

Effect of Play-Based Occupational Therapy on Social Engagement and Joint Attention in Autism Spectrum Disorder

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Abstract

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by deficits in social communication, restricted interests, and repetitive behaviours. Among the core impairments in ASD, difficulties in social engagement and joint attention significantly interfere with adaptive functioning and participation. Occupational therapy (OT) — particularly play-based approaches — has increasingly been applied to promote social participation; however, evidence regarding its efficacy on joint attention and social engagement within ASD remains limited. This study investigated the effects of structured play-based occupational therapy on social engagement and joint attention behaviours in children with ASD. Twenty-eight participants aged 4–10 years were randomly assigned to an intervention group receiving 12 weeks of play-based OT or a control group receiving standard developmental support. Outcome measures included standardized observational ratings of joint attention, social interaction metrics, and caregiver-reported social responsiveness. Results indicated significant improvements in joint attention initiation, shared affect, and reciprocal interaction in the intervention group compared to control, suggesting that play-based OT can enhance core social communication domains in ASD. These findings support play-based OT as an efficacious, neurodevelopmentally grounded intervention and underscore its role in fostering meaningful social participation.

Keywords: Autism Spectrum Disorder, play-based occupational therapy, social engagement, joint attention, neurodevelopment, childhood intervention.

How to cite this article: Meena SK, Buragohain S. Effect of Play-Based Occupational Therapy on Social Engagement and Joint Attention in Autism Spectrum Disorder. *Int J Drug Deliv Technol.* 2026;16(49s): 922-925. DOI: 10.25258/ijddt.16.49s.104

1. Introduction

Autism Spectrum Disorder (ASD) affects approximately 1 in 54 children worldwide and persists across the lifespan with significant variability in symptom severity and functional outcomes.¹ Core features of ASD—particularly deficits in social communication and interaction—are strongly associated with long-term functional challenges. Among these deficits, impaired joint attention and reduced social engagement are early markers and predictors of developmental outcomes.²

Joint attention, defined as shared focus between a child, another person, and an object or event, is foundational for language development, social cognition, and adaptive functioning. Children with ASD consistently demonstrate reduced initiation and response to joint attention bids, which impairs learning opportunities and social reciprocity. Social engagement, including eye contact, shared affect, turn-taking, and reciprocal interaction, is similarly compromised in ASD and remains a key target for early intervention.³

Occupational therapy (OT), which focuses on enabling participation in meaningful activities, frequently incorporates play-based strategies to address social, cognitive, and sensorimotor deficits.⁴ Play provides a natural context for developing communication, problem-solving, and interpersonal skills. Play-based OT interventions use structured and child-centered activities

to enhance skills such as joint attention, imitation, emotional regulation, and turn-taking.⁵

Although several studies have examined play-based interventions such as Pivotal Response Training and Play Therapy in ASD, few have specifically evaluated play-based occupational therapy within a developmental and sensory integration framework. Additionally, most existing literature focuses on language improvement or behavioural outcomes, with limited emphasis on core social engagement and joint attention.⁶

The current study aimed to address this gap by examining the effects of structured play-based OT on social engagement and joint attention behaviours in children with ASD. It was hypothesized that children

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receiving play-based OT would show greater improvement in these domains compared to those receiving standard developmental support.

2. Literature Review

2.1 Belindi Henning et al. (2016) examined the feasibility and effectiveness of a social play intervention for children with autism spectrum disorder (ASD) using a multiple case study design. The study included five children with ASD, five typically developing playmates, and their parents. The intervention, delivered by therapists and parents, involved clinic sessions and home modules, with high parental adherence (92.2%). Results showed improved social play skills in four of five pairs from pre- to post-intervention, though gains declined at follow-up for most. The intervention was effective for some children, indicating selective applicability and the need to match participants appropriately.⁷

2.2 Shaunna Kelder et al. (2017) explored occupational therapy practitioners' perceptions of play-based interventions on cooperative behaviours in elementary school children with autism spectrum disorder (ASD). A qualitative study using an anonymous survey collected responses from occupational therapists and certified occupational therapy assistants regarding interventions such as sensory integration, modelling, and behavioural strategies. Findings highlighted that play-based interventions are commonly used to improve social, communication, and self-regulation skills, which may positively influence cooperative behaviours. However, the study emphasized limited evidence specifically linking play to cooperative behaviour in children with ASD, indicating the need for further research to strengthen occupational therapy practice.⁸

2.3 G. Rautenbach et al. (2024) conducted a study to determine the effect of play-based occupational therapy on playfulness and social play of children with ASD. PubMed, EBSCOhost, OT seeker, Scopus, Sabinet, Cochrane, and ProQuest were searched. Rayyan was used to sort studies and extract data, following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. The methodological quality of the 12 eligible studies was reviewed using the Joanna Briggs Institute (JBI) checklist tool and data were synthesized using meta-analysis techniques. This review found moderate to strong evidence for 11 of the 12 studies, that play programmes, with a combination of guided and free play, individual, and group therapy sessions, effectively promoted playfulness and social play.⁹

2.4 Kaur, Kinkuri Sahib et al. (2019) conducted a study highlighting play as a key medium in developmental social skills training for young children. Three children aged 4–5 years participated, with baseline socialization assessed using the Vineland Adaptive Behavior Scales–Second Edition. The intervention involved play-based occupational therapy sessions lasting 60 minutes, twice weekly. After six months, reassessment showed improvement in socialization scores, with increases of 11.6%, 14.8%, and 8.3% for the three children. The findings suggest that play-based interventions can effectively enhance

social skills in young children, supporting the use of play as a central therapeutic approach in occupational therapy practice.¹⁰

3. Methods

3.1 Participants

Twenty-eight children diagnosed with ASD (DSM-5 criteria) participated in this study. Inclusion criteria were: (a) aged 4–10 years, (b) ASD diagnosis confirmed by Autism Diagnostic Observation Schedule (ADOS-2) and clinical evaluation, and (c) stable educational and therapeutic support for at least three months prior. Exclusion criteria included significant sensory impairments (e.g., blindness), major motor disabilities, or uncontrolled epilepsy. Participants were randomized into:

- Intervention group (n = 14) — received play-based OT
- Control group (n = 14) — received standard developmental support

Groups were matched on age, ASD severity, and non-verbal IQ.

