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### Effect of Recreational Physical Activity Program on Aberrant Behaviors of Adolescents with Mild Intellectual Disabilities


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## Effect of Recreational Physical Activity Program on Aberrant Behaviors of Adolescents with Mild Intellectual Disabilities

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### ABSTRACT

This study investigated the effect of the Recreational Physical Activity Program (RPAPP) on problem behaviors of adolescents with mild intellectual disabilities. The experimental group (n=17) involved the parents of adolescents with mild intellectual disabilities who were studying at the School for the Mildly Mentally Handicapped, within the Meram Melike Hatun Special Education Vocational High School affiliated to the Ministry of National Education in Konya. The parents who remained after the exclusion of the lost data constituted the control group (n=17). The Personal Information Form developed by the researchers and the Aberrant Behavior Checklist were used to collect data. The sample of the study consisted of 34 participants. To measure the aberrant behaviors of the adolescents, an evaluation was made through the parents. The study had a pretest-posttest experimental design with a control group. A 16-session RPA was implemented in the experimental group for 8 weeks, two sessions a week and each session lasting for about an hour. The results of the study revealed no statistically significant difference between the Aberrant Behavior Checklist pre-test and post-test total and factor scores of the experimental and control groups ( $p>.05$ ). the application of a recreational physical activity program in 16 sessions is not sufficient to reduce aberrant behaviors; therefore, longer-term programs are necessary for behavior change.

**Keywords:** Aberrant Behaviors, Adolescent, Intellectual Disability, Therapeutic Recreation Program



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## INTRODUCTION

Adolescents with intellectual disabilities may exhibit more problematic behaviors than adolescents without disabilities, and they are also characterized as more disadvantaged than other people in terms of psychological and neuropsychiatric problems (Freund & Reiss, 1991; Russell & Forness, 1985, Semmel & Gao, 1992). Aberrant behaviors can be defined as behaviors that prevent the learning of new skills and cause the individual to stay out of the learning environment, can be harmful to himself or other individuals, and do not comply with the social norms of the society in which the individual lives (Zarkowska & Clements, 1994). Therapeutic recreational activities may have an effect as a healing method on the problem behaviors of adolescents with mild intellectual disabilities (Ertüzün & Daşkıran, 2022; Garcia-Villamizar et al., 2017; Kunzi, 2015). According to the National Council for Therapeutic Recreation Society, therapeutic recreation includes therapy as well as education and entertainment to improve the health status of disadvantaged groups, increase their quality of life, enable them to have fun, and ensure independence in their lives (NCTRC, 2022). The American Therapeutic Recreation Association (ATRA) defines therapeutic recreation activity as the application of therapeutic recreation using a systematic method that uses recreation and other activity-based interventions to meet the psychological health, physical health, and well-being needs of individuals with illnesses and disabilities (ATRA, 2019).

The literature supports the positive effects of therapeutic recreation practices on individuals with intellectual disabilities. Adolescents who passively engage in unstructured activities show higher levels of depressive symptoms and behavioral problems than adolescents who participate in structured recreational activities (Bartko & Eccles, 2003; Mahoney & Stattin, 2000). Therapeutic recreation practices increase the emotional adaptation behaviors of intellectually disabled individuals (Ertüzün & Daşkıran 2022) and contribute to their self-confidence and socialization (Guidetti et al., 2009). Moreover, these practices reduce symptoms such as restlessness (Hinckson & Curtis 2013), promote independence, coping skills, competitiveness, and teamwork among disabled adolescents (Patel & Greydanus, 2002), and provide opportunities to establish friendships, express creativity, and develop a social environment. It has been observed that recreational activities make a significant contribution in situations such as increasing the psychological well-being of disabled adolescents and nurturing the meaning and purpose of adolescents' lives (Dykens et al., 1998). In other words, recreational activities have a positive effect on individuals with intellectual disabilities, as well as on non-disabled adolescents, in terms of increasing the quality of life of individuals, making friends, feeling independent, enjoying themselves, and acquiring skills (Hanley-Maxwell et al., 1995; Gresham & Reschly, 1986; Ertüzün & Daşkıran, 2022). Such practices are crucial in the process of reintegrating adolescents with mild intellectual disabilities into society.

