



# Utilization of Yoga for Children with Developmental Disabilities: Improving Participation in Functional Activities

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## Abstract

Developmental disabilities are a group of conditions that have impairment in different areas such as physical dysfunction, language and communication, or behaviors. Research was appraised to determine the effectiveness of yoga on improving participation in activities for children with developmental disabilities. The research supports the use of yoga from a trained professional and in conjunction with or as a replacement for other physical exercise. However, the research determined that consistent yoga practice is needed for retention of the benefits.

**Keywords:** Autism spectrum disorder; Attention deficit hyperactive disorder; intellectual disability; cerebral palsy

**Abbreviations:** ASD-Autism Spectrum Disorder; CP-Cerebral palsy; ID-Intellectual disability; ADHD attention deficit hyperactive disorder; OT-Occupational Therapy; GRTL-Get Ready to Learn

## Introduction

Developmental disabilities are a group of conditions that have impairment in different areas such as physical dysfunction, language and communication, or behaviors; including autism spectrum disorder (ASD), intellectual disability (ID), cerebral palsy (CP) and attention deficit hyperactive disorder (ADHD).

ASD is a developmental disability that causes significant issues in social interactions with behavioral and communication challenges of which 1 out of 160 worldwide [1], Early access to evidence-based interventions can improve the development of communication and social interaction. Definitions and terminology in regard to ID vary and include, mental retardation, mental handicap, intellectual disabilities, and learning disabilities [2]. The WHO defines ID as a significantly reduced ability to understand new or complex information and to learn and apply new skills.

The exact incidence globally of intellectual disabilities is hampered by differences in defining the classification and lack of consistent diagnostic tools. Approximately 6.5 million Americans have been diagnosed [3]. Children diagnosed with ID have difficulty successfully participating in classroom activities, playing, and socializing with their peers. CP is a disability that affects a person's ability to move and maintain balance and posture due to abnormal brain development or damage to a developing brain [3]. This is the most common motor disability in children with 1 to nearly 4 per 1,000 live births include children with CP [4]. There are four types of CP. Spastic CP is the most common type, affecting about 80% of individuals with this condition [4]. Spastic CP is characterized by having increased muscle tone, which indicates that the muscles are stiff and difficult to move [3]. The less common forms of CP include dyskinetic, ataxic, and mixed [4]. Dyskinetic CP is characterized by

uncontrollable movements, which can make it difficult to walk and sit [3]. Movements can be slow or rapid and the child can be affected in their hands, arms, feet, legs, face, and tongue. Children with this type of CP can have difficulty with changes in muscle tone. Ataxic CP is characterized by poor balance and coordination [3]. These children have difficulty with rapid movements or movements that require a lot of control. Mixed CP is when a child has symptoms of more than one type of CP [3]. This impairment makes it difficult for children to participate in leisure and lay activities with peers. ADHD is a lifelong disorder that affects the brain's executive function skills such as attention, memory, concentration, organization and impulsivity [5]. ADHD is easily recognized as an important disorder globally as it affects individuals at a young age, strong associations with secondary disorders, persistence into adulthood, and impact on role functioning [6]. The prevalence of childhood ADHD globally is reported as an average of 2.2% with a range of 0.9-2.9%. ADHD's cause is not entirely clear, but it is believed to be caused by chemical, structural, and neural connectivity difference in the brain as a result of genetics. Symptoms of ADHD include getting easily distracted, trouble organizing tasks, difficulty following directions, trouble holding attention to tasks, and failing to pay close attention to details such as with schoolwork [6]. These symptoms make it difficult for children to ignore distractions in class, leading to decreased participation in education.

Children with developmental disabilities implement various practice and strategies to cope with symptoms. Some practices are non-traditional. The physical aspect of yoga focuses on posture to develop strength, flexibility, and endurance through asanas. The variations in movement can help a person stretch each joint of the body through full range of motion. Due to concentration of breath and physical positions, yoga has multiple benefits for children who suffer from disruptions in their daily life. Yoga can be beneficial for children who want to increase their flexibility, strength, awareness of the physical and mental aspect, and manage stress related symptoms [7]. It is reasonable that yoga can be used therapeutically to increase the quality of life for children with developmental disabilities.

## Discussion

A search of Google Scholar, OT Seeker, CINAHL Complete, and Science Direct was conducted with the search terms cerebral palsy, children, yoga, developmental disabilities, intellectual disability, attention deficit hyperactive disorder, motor, and autism spectrum disorder. Results included articles from 2011-2021. The articles used for this review were level I through 5. The research focused on children and adolescents as the population with various ages ranging from 5-17 years old.

