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Recreational Exercise as a Rehabilitation Approach in Juvenile Justice: Effects on Inappropriate Interpersonal Behavior among Juvenile Delinquents in India

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ABSTRACT

Juvenile delinquency poses a significant challenge to criminal justice systems worldwide, with behavioural disorders frequently hindering the rehabilitation and social reintegration of young offenders. Contemporary juvenile justice systems increasingly emphasize rehabilitation rather than punishment, highlighting the need for evidence-based interventions that foster positive behavioral changes. Recreational exercise has emerged as a promising non-pharmacological intervention capable of enhancing psychological well-being, promoting social interaction, and reducing maladaptive behavior. This study examined the effectiveness of a structured recreational exercise program in reducing inappropriate interpersonal behavior among juvenile delinquents residing in a Government Observation Home in India. Fifty (50) juvenile boys, age ranging between 14-17 years were randomly selected as subjects from the Government Juvenile Home (Boys), Mathura. They were randomly divided into two groups of 25 each: the recreational exercise group and the control group. Subjects' behavior for inappropriate interpersonal behavior was rated by their supervisors on the Emotional and Behavior Problem Scale (EBPS) developed by McCarney and Arthaud (2012) in pre- and post-intervention sessions. The subjects were administered selected recreational exercises for 12 weeks. A paired-samples t-test was used to determine the significance of the difference between the pre- and post-scores. In the recreational exercise group, the mean scores for inappropriate interpersonal behavior at pre-test (10.12 ± 1.05) were higher than the mean scores at post-test ($9.52 \pm .65$). The t-test indicated a statistically significant change in these scores ($t = 4.24, p < .001$). This study concludes that recreational exercises reduce emotional and behavioral problems and enhance well-being, mental focus, mood, attention, and stress tolerance among juvenile delinquents. These findings indicate that structured recreational exercise can serve as an effective rehabilitation approach for improving interpersonal behavior in juvenile delinquents. This study supports the integration of recreational exercise programs into juvenile rehabilitation policies and institutional practices as a complementary behavioral intervention aimed at facilitating positive psychosocial development and successful social reintegration.

Keywords: Juvenile Delinquency, Recreational Exercise, Juvenile Justice, Behavioural Rehabilitation, Inappropriate Interpersonal Behaviour

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Introduction

Juvenile delinquency continues to be one of the most pressing social and legal concerns confronting contemporary societies. Adolescents involved in delinquent behavior frequently experience emotional, behavioral, educational, and interpersonal difficulties that adversely affect their personal development and increase the likelihood of continued antisocial behavior in adulthood (Moffitt, 2018). Consequently, juvenile justice systems worldwide have gradually shifted from punitive approaches to rehabilitation-oriented models that emphasize behavioral modification, psychosocial development, and successful reintegration into society (Heilbrun, K., DeMatteo, D., King, C., & Filone, S. (2017).

In India, the Juvenile Justice (Care and Protection of Children) Act, 2015, advocates a child-centered approach that prioritizes care, protection, education, counselling, skill development, and rehabilitation over punishment. Observation Homes function as temporary residential institutions where juveniles receive supervision, counselling, education, vocational training, and behavioral guidance pending legal proceedings or rehabilitation planning. However, despite these institutional efforts, many juveniles continue to exhibit behavioral difficulties, particularly inappropriate interpersonal behavior, characterized by poor peer relationships, aggression, hostility, social withdrawal, and difficulties in maintaining constructive social interactions. Such behavioral characteristics frequently impede successful rehabilitation and increase the risk of reoffending.

Physical activity has gained considerable attention as a valuable psychosocial intervention capable of improving mental health and behavioral functioning in children and adolescents (Li, Z., Li, J., Kong, J., Li, Z., Wang, R., & Jiang, F. 2024). Recreational exercise, in particular, differs from competitive sports by emphasizing enjoyment, voluntary participation, cooperation, communication, and social engagement, rather than performance outcomes (Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. 2013). Structured recreational activities provide opportunities for emotional expression, teamwork, self-control, empathy, conflict resolution, and development of positive interpersonal relationships. Previous investigations have reported that participation in recreational and physical activity programs contributes to reductions in aggression, anxiety, depression, behavioral disorders, and social maladjustment while simultaneously improving self-esteem, emotional regulation, and social competence (Biddle & Asare, 2011; Lubans et al., 2016).