Adolescence is a critical period in human life. It represents the transition to adulthood and offers a unique opportunity to both prevent psychological disorders and positively affect developmental trajectories. It also affects the future lives of individuals (Patton et al., 2016). In the literature there are studies stating that recreational activities have a positive effect on the transition from childhood to adolescence (Fawcett et al., 2009). It is thought that the practices to be performed in adolescence may support individuals with mild intellectual disabilities who exhibit problem behaviors and help them to have a better life in the future.

At this point, it arouses curiosity to whether RPAP can improve the aberrant behaviors of individuals with mild intellectual disabilities. Our review of the national and international literature showed that studies on the effect of therapeutic recreation activities

on the aberrant behaviors of individuals with intellectual disabilities are limited (Garcia-Villamizar et al., 2017; Gençöz, 1997). According to the results obtained from the studies, the therapeutic recreation program has a positive effect on problematic behaviors and hyperactivity and indirectly has an effect on adaptive behaviors, well-being, and social skills (Gabriels et al., 2015; Garcia-Villamizar et al., 2017; Harris & Williams, 2017). The physical activity practices of therapeutic recreation for adolescents with mild intellectual disabilities are important and need to be studied in depth (Hawkins et al., 2014; Garcia-Villamizar et al., 2017). Depending on the results of the research, plans can be made for the spread of therapeutic recreation practices, and problem behaviors of adolescents with mild intellectual disability can be minimized as much as possible. Individuals with intellectual disabilities who exhibit compulsive behaviors often have limited opportunities to improve their social skills and less access to educational programs and leisure activities, which may lead to an increased risk of being physically restrained and abused (Murphey et al., 2005).

Aberrant behaviors include hyperactivity, lethargy, stereotypic behaviors, harmful behaviors, and inappropriate speech. The Self-determination and Enjoyment Model can be an effective method for use in any RPAP (Gresham & Reschly, 1986; Ertüzün & Daşkiran, 2022). Self-determination is related to reducing social withdrawal as one of the problem behaviors, while entertainment involves controlling hyperactivity and stereotypic and harmful behaviors through entertaining activities (Dattilo et al., 1998). It is thought that this model is the most effective method to guide therapeutic recreational activity in the process of improving problem behaviors. Therapeutic recreation practices may help eliminate the problem behaviors of adolescents with mild intellectual disabilities in the short term, and the widespread use of therapeutic recreation practices may indirectly lead to reaching out and reintegrating more adolescents with mild intellectual disabilities into society in the long term. Therefore, the present study aimed to contribute to the literature by investigating whether the RPAP developed by the researchers has an effect on reducing the aberrant behaviors of adolescents with mild intellectual disabilities.

## METHOD

### Research Design

This research is quantitative with a pre-test post-test randomized design with a control group. This study was conducted in accordance with the Consolidated Standards of Reporting Trials (CONSORT) reporting guidelines (Schulz et al., 2010).

### Research Group

The research population consisted of 86 students with mild intellectual disabilities studying at the School for Intellectual Disability, within Meram Melike Hatun Special Education Vocational High School, affiliated to the Ministry of National Education in Konya, and their parents (mother or father). The sample size was calculated using the G-Power 3.01 program (G\*Power 3.1 Manual, 2023). Power analysis was based on a type I error of 0.05, power of 0.95, and effect size of  $f=0.55$ . Based on this calculation, the sample size was determined to be at least 10 people. Since the research has a pretest-posttest control group design and any data loss could reduce internal validity, it was decided to have 20 participants in each group (experimental group and control group).

