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Effectiveness of the FIT INDIA Movement Program in Enhancing Self-Esteem Among Children with Autism Spectrum Disorder: A Quasi-Experimental Study

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ABSTRACT

This quasi-experimental study evaluated the psychosocial impact of a structured FIT INDIA Movement physical activity program on self-esteem in children diagnosed with Autism Spectrum Disorder (ASD). Forty participants aged 7 to 12 years from three therapy centres in Tiruchirappalli, India, were randomly assigned to an intervention group or a waitlist control group. The intervention comprised 12 weeks of FIT INDIA–based aerobic, balance, and coordination exercises adapted for ASD. Self-esteem was measured pre- and post-intervention using the Rosenberg Self-Esteem Scale (RSES) with parent-assisted administration protocols. Intervention fidelity was monitored through therapist adherence checklists and attendance logs, and therapists experienced in ASD led the sessions. Statistical analyses included paired t-tests and repeated-measures ANOVA, revealing significant improvement in self-esteem for the intervention group ($p < .001$, Cohen's $d = 1.8$). Findings underscore the potential of national fitness initiatives to enhance psychosocial health in ASD populations, and underscore the need for larger multicenter randomized trials incorporating diverse measurement approaches.

Keywords: Autism Spectrum Disorder, Self-esteem, Physical activity, FIT INDIA Movement, Quasi-Experimental Design

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1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterised by social communication impairments, restricted interests, and repetitive behaviours (American Psychiatric Association, 2013). Children with ASD frequently experience lower self-esteem due to challenges with emotional regulation and social interaction (Mazurek & Kanne, 2010). Self-esteem is vital for psychological resilience and social adaptation.

Physical activity promotes mental health in children (Fox, 2000), and structured exercise programs have demonstrated benefits for motor skills, emotional regulation, and social functioning in ASD populations (Bremer et al., 2015; Pan & Frey, 2006). The Government of India's FIT INDIA Movement, launched in 2019, encourages fitness and holistic well-being across age groups (Government of India, 2019), but its impact on children with developmental disabilities remains unexplored.

This study investigates whether a FIT INDIA Movement–based physical activity intervention can enhance self-esteem among children with ASD in an Indian clinical context.

2. Literature Review

Children with ASD typically engage in less physical activity than neurotypical peers, which may exacerbate low self-confidence and social isolation (Bandini et al., 2013). Structured physical activity programs incorporating reinforcement and predictable routines support improved participation and emotional outcomes in ASD (Koegel et al., 2014; Healy et al., 2018).

Existing research from international settings demonstrates positive psychosocial effects of exercise for children with ASD. However, the relevance and application of national fitness initiatives like FIT INDIA to this population in India remain under-studied, creating a gap this study aims to fill. Thus, there is a need for context-specific, quasi-experimental studies conducted in Indian therapy settings to examine whether such national initiatives can be adapted as feasible psychosocial interventions for ASD.

3. Research Hypothesis

Participation in a structured FIT INDIA Movement Program will significantly enhance self-esteem in children with ASD compared to a waitlist control group.

4. Method

4.1 Study Design

A quasi-experimental pretest–posttest control group design was employed.

4.2 Participants and Demographics

Forty children with clinically confirmed ASD, aged 7–12 years, were recruited from three licensed therapy centers in Tiruchirappalli. Parental consent was obtained prior to inclusion.

Participant characteristics are summarized in Table 1.

Characteristic	**Values**
Sample size	40
Gender	32 males, 8 females
Age (years)	Mean = 9.1; SD = 1.7
ASD severity (CARS-2 score)	Mild–Moderate: 26; Severe: 14
Comorbidities	ADHD: 6; Speech–language delay: 18; None: 16

Table 1. Participant Demographic Characteristics

Inclusion criteria required a clinical diagnosis of ASD, the ability to follow simple instructions, and parental consent. Participants were assigned to intervention (n = 20) or waitlist control (n = 20) groups while maintaining comparable baseline characteristics.