Within juvenile correctional settings, recreational exercise may represent an effective behavioral rehabilitation tool because it encourages the constructive use of leisure time, enhances peer cooperation, strengthens institutional discipline, and provides opportunities for positive social interaction under professional supervision. Regular participation in structured recreational programs has been associated with improvements in emotional regulation, reduced impulsivity, enhanced self-discipline, and better interpersonal adjustment among adolescents experiencing behavioral challenges (World Health Organization, 2020). Nevertheless, empirical evidence examining the effectiveness of recreational exercise among institutionalized juvenile delinquents in India remains limited.

The present study addresses this gap by investigating whether a structured 12-week recreational exercise program can significantly reduce inappropriate interpersonal behavior among juvenile delinquents residing in a Government Observation Home in India. Using a randomized pre-test-post-test control group design and a culturally adapted Emotional and Behavior Problem Scale, this study sought to provide empirical evidence regarding the role of recreational exercise as a rehabilitation approach within juvenile justice institutions. The findings are expected to contribute to the growing body of evidence supporting non-custodial behavioral interventions and may assist policymakers, correctional administrators, psychologists, physical education professionals, and social workers in strengthening rehabilitation programs for juveniles in conflict with the law.

Methodology

The present study adopted a true randomized pre- and post-test experimental design to examine the effectiveness of recreational exercise in reducing inappropriate interpersonal behavior among juvenile delinquents. This design enabled a comparison of behavioral changes before and after the intervention while controlling for potential threats to internal validity through the random allocation of participants into experimental and control groups. Fifty (50) juvenile boys, age ranging between 14-17 years were randomly selected as subjects from the Government Juvenile Home (Boys), Mathura.

The study was conducted at the Government Observation Home in Mathura, Uttar Pradesh, India. Fifty (50) juvenile boys, age ranging-14-17 years were randomly selected and divided into two equal groups comprising 25 participants each.

- **Recreational Exercise Group**
- **Control Group**

Random allocation was performed using Microsoft Excel randomization procedures to minimize the allocation bias. Written informed consent was obtained before the commencement of the study, and all intervention procedures were explained to the participants and institutional authorities. Behavioral assessment for inappropriate interpersonal behavior was carried out using the **Emotional and Behavior Problem Scale (EBPS-2R)** developed by **McCarney and Arthaud (2012)**.

Intervention Program

Participants assigned to the recreational exercise group underwent a 12-week structured recreational exercise program, conducted five days per week during morning sessions between 7:00 a.m. and 9:00 a.m.

Recreational Exercise Program:
Recreational Exercises schedule for twelve weeks

Day	Recreational Games	1 to 4 weeks	5 to 8 weeks	9 to 12 weeks
Monday & Thursday	Musical chair & Blind man's buff	30 minutes	40 minutes	50 minutes
Tuesday & Friday	Dodge ball & Burning balls	30 minutes	40 minutes	50 minutes
Wednesday	Stole the meet & Lemon race	30 minutes	40 minutes	50 minutes

The subjects in the recreational exercise group (Group 'B') were administered with selected recreational exercises. They performed the above six recreational games as recreational exercises. Two games were played every day, and each game was played for 15 minutes at the beginning. There was 5 minutes rest between games. The duration of games was increased after every four weeks for a specific time as per the schedule.

The intervention was administered under the direct supervision of the researcher, with assistance from wardens to ensure consistency and participant safety. The control group continued routine institutional activities without exposure to any structured or recreational interventions.

Behavioral ratings were obtained before and after the intervention using observer ratings rather than self-reports. Wardens responsible for supervising the juveniles completed the EBPS after receiving detailed orientation regarding the assessment procedure. The first

assessment constituted the pre-test, whereas the second assessment was conducted immediately after the completion of the twelve-week intervention program.

Statistical Analysis

Descriptive statistics (Mean and Standard Deviation) were computed to summarize the behavioral scores. To determine behavioral changes within groups, **paired-samples t-tests** were employed to compare pre- and post-test scores. Statistical analyses were performed using **SPSS Version 17**, and the level of statistical significance was set at $p < .05$.

Results

To determine the effectiveness of recreational exercise in reducing inappropriate interpersonal behavior, paired-samples *t*-tests were performed separately for the control and recreational exercise groups.