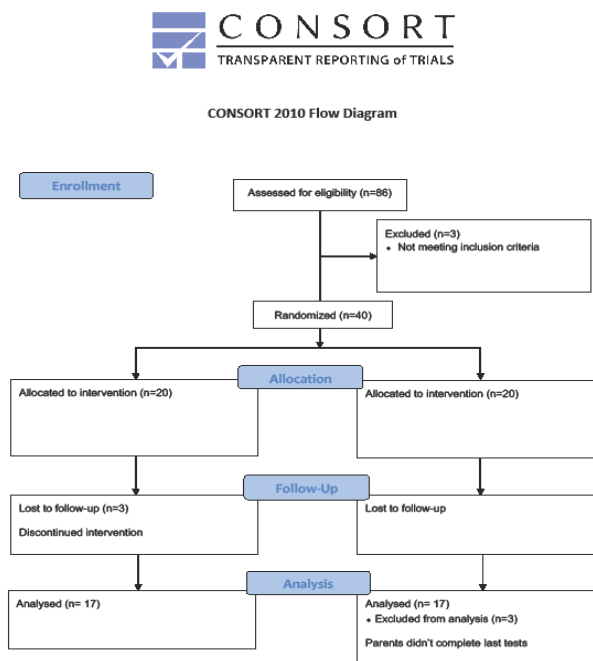
### Randomization

A simple random number table created from the school's general student list was used for random sampling. The experimental and control groups created by a statistician who did not know the names and characteristics of the students. A statistician who knew the randomization process and could make an objective assignment assisted in the assignment of

the participants of the experimental and control groups. The list of students was taken, their names were written on papers, and they were assigned to the groups by drawing lots. Then, the parents of 40 randomly selected students from the target population were randomly assigned to the experimental and control groups (20 parents in each group). The parents were informed about the content of the study. The parents of three students with physical disabilities were excluded from the study. The data obtained from the parents of the students in the experimental group who participated in at least 14 sessions of the RPAP were evaluated. Three parents in the control group who did not give consent for data collection during the post-test were excluded from the study because of lack of data. The parents who regularly participated in the study constituted the experimental group (n=17), whereas the parents who remained after the removal of the lost data constituted the control group (n=17). The demographic data of the parents in the study were similar in terms of variables such as income, education, and place of residence.

The flow diagram of the experimental and control groups was prepared based on CONSORT 2010 shown in (Figure 1). The parents of 40 students in the sample were randomly assigned to the experimental and control groups (20 parents in each group). Before the 16-session RPAP was implemented, three parents in the experimental group withdrew from the study because their children could not participate in the program regularly, whereas three parents in the control group withdrew from the study because they did not want to participate in the study. Each participant's inclusion in the analysis without considering reasons such as leaving the assigned group, incompatibility, and treatment/intervention after randomization is defined as intention to treat (ITT) analysis. The method that involves the exclusion of those who left the study before any intervention at the beginning of the study is defined as modified intention to treat (MoITT) (Akin & Koçoğlu, 2017). MoITT was performed in this study, and ITT analysis was performed for control purposes, and no difference was observed between the findings.

**Figure 1.** The Consort (2010) Flow Diagram of the Study (Source: <http://www.consort-statement.org/consort-2010>).



## **Blinding**

Blinding was applied to the statistician who determined the experimental and control groups, data collectors, and during the statistical analysis reporting process. Thus, sampling bias, statistical and reporting bias were controlled.

## **Intervention**

### *Recreational Physical Activity*

A 16-session RPA was implemented in the experimental group for 8 weeks, two sessions a week and each session lasting for about an hour. This program implemented by 1 practitioner and 2 assistant practitioners who were experts in dance and educational games and had previously worked with adolescents with mild intellectual disabilities. The RPAP includes rhythm, dance, and educational games. The program was planned on the basis of the Self-Determination and Enjoyment Model (Dattilo et al., 1998), which aims to strengthen personal development and well-being by creating an enjoyable environment with therapeutic recreation. The program aimed to reduce the aberrant behaviors of adolescents with mild intellectual disabilities, such as hyperactivity, lethargy and social introversion, and harming themselves and their friends during games. Games that help develop emotional adaptation skills were selected for the program. It aimed to eliminate behaviors that can be considered problematic and to help adolescents be happy in activities where they can take responsibility.

