpersonal relations ($Z = 2.805, p < 0.01$), self-regulation ($Z = 2.818, p < 0.01$), and academic proficiency ($Z = 2.809, p < 0.01$). 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 Behaviour Scale (SSBS) Experimental Group pre-test and post-test Wilcoxon Comparative Statistic

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

* $p \leq 0.005$.

Table 4 unveils a lack of statistically substantial disparities between the pre- and post-test groups in the sub-dimensions of the negative social behavior form, specifically the aggressive-aggressive, antisocial-aggressive, and destructive-demanding dimensions ($p > 0.05$). Nevertheless, within the experimental group, noteworthy statistical distinctions were observed in the sub-scores of the social competence component, pertaining to the pre- and post-test scores across the dimensions of interpersonal relationships ($Z = -3.599, p < 0.01$), self-regulation ($Z = -2.176, p < 0.05$), and academic proficiency ($Z = -2.962, p < 0.05$).

Table 4: Social Behavior Scale in School, Test, and Control Group Post-test Comparative Statistic

	Exp. Control	N	Mean Ranks	Sum of Ranks	U	Z	P
Interpersonal relationships	Exp.	10	15.25	152.50			
					2.500	-3.599	0.000*
Self-control	Control	10	5.75	57.50			
	Exp.	10	13.35	133.50			
					21.500	-2.176	0.030*
Academic skills	Control	10	7.65	76.50			
	Exp.	10	14.40	144.00			
					11.000	-2.962	0.003*
Aggressive-nervous	Control	10	6.60	66.00			
	Exp.	10	8.75	87.50			
					32.500	-1.330	0.184
Antisocial-aggressive	Control	10	12.25	122.50			
	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 reveals that significant statistical disparities were identified among the pre-test, posttest, and retention test values within the SSBS subscales encompassing social competence ($p \leq 0.01$) and negative social behaviors ($p \leq 0.05$). Nonetheless, no noteworthy distinction was evident concerning the sub-dimension of destructive demanding and negative social behavior ($p > 0.05$). When assessing the average rank and standard deviation scores, it was evident that retention test scores were inferior to pre-test scores.

Table 5: SSBS Experimental Group, Pre-test, Post-test, and Retention Test Values Comparison

Parameter	\bar{X}	Std. S.	Mean Ranks	σ^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			

Discussion

In the context of this study, a systematic and consistent application of physical education and play sessions was carried out over a 24-week period for children aged seven to nine with mild cognitive impairment, and evaluations were conducted on the SSBS subscales, including the social competence and negative social behavior forms (as depicted in Table 2). No statistically significant distinctions were observed between the pre-test scores of the experimental and control groups ($p > 0.05$). In contrast, within the experimental group, a significant transformation in the SSBS social competence form was noted from the pre-test to the post-test phase (as illustrated in Table 3), indicating substantial variations in the sub-dimensions of interpersonal relationships ($Z = -2.805$, $p < 0.01$), self-regulation ($Z = -2.818$, $p < 0.01$), and academic skills ($Z = -2.809$, $p < 0.01$). Nevertheless, no statistically meaningful divergence was detected between the pre- and post-test scores for the negative social behavior form subscales, including antisocial-aggressive and destructivedemanding dimensions ($p > 0.05$), but a notable shift was evident in the aggressive-nervous ($Z = -2.524$; $p < 0.05$) sub-dimension. These findings suggest that the practice positively impacted the aggressive-nervous behaviors within the children's social competence levels and negative social behaviors. Moreover, even though no significant result was observed in the antisocial-aggressive and destructive-demanding sub-dimensions of the negative social behavior subscales, a favorable reduction was observed in the average rank 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, during the analysis conducted between the post-test scores of the test and control groups (as represented in Table 4), a statistically significant contrast was identified in the final test scores within the dimensions of interpersonal relationships ($Z = -3.599$, $p < 0.01$), self-regulation ($Z = -2.176$, $p < 0.05$), and academic skills ($Z = -2.962$, $p < 0.05$) within the social competence form subdimensions. No significant differences were found in the scores of the negative social behaviors form, particularly within the aggressive-aggressive, antisocial-aggressive, and destructive-demanding sub-dimensions ($p > 0.05$). However, the experimental group displayed a favorable reduction in negative social behavior dimensions at the average rank level.