5. Intervention

The FIT INDIA Movement Program was tailored to the cognitive, sensory, and motor profiles of children with ASD following national FIT INDIA guidelines (Government of India, 2019). Each 45-minute session included:

- Aerobic warm-up (10 minutes)
- Balance and coordination tasks (15 minutes)
- Interactive movement games incorporating reinforcement (20 minutes)

Sessions were conducted twice weekly over a 12-week period.

Intervention Fidelity and Therapist Expertise

To maximize consistency and reliability:

• Therapists trained in ASD and adapted physical activity delivered the program.

• A fidelity checklist was used to monitor adherence, confirming 94% protocol completion.

• Attendance records were maintained, with average attendance of 88%.

• Visual supports, simplified language, and structured reinforcement were integral to all sessions.

6. Measurement

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965), a widely validated measure of global self-worth.

Given challenges with self-report in ASD, validity was optimized through:

• Parent-assisted administration to support children with communication difficulties.

• Items read aloud using simplified, concrete language.

• Visual cues and therapist support to ensure comprehension.

This approach aimed to retain the reliability of the RSES while accommodating cognitive variability in this population. (Ensure that the Beatson et al. reference in your reference list is genuine and correctly formatted, or remove it if not needed.)

7. Procedure

Baseline self-esteem scores were gathered for all participants. The intervention group then completed the 12-week program, after which post-intervention RSES scores were collected for both groups. The waitlist control group received the intervention following study completion.

8. Statistical Analysis

Data were analyzed using SPSS v26. Descriptive statistics characterized demographic and baseline measures. Paired t-tests examined within-group pretest–posttest changes. Group × time interaction effects were tested with repeated-measures ANOVA. Effect size was calculated using Cohen's d, with the significance level set at $p < .05$. Assumptions of normality and homogeneity of variance for t-tests and ANOVA were checked and met.

9. Results

Group	Pre test Mean (SD)	Post test Mean (SD)	t-value	p-value
Intervention	14.85 (3.12)	19.25 (3.01)	7.45	< .001
Control	15.10 (2.98)	15.60 (3.05)	1.12	0.28

Table 2. Self-esteem scores pre-and post-intervention

Effect size for the intervention was large (Cohen's d = 1.8). Repeated-measures ANOVA confirmed a significant group × time interaction, $F(1, 38) = 32.24$, $p < .001$, indicating that self-esteem improved significantly only in the intervention group. This interaction reflected a large effect size (partial η^2; you may insert the computed value, e.g., partial $\eta^2 \approx 0.46$, and format it according to journal guidelines).

10. Discussion

Findings demonstrate that a FIT INDIA Movement–based physical activity program significantly enhances self-esteem in children with ASD. Improvements may arise from increased physical competence, structured social interaction, predictable routines, and reinforcement strategies, which are key factors noted in previous research (Healy et al., 2018; Bremer et al., 2015).

The adapted administration of the RSES with parent and therapist support addressed potential validity concerns for this population. High intervention fidelity and therapist expertise likely contributed positively to the observed outcomes.

Limitations

- Modest sample size limits generalizability.
- The study was restricted to a single region and a small number of therapy centers.
- No long-term follow-up was conducted to evaluate sustained effects.
- RSES adaptations, while pragmatic, may have altered psychometric properties and should be examined further.

Future Research Directions

Given the large effect size observed in this quasi-experimental study, future multicenter randomized controlled trials with larger, heterogeneous samples and stratification by ASD severity and age should be conducted to elucidate differential effects. Triangulation of self-esteem assessment methods, including parent reports, observational assessments, and physiological markers, would strengthen construct validity. Longitudinal designs could clarify the sustainability of

psychosocial benefits over time.

11. Conclusion

The FIT INDIA Movement program offers a feasible and effective approach to improving self-esteem among children with ASD, supporting holistic well-being beyond physical fitness. Integrating such national fitness initiatives into therapy and education may promote inclusive growth and psychosocial resilience for children with developmental disabilities

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