Comparison of means between pre and post-test of both the groups

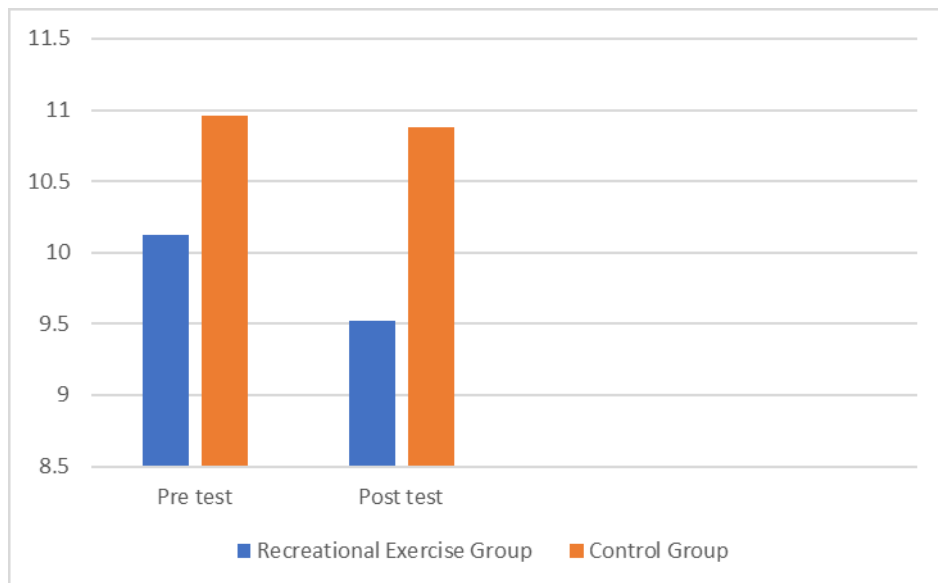
Group	Mean		Mean difference	Standard Deviation		t	(p)
	Pre	Post		Pre	Post		
Recreational Exercises	10.12	9.52	.60	1.05	.65	4.24	<.001
Control	10.96	10.88	.08	4.33	4.07	.70	.491

A paired-samples *t*-test was employed to examine the effectiveness of the 12-week recreational exercise program by comparing the pre-test and post-test scores of the recreational exercise and control groups. The results revealed a statistically significant reduction in inappropriate interpersonal behavior among participants who underwent the recreational exercise intervention. The mean score decreased from 10.12 ± 1.05 in the pre-test to 9.52 ± 0.65 in the post-test, yielding a mean reduction of **0.60 points** ($t(24) = 4.243, p < .001$). This finding indicates that participation in structured recreational exercise produces a meaningful improvement in interpersonal behavioral functioning among juvenile delinquents.

In contrast, the control group showed only a negligible reduction in mean scores, from 10.96 ± 4.33 in the pre-test to 10.88 ± 4.08 in the post-test, with a mean difference of **0.08 points**. The observed change was not statistically significant ($t(24) = 0.700, p = .491$), indicating that routine institutional care without structured physical activity did not produce measurable improvements in inappropriate interpersonal behavior.

Taken together, these findings demonstrate that the significant reduction in inappropriate interpersonal behavior can be attributed to the recreational exercise program rather than to the passage of time or routine institutional care. The intervention appears to have promoted healthier interpersonal relationships, improved behavioral regulation, and enhanced social adjustment among juvenile delinquents. These results support the effectiveness of recreational exercise as a rehabilitation approach within juvenile justice institutions and underscore its potential role as a complementary behavioral intervention for fostering positive psychosocial development in adolescents.

Fig.1: Graphical representation of the mean of inappropriate interpersonal behavior of both groups.



The graphical representation demonstrates that the behavioral scores remained almost unchanged in the control group, whereas the recreational exercise group exhibited a noticeable decline in inappropriate interpersonal behavior following the intervention. Lower scores indicate improved behavioral functioning, emphasizing the effectiveness of recreational exercise as a rehabilitation approach within juvenile justice institutions.

Discussion

This study examined the effectiveness of a structured recreational exercise program in reducing inappropriate interpersonal behavior among juvenile delinquents. The findings revealed that participants who completed the 12-week intervention demonstrated a significant reduction in inappropriate interpersonal behavior, whereas the control group showed no significant improvement. These results indicate that recreational exercise is an effective behavioural rehabilitation approach for improving interpersonal functioning among juveniles in conflict with the law.