A theme that was identified was the impact of a structured yoga program that utilized an expert in the field. The experts were utilized to train caregivers or teachers or led the intervention [8-13]. These studies utilized interventions that involved a person who has studied the ancient discipline with specific principles, and this

type of intervention may not be an area of expertise for a generalist practitioner. Interventions yielded favorable outcomes in motor skills such as reaction time, eye-hand coordination, static balance, and agility. When traditional yoga activities were provided research found improvements in motor skills, increased coordination through the use of breathing exercises, imitative poses, partner poses, and relaxation [9]. Children with developmental disabilities often experience difficulties with completing functional activities due to deficits in motor skills.

In addition to physical improvements, a structured yoga program has also yielded positive results in process skills such as concentration, visual-perception, communication, emotional regulation, attention, adaptive behaviors, and self-awareness [8,10,13]. The Get Ready to Learn Yoga (GRTL) program is a structured occupational therapy (OT) intervention that uses yoga principles with children with ASD. This intervention was implemented by teachers who were trained by the creator of GRTL, Anne Buckley-Reen [10]. The children in the study were found to have positive effects on their behavior such as less irritability, compliance, and social behaviors. Another study that used a multimodal program called "Climb Up" as an intervention mentioned improvements in areas of conduct for children with ADHD [11]. This intervention utilized yoga postures, meditation and behavioral play therapy. More than half of the participants demonstrated improved academic and behavioral performances. Appropriate social behaviors can aid a child in their ability to thrive in the school environment.

Research has also determined that yoga was often associated with physical activity. This included interventions that used yoga in addition to other physical exercise [14-17]. One study used physical exercise in addition to yoga in the form of a home exercise program. This intervention focused on improving balance and mobility for an individual with CP and allowed the individual to complete functional tasks with increased ease [14]. Other interventions used warm-up and cool-down activities before and after yoga to improve flexibility and movement for individuals with disabilities [15&16]. Increased flexibility and movement advance the individual's ability to participate in desired occupations. Studies focused on the combination of mind and body exercises for children with disabilities including ASD and ID to improve productivity for academics. Both interventions showed improvements with overall physical health in addition to improved behaviors and academic performance for both populations. Other improvements included increased participation in desired occupations as well as improvement in functional tasks such as self-care.

One study examined the use of yoga as a replacement of a physical education class for children with ASD to incorporate the intervention into their structured day [18]. When compared to physical exercise, it was found that yoga had greater improvements for functional activities than physical education class. Yoga also had significant improvements on the Bruininks-Oseretsky Test of

Motor Proficiency-2nd Edition for categories such as gross motor and bilateral coordination. Differences in outcomes between the two interventions also included yoga having greater improvements in self-esteem and functional health. However, it was found that both yoga and physical exercise provided improvements in overall health and cognition [17].

Research explored the long-term retention of positive outcomes that emerged from yoga interventions. Research supported the use of yoga for physical, mental, and emotional improvements for children with disabilities. However, regular practice of yoga is necessary for the retention of those benefits. Research indicated the retention of benefits for MiYoga, a mindfulness-based yoga program, six months after the intervention. The children in the study had initially participated in the intervention daily for eight weeks. They were found to have had no retention of the initial benefits of MI Yoga, such as sustained attention and decreased impulsivity [19]. Another study also showed evidence of poor retention of yoga benefits when yoga is not practiced regularly [14]. Children with ADHD in this study were found to have symptom relapse when they were inconsistent with the practices. With regular yoga practice occurring at least three times a week, children had reduced scores on the ADHD Rating Scale-IV.

## Conclusion

After analyzing the research, a positive correlation was found between yoga interventions and increased performance in described functional activities for children with a developmental disability. These disabilities included ASD, ID, CP, and ADHD. It was found that structured yoga programs yielded improvements for children with developmental disabilities due to the expertise of a trained yoga professional. However, it was determined that regular practice is required to retain the benefits long-term. Functional abilities for children with disabilities include getting dressed, self-care, classroom and social participation, or play with peers. The research has shown that yoga improves flexibility and has greater outcomes related to functional mobility and self-esteem in comparison to physical exercise. Outcomes in areas outside of physical activity such as increased social skills and attention have also been supported as benefits of yoga. These outcomes allow individuals to have increased participation within the classroom and with peers. With different levels of evidence and diverse outcomes in skills necessary for functional activities, the literature supports the use of yoga and intervention for children with developmental disabilities.

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## Conflict of Interest

There are no financial interests or conflict of interests.

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