Before the program was implemented, the experimental group was informed about the purpose of the research and the program by the researchers, and verbal consent was obtained from the participants. The second author of the study conducted the RPAP with the adolescents in the experimental group in the school gymnasium. The second author explained the games to the students, while the other authors modeled how the games were played. A third author with sufficient professional experience acted as the supervisor. During the games, all researchers played guiding and supporting roles in the students. It was observed that the students had visibly fun during the games and were willing to participate.

### *Control Group*

The control group included the parents of the students who did not participate in any of the games in the program. It was stated that the intervention could be offered to the control group at any time after the study. The Aberrant Behavior Checklist was administered to the parents in the control group twice as a pre-test and post-test measurement.

## **Data Collection Tools**

### *Personal Information Form*

The form was developed by the researchers to obtain information about the age and gender of the adolescents, parent's gender, educational status of the parent, number of siblings, family income status, and place of residence.

### *Aberrant Behavior Checklist*

The checklist was developed by Aman, Singh, Stewart, and Field (1985) to evaluate the problem behaviors observed in individuals with intellectual disabilities and the changes in these behaviors. The checklist can complete by teachers, specialists, or parents working with people with intellectual disabilities. The original form of the scale consists of 58 items under 5 factors. The factors were irritability (factor 1), lethargy, social withdrawal (factor 2), stereotypic behavior (factor 3), hyperactivity, noncompliance (factor 4), and inappropriate speech (factor 5). The scale items are rated on a four-point scale from 0 (no problem) to 3 (extremely problematic) according to the severity of the symptoms. The total score that can be obtained from the scale varies between 0 and 124. The Turkish validity and reliability

study of the scale was carried out by Sucuoğlu (2003), and 12 items were removed from the checklist because they were under more than one factor. Thus, the Turkish version of the scale included 46 items under the factors of hyperactivity (e.g. impulsive, act without thinking), lethargy (e. g. withdrawn; prefers solitary activities), stereotypic behaviors (e.g., meaningless, recurring body movements), harmful behaviors (e.g., deliberately hurting herself/himself), and other behaviors (e.g., mood changes quickly). However, the factor of other behaviors that emerged in the Turkish version of the scale, but which does not exist in the original scale, includes 4 items under three different factors, and thus, it was not used in this study.

### Data Collection Process

Ethics committee approval was obtained from Selçuk University, Faculty of Sport Sciences Non-Interventional Clinical Research Ethics Committee (no: 40990478-050.99/39612). Data collected by the researchers. The study was registered on ClinicalTrials.gov on October 23, 2019 under the title "The Effects of Therapeutic Recreation Activities on Aberrant Behaviors of Individuals with Intellectual Disabilities" and with the record number NCT 04546464. A meeting was held with the parents of the students in the experimental group to inform them about the program and the measurement tool. After the meeting and before the randomization process, the researchers administered the Personal Information Form and the Aberrant Behavior Checklist to the parents who volunteered to participate in the study as pre-tests. After the 16-session-RPAP, the Aberrant Behavior Checklist was applied again to the parents in both groups as the post-test measurement. It took approximately 10 min to complete the form and the checklist.

### Data Analysis

Frequency distributions (number, percentage) were calculated for categorical variables, and descriptive statistics (mean, standard deviation, median, minimum, maximum) was calculated for continuous variables. The normality of the intergroup numerical variables was analyzed using the Shapiro-Wilk test of normality, and it was observed that they did not show a normal distribution. For this reason, non-parametric statistical analyzes (Mann Whitney U and Wilcoxon tests) were conducted because the assumption of normal distribution was not met and the number of participants in the groups was 17. The level of statistical significance was set at  $p < .05$ , and the data were analyzed using the IBM SPSS Statistics 22 program.

## FINDINGS

In this section, the frequency and percentage values of the students participating in the study and their parents' gender, education and income status of the parents are shown in (Table 1).