Existing literature highlights that consistent physical activity studies conducted with individuals experiencing cognitive challenges have demonstrated positive impacts on various facets, including socialization, communication skills, mitigation of negative behaviors, daily life competencies, nurturing healthy relationships, self-expression, academic proficiencies, self-esteem, and overall quality of life. These outcomes corroborate the findings of our research. Based on these results, it can be inferred that the systematic engagement in physical education and play activities has a notable influence on the social competence and negative social behavior of individuals with mild cognitive impairments.

With regard to the retention test conducted after a 16-week interval to assess whether the effects of the physical education and play interventions persisted among the participants, it was observed in the experimental group that the SSBS, social competence, and negative social behavior subdimensions displayed a significant difference according to the Friedman test result comparison statistics ($p \leq 0.001$) regarding the variations between pre-test, post-test, and retention test ($p \leq 0.001$). In contrast, no significant difference was evident within the destructive-demanding subscale of the negative social behaviors ($p > 0.001$), and the mean and standard deviation scores displayed an increase in accordance with the test scores (as outlined in Table 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.

References

1. Demirkaya H. Social Behavior through Individual and Organizational Dimensions Etiquette Protocol; Umuttepe Publishing: Kocaeli, Turkey; c2013.
2. Anup K. Adapted Physical Education, Sports Publication, New Delhi; c2003.
3. Burghardt GM. Defining and Recognizing Play; Oxford Handbook of the Development of Play; Pellegrini, A.D., Ed.; Oxford University Press: Oxford, UK; c2010. p. 9-18.
4. Pellegrini AD. The Role of Play in Human Development; Oxford University Press: Oxford, UK; New York, NY, USA; c2009.
5. Meral BF, Cinisli NA. Special Education and 50 Sample Games; Vize Publishing: Ankara, Turkey; c2015.
6. Yildiz E, Simsek U, Agdas H. Effect of Educational Games Integrated Cooperative Learning Model on Students' Motivation Toward Science Learning and Social Skills. J Kirsehir, Educ. Fac. (JKEF). 2017;18:37-54.
7. Alp H, Camliyer H. The children participated with social adjustment disorders fused extracurricular movement education and game activities monitoring of children's social adaptation process next two years. Int. J Social Sci. Educ. Res. 2015;1:88-100.
8. Badau D. The educational impact of implementation the education through adventure discipline in physical education and sports academic curriculum. Phys. Educ. Stud. 2017;21:108-115.
9. Badau A. Study of somatic, motor and functional effects of practicing initiation programs in water gymnastics and swimming by students of physical education and sports. Phys. Educ. Stud. 2017;21:158-164.
10. Sucuoglu B, Ozokcu O. Evaluate the social skills of the mainstreamed elementary students. Ankara Univ. Fac. Educ. Sci. J Spec. Educ. 2005;6:41-57.
11. Serin CGE. Social Skill Levels in Adolescents with Mental Disabilities and Behavior Problems Levels of Perception by Comparing Parents' General Investigation of Self-Efficacy. Master's Thesis, Institute of Education Sciences, Dokuz Eylul University, Izmir, Turkey; c2012.
12. Avcioglu H. The effectiveness of cooperative learning and drama techniques in acquisition of social skills by the children with intellectual disabilities. Educ. Sci. 2012;37:110-125.
13. Singh BK. Sports Psychology, Lakshay Publication, New Delhi; c2010.
14. Savas E, Gulum K. The effects of teaching methods of implementation with traditional games on achievement and permanence. Trakya Univ. J Soc. Sci. 2014;16:175-194.
15. Kaya S, Elgun A. The influence of instructional games in science teaching on primary students' achievement. Kastamonu Educ. J. 2015;23:329-342.
16. Henniger ML. Teaching Young Children (and Introduction); Pearson Merrill Prentice Hall: Upper Saddle River, NJ, USA; c2005.
17. Zabelina DL, Robinson MD. Child's play: Facilitating the originality of creative output by a priming manipulation. Psychol. Aesthet. Creativity Arts. 2010;4:57-65.
18. Dusa FS, Badau A, Badau D, Trambitas C, Brinzaniuc K. Investigating the Deformation Parameters of PVC Fitness Balls in Relation to the Height and Body Mass Index of the Users. Mater. Plast. 2017;54:606-609.
19. Singh H. Psychology in Sports, Nipun Prakashan, Keshav Puram, New Delhi.
20. Wankahde Santosh K. Sports Sociology, Prerna Prakashan, New Delhi; c2006.