The observed improvement may be attributed to the psychosocial nature of recreational activities, which emphasize cooperation, communication, teamwork, and emotional regulation over competition. Through repeated participation in structured group activities, juveniles develop self-control, conflict resolution skills, and positive peer relationships, thereby reducing maladaptive interpersonal behaviors.

These findings are consistent with previous research demonstrating that regular physical activity positively influences psychological well-being and behavioral adjustment. **Biddle and Asare (2011)** reported that physical activity improves emotional well-being, social functioning, and behavioral regulation while reducing symptoms of anxiety and depression. Similarly, **Lubans et al. (2016)** found that structured physical activity enhances self-esteem, resilience, and interpersonal skills. The present study extends this evidence by demonstrating that recreational exercise can effectively improve inappropriate interpersonal behavior among institutionalized juvenile delinquents in India.

These findings are also supported by the **Positive Youth Development (PYD)** framework, which proposes that structured physical activity promotes personal and social competencies through experiential learning. Recreational games encourage cooperation, communication, empathy, and responsible decision-making, fostering prosocial behavior and supporting behavioral rehabilitation. From a juvenile justice perspective, the findings reinforce the rehabilitative philosophy advocated by the United Nations Convention on the Rights of the Child, the United Nations Standard Minimum Rules for the Administration of Juvenile Justice (Beijing Rules), and India's Juvenile Justice (Care and Protection of Children) Act, 2015, all of which emphasize rehabilitation, education, and social reintegration over punitive measures. The present findings provide empirical support for incorporating structured recreational exercise into institutional rehabilitation programs.

The absence of significant behavioral improvement in the control group further highlights that routine institutional care alone may be insufficient to bring about measurable changes in behavior. Instead, systematic and engaging interventions, such as recreational exercise, appear to be necessary to facilitate positive psychosocial development among juveniles (Kumar, G., & Faruque, D. S. *Editorial Board*, 41). From a practical standpoint, recreational exercise is a cost-effective and easily implemented intervention that requires minimal infrastructure. Its enjoyable and participatory nature enhances motivation and adherence, making it particularly suitable for Observation Homes and other juvenile rehabilitation institutions, especially in resource-constrained settings (Mathunjwa, M. L., Mazibuko, S., Avramov, D., & Gudani, M. G. 2026).

Despite these encouraging findings, this study was limited to a single Government Observation Home with a relatively small sample size. Future research involving multiple institutions, larger samples, longer follow-up periods, and additional behavioral outcomes is recommended to strengthen the evidence regarding the role of recreational exercise in juvenile rehabilitation.

The present study contributes to the growing evidence that structured recreational exercise is an effective behavioral intervention in juvenile justice settings. Beyond improving physical health, it promotes healthier interpersonal relationships, emotional regulation, and prosocial behavior, thereby supporting the broader objectives of juvenile rehabilitation and successful reintegration into society.

Conclusion

The present study demonstrated that a structured twelve-week recreational exercise program significantly reduced inappropriate interpersonal behavior among juvenile delinquents residing in a Government Observation Home in India. Participants who engaged in recreational exercise exhibited meaningful behavioral improvement, whereas no statistically significant change was observed among juveniles who received routine institutional care without structured physical activity. These findings indicate that recreational exercise can serve as an effective rehabilitation approach in juvenile justice institutions.

The results support the growing recognition that behavioral rehabilitation requires interventions addressing not only legal or disciplinary concerns but also the psychosocial development of young offenders. Recreational activities create opportunities for cooperation, communication, emotional regulation, and positive peer interaction, thereby facilitating improvements in interpersonal functioning that are essential for successful community reintegration into society. From a policy perspective, the findings suggest that recreational exercise programs should be systematically incorporated into the rehabilitation framework of Observation Homes, Special Homes, and other juvenile correctional institutions. Such programs may complement counselling, education, vocational training, and psychological

services by providing a holistic approach to behavioral development. Investing in structured recreational activities has the potential to strengthen rehabilitation outcomes while supporting the broader objectives of India's juvenile justice system and international child rights frameworks. Recreational exercise represents a practical, cost-effective, and evidence-based rehabilitation strategy that can foster positive behavioral changes among juvenile delinquents. Integrating structured recreational programs into institutional rehabilitation policies may contribute to healthier interpersonal relationships, improved psychosocial adjustment, and enhanced opportunities for successful reintegration into society.

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