**Table 1.** The Distribution of Characteristics of Adolescents and Parents in Experimental and Control Groups

	Control (n=17)		Experimenta l (n=17)		X <sup>2</sup>	p
	n	%	n	%		
<b>Gender of the Adolescent</b>						
Female	7	41.2	6	35.3	.125	.724
Male	10	58.8	11	64.7		
<b>Gender of the parent</b>						
Mother	8	47.1	6	35.3	.486	.486
Father	9	52.9	11	64.7		

<b>Mother's level of education</b>						
Illiterate	2	11.8	2	11.8		
Primary school	13	76.5	11	64.7		
Secondary school	2	11.8	4	23.5	.833	.659
<b>Father's level of education</b>						
Primary school	13	76.5	14	82.4		
Secondary school	2	11.8	1	5.9		
High school	1	5.9	1	5.9		
University	1	5.9	1	5.9	.370	.946
<b>Level of income</b>						
Below the minimum wage	6	35.3	8	47.1		
Minimum wage	7	41.2	6	35.3		
Twice the minimum wage	3	17.6	3	17.6		
3 times or more of the minimum wage	1	5.9	0	0	1.363	.714

The descriptive statistics for the participants are shown in (Table 1). The majority of the control group (58.8%) and the experimental group (64.7%) consisted of male adolescents, and their mean age was similar (Experimental group<sub>age</sub>: 17.94±1.30; Control group<sub>age</sub>: 17.47±1.51). Both the experimental and control groups mainly included fathers (64.7% and 52.9%, respectively). The mean age of the mothers (45.35±7.02) and fathers (48.82±7.27) in the experimental group was found to be higher than that of the mothers (42.94±5.70) and fathers (46.88±5.27) in the control group. In addition, the parents in the experimental and control groups were found to have similar education and income levels. The majority of the participants had an income below the minimum wage or earned the minimum wage. Chi-square analysis revealed no statistically significant difference between the groups in terms of demographic characteristics (p>.05).

**Table 2.** Intra-Group and Inter-Group Comparison of Aberrant Behaviour Checklist Pre-Test and Post-Test Scores

	Control		Experimental		Inter-group	
	X	SD	X	SD	Z <sup>a</sup>	p
<b>Hyperactivity Pre-Test</b>	22.24	6.66	22.06	6.39	-1.959	.050
<b>Hyperactivity Post Test</b>	26.41	7.48	22.65	8.06	-.284	.776
<b>Intra-group</b>	Z <sup>b</sup> =-.121	p=.904	Z <sup>b</sup> =-1.674	p=.094		
<b>Lethargy Pre-Test</b>	28.65	10.58	26.59	8.76	-.189	.850
<b>Lethargy Post-Test</b>	28.76	10.24	25.29	7.69	.751	.452
<b>Intra-group</b>	Z <sup>b</sup> =-.450	p=.653	Z <sup>b</sup> =-.899	p=.369		
<b>Stereotypic Behaviors Pre-Test</b>	8.29	3.27	8.35	3.55	.000	1.00
<b>Stereotypic Behaviors Post-Test</b>	8.65	3.77	7.24	3.40	-1.691	.091
<b>Intra-group</b>	Z <sup>b</sup> =-.398	p=.691	Z <sup>b</sup> =-1.431	p=.153		
<b>Harmful Behaviors Pre-Test</b>	3.47	1.07	4.35	2.78	-.378	.705
<b>Harmful Behaviors Post-Test</b>	3.41	0.94	3.12	0.33	-1.892	.058
<b>Intra-group</b>	Z <sup>b</sup> =-.904	p=.366	Z <sup>b</sup> =-.643	p=.520		
<b>Total Aberrant Behavior Pre-Test</b>	58.93	12.80	61.35	17.50	-1.191	.234
<b>Total Aberrant Behavior Post-Test</b>	67.29	18.45	57.63	14.80	-.796	.426
<b>Intra-group</b>	Z <sup>b</sup> =-.786	p=.432	Z <sup>b</sup> =-1.482	p=.138		

<sup>a</sup> Mann-Whitney U <sup>b</sup> Wilcoxon analysis

The results of the analysis conducted to investigate whether RPAP reduced problem behaviors in adolescents with mild intellectual disability are shown in (Table 2). The pretest



scores of the experimental and control groups were compared, and no significant differences were found between the Aberrant Behavior Checklist total and factor scores of the groups ( $p>.05$ ).