3.2 Intervention Protocol

The play-based OT program was delivered by licensed occupational therapists trained in ASD and play interventions. The intervention was:

- 12 weeks
 - 3 sessions/week
 - 60 minutes/session
- It consisted of structured but flexible play activities designed to promote:
- Initiation of shared attention
 - Response to joint attention
 - Reciprocal turn-taking
 - Use of communicative gestures
 - Shared affect and interaction

Therapeutic play tasks included play stations (e.g., interactive games, role play, object play with social prompts), peer modelling (where appropriate), and family involvement strategies to generalize skills.

3.3 Outcome Measures

Primary Outcomes

1. Joint Attention Rating Scale (JARS) — measures initiation and response to joint attention bids.
2. Social Engagement Observation Protocol (SEOP) — rates shared affect, eye contact, and reciprocal interaction during peer and therapist play.

Secondary Outcomes

1. Social Responsiveness Scale (SRS-2) — caregiver-reported measure of social behavior severity.
2. Vineland Adaptive Behavior Scales (VABS Socialization Domain) — caregiver interview measuring social adaptive behavior.

Assessments were conducted at:

- Baseline (pre-intervention)
- Post-intervention (Week 12)
- Follow-up (Week 20)

3.4 Statistical Analysis

Data were analyzed using repeated measures ANOVA to examine group \times time effects on all outcome measures. Effect sizes (Cohen's d) were calculated. Significance was set at $p < 0.05$.

4. Results

4.1 Joint Attention Behaviors

Children in the play-based OT group demonstrated significant improvements in joint attention initiation and response compared to controls. Repeated measures ANOVA revealed a significant group \times time interaction:

- Joint Attention Initiation: $F(2, 50) = 12.3, p < 0.001, d = 0.85$
- Joint Attention Response: $F(2, 50) = 9.8, p < 0.001, d = 0.79$

Post-hoc tests showed a large effect from baseline to post-intervention in the intervention group ($p < 0.001$), with gains maintained at follow-up ($p = 0.002$).

4.2 Social Engagement

Social engagement scores (SEOP) improved significantly in the intervention group:

- Shared Affect: $F(2, 50) = 10.7, p < 0.001$
- Reciprocal Interaction: $F(2, 50) = 11.5, p < 0.001$

Control group changes were non-significant across time points.

4.3 Caregiver-Reported Outcomes

SRS-2 and VABS socialization scores demonstrated moderate improvements in the intervention group:

- SRS-2 Total Score: $F(2, 50) = 8.2, p = 0.001$
- VABS Socialization: $F(2, 50) = 7.5, p = 0.002$

Caregivers reported noticeable increases in spontaneous social interaction and eye contact in natural settings.

5. Discussion

5.1 Summary of Findings

This study demonstrates that play-based occupational therapy significantly improves joint attention and social engagement in children with ASD. Children in the intervention group showed marked gains in both initiation and response to joint attention bids, increased shared affect, and enhanced reciprocal interactions compared to controls. These benefits were robust at post-intervention and maintained at follow-up.

5.2 Mechanisms of Change

Several mechanisms may underlie these improvements:

- Neural Engagement: Structured play engages social brain networks including superior temporal sulcus, prefrontal circuits, and mirror neuron systems, promoting neuroplastic adaptations.
- Motivation and Reward: Play inherently activates reward pathways, enhancing motivation for social interaction in ASD — a domain often marked by social motivation deficits.
- Sensory Integration: Play-based OT often includes sensory modulation, supporting regulation and readiness to engage socially.

5.3 Comparison with Traditional Interventions

Unlike strictly didactic or reinforcement-based therapies, play-based OT provides a naturalistic, child-centered context for skill acquisition. This may produce more generalized and durable social gains. The results of this study align with findings from other play-based intervention research but extend them by situating play specifically within OT practice.

5.4 Clinical Implications

These findings support the integration of play-based OT as a key component of intervention planning for children with ASD, particularly when goals target social engagement and joint attention. Occupational therapists, in collaboration with caregivers and educators, can implement structured play protocols that are engaging, developmentally appropriate, and effective.

5.5 Limitations and Future Research

Limitations include:

- Sample Size: Moderate sample size; larger multisite trials are needed.
- Blinding: Assessors were not fully blinded to group assignment.
- Generalization: While gains were reported in natural settings by caregivers, objective measures outside clinical contexts could strengthen findings.

Future studies should incorporate neuroimaging or electrophysiological methods (e.g., fMRI, EEG) to elucidate neural correlates of behavioral change. Long-term follow-up and evaluation of generalization across contexts (home, school) are also warranted.

6. Conclusion

Structured play-based occupational therapy produces meaningful improvements in social engagement and joint attention in children with Autism Spectrum Disorder. These findings provide evidence that play-based OT enhances core social communication domains relevant to adaptive functioning. Play-based OT should be considered an effective and developmentally informed intervention strategy within multidisciplinary treatment models for ASD.

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