The analyzes revealed no significant difference between the pre-test and post-test Aberrant Behavior Checklist total and factor scores in the experimental group ( $p>.05$ ). In addition, no statistically significant difference was found between the pre-test and post-test Aberrant Behavior Checklist total and factor scores of the control group ( $p>.05$ ).

## DISCUSSION & CONCLUSION

The present study, which aimed to investigate the effect of RPAP on the aberrant behaviors of adolescents with mild intellectual disabilities, revealed no statistically significant difference between the experimental group's pre-test and post-test total and factor scores. Although not significant, it can be said that the RPAP had positive effects on the experimental group, i.e., it reduced the problem behaviors of the adolescents. The reason for this insignificant result may be related to the duration of RPAP. There are no studies in the literature with very similar sample characteristics. However, long-term intervention studies conducted with different age groups and methods support this interpretation. For example, Bala et al. (2011) investigated the effect of motor exercises and kinesiological activities for 9 months with preschool children on reducing problem behaviors and found that aggression, anger, and destructiveness decreased in children with increased externalizing behavior and anxiety, phobia, and shyness decreased in children with distinctive internalizing behavior. A 12-week study was conducted to explore the effect of a peer-mediated adaptive physical activity program on the problem behaviors of students with intellectual disabilities (Esentürk & Güngör, 2020). The findings revealed a statistically significant difference between the pre-test, post-test, and follow-up tests regarding the problem behaviors of students with intellectual disabilities. A 40-week intervention study (Garcia-Villamisar et al., 2017) conducted with individuals with autism spectrum disorder and intellectual disability showed that the therapeutic recreation program had a positive effect on social skills, adaptation behavior, and well-being, and it can be an effective intervention method for individuals with autism spectrum disorder and intellectual disabilities.

On the basis of these findings, it can be stated that long-term therapeutic practices can be an effective method in reducing aberrant behaviors. This study aimed to reduce the problem behaviors of adolescents with mild intellectual disabilities using RPAP. The absence of a significant decrease may be related to short-term mood changes caused by the environment during the activities and to psychosocial processes. Previous studies have also indicated that it is not possible to create a permanent change in human behavior in a short time (Kırımoğlu et al., 2016).

The findings revealed that although there were no statistically significant differences between the pre-test and post-test scores of the experimental and control groups, RPAP reduced hyperactivity, lethargy, and stereotypic and harmful behaviors through rhythm, dance, and educational games. Thus, the study indicated that RPAP can be a valid program eventually for reducing hyperactivity, lethargy, and stereotypic and harmful behaviors. It is thought that RPAP may allow adolescents and their families to experience positive emotional states and indirectly increase their quality of life. Future studies may investigate the relationship between therapeutic recreation programs that include rhythm, dance, educational games, and different skills. The quality of life of individuals with mild intellectual disabilities who participate in recreational physical activities and that of those who do not can be compared.

## Limitations and Recommendation

It should be noted that this study has some limitations. The Aberrant Behaviors Checklist, which is a behavioral rating list, was used as the only measurement tool in this study. It would have been possible to obtain more concrete results by including more than one measurement tool in the study. In addition analyzes were performed only on the basis of the evaluations of the parents. Obtaining information from teachers about changes in behaviors may provide supportive data for evaluating problem behaviors. The adolescents with mild intellectual disabilities in the control and experimental groups did not exhibit severe problem behaviors and could accompany group activities. This may be the reason why the intervention did not change the participants' behaviors.

Effective implementation of recreational physical activity programs for adolescents in special education schools by physical education teachers is a necessity to achieve desired results. In addition, it is necessary to design different types of free time activities that adolescents can participate in outside school time, to increase the awareness of parents about free time activities, and to gain the support of local administrations. It is thought that future studies should apply RPAP to individuals with higher levels of aberrant behaviors. In addition, randomized controlled studies with longer-term RPAPs are recommended to observe behavioral changes in people with intellectual disabilities. Conducting qualitative studies in the future will create a different perspective in terms of the functions of recreational activities in reducing aberrant behaviors.

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**Ethics statement:** We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

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