

The Role of Swimming within an Adapted Program in Improving Disorders of a Child with Autism Spectrum Disorder

Beggar Mounira, Institute of Physical Education and Sports,
Algeria.

Beggar.mounira@univ-alger3.dz

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Abstract:

This theoretical study aims to provide data on children with Autism Spectrum Disorder (ASD) and their accompanying disorders. It begins by defining this group, highlighting their main characteristics in terms of types, associated symptoms, and diagnostic stages.

The importance of engaging in adapted sports, particularly swimming, is discussed, along with its objectives, such as improving the behavior of children with ASD by reducing aggressive behaviors. This is aimed at developing sensory, motor, and psychological aspects. Furthermore, the study outlines the professional challenges trainers may face and emphasizes what should be avoided or considered to prevent behavioral issues during the adapted swimming program, taking into account psychological and social aspects.

KEY WORDS : Autism Spectrum Disorder; Adapted Sports; Swimming; Child.

الملخص:

هدفت هذه الدراسة النظرية إلى إعطاء معطيات حول أطفال طيف التوحد وكل الاضطرابات المصاحبة لهم، بحيث تطرقنا في البداية إلى التعريف بهذه العينة من خلال إبراز أهم خصائصها من حيث الأنواع، الأعراض المصاحبة لها ومراحل تشخيصها.

كما تم ذكر أهمية ممارسة الرياضة المكيفة عامة الرياضة السباحة خاصة وأهدافها وذلك بتحسين سلوك طفل طيف التوحد بالتقليل من السلوكيات العدوانية، بهدف تطوير الجانب الحسي، الحركي والنفسي، وتم توضيح أغلب المشاكل المهنية التي قد تواجه المدربين، وما يجب تجنبه ومراعاته لنقادي المشاكل السلوكية لطفل طيف التوحد خلال البرنامج المكيف في رياضة السباحة بمراعاة الجوانب النفسية والاجتماعية.

الكلمات المفتاحية: اضطراب طيف التوحد؛ الرياضة المكيفة؛ السباحة؛ الطفل.

1-Introduction:

Autism Spectrum Disorder (ASD) is a highly significant topic of interest to states, as it is considered a sensitive issue that has persisted in human societies both past and present. According to the Autism Society of America (1999), there has been a substantial annual increase in the number of diagnosed cases, making it the third most common developmental disorder, surpassing Down syndrome cases. The global number of individuals with ASD has reached 7 million (Jamal Al-Khatib et al., 2008).

ASD, as defined by (Ahmed Ibrahim, 2020, p. 22), affects children under three years old—a time for interactive group play and building a secondary environment, such as friendships and community interactions. However, without prior warning, children with ASD exhibit withdrawal, lack of interaction or play with peers, inability to communicate verbally, crying or laughing without reason, among other symptoms. Efforts are made to help them adapt to their disability and integrate into society.

Caring for individuals with autism spectrum disorder (ASD) is considered one of the hallmarks of societal and cultural advancement. For this reason, researchers and authorities work diligently to provide proper care and appropriate rehabilitation for this group. The tireless efforts of parents must not be overlooked, as they go above and beyond to improve their children's conditions through treatment and by striving to provide as many human and material resources as possible. This is particularly important given that autism spectrum disorder is characterized by its complexity and the unusual behavioral patterns associated with it.

Due to the differences among children with ASD, as well as the degree of severity regardless of age or gender, each case is diagnosed individually by a psychologist, who then provides reports to physical education teachers or specialized trainers. These professionals plan adapted programs aimed at improving the disorders experienced by children with ASD.

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Swimming stands out from other sport due to its unique environment. It has been used as a therapeutic tool for individuals with disabilities, with regional and international competitions organized according to the type of disability. Swimming helps reconnect individuals with their community and develop their interests and abilities.

According to Mohamed (Ali Ahmed, 1998, p. 11), swimming, by its individual nature, provides holistic development for its practitioners. It enhances coordination, balance, agility, appearance, and physical fitness, while promoting health, tissue integrity, and skill performance. It also increases one's capacity to handle various daily tasks.

Adapted physical activities serve as an active and positive means of relaxation, offering a valuable way to utilize leisure time. They contribute to improving the health, psychological, and physical levels of children with ASD, providing them with joy, reducing boredom, and fostering the acquisition of linguistic, educational, and motor skills.

This leads us to pose the following research question: **Does swimming within an adapted program play a role in improving the disorders associated with children with ASD by aiding their educational development, linguistic growth, sensory activation, social communication, motor skill development, and sensory-motor coordination?**

2- General objective of the study:

- **The autism group is considered the most marginalized in our society. Thus, we focus on this group to understand the hidden aspects they experience.**
- **Increasing awareness, particularly within families and the general community, about the necessity of practicing adapted sports and swimming for children with autism.**
- **Improving the psychological, physical, and intellectual aspects of children with autism spectrum disorder through adapted activities and swimming to integrate them with their peers and make them active members of society.**

3- Procedural definition of the concepts mentioned in the research:

- Autism Spectrum Disorder

According to the World Health Organization (2020), Autism Spectrum Disorders are neurodevelopmental disorders resulting from abnormalities in brain growth and function. This term encompasses a range of conditions, including previously distinct conditions like autism and Asperger's syndrome. Although some individuals still use the term "Asperger's syndrome," it is generally considered part of the broader autism spectrum.

(Eid Abu Al-Maati Al-Dasouki et al. 2021: p292) highlighted that ASD causes challenges in social, emotional, and communication skills, resulting in differences in how individuals with ASD interact, learn, and engage socially compared to neurotypical children. The spectrum includes a wide range of educational, cognitive, and problem-solving abilities

- Swimming

According to (Qasim Hassan Hussein, 2000, p11), swimming is one of the many water activities where the individual uses their body to move through water—a medium significantly different from land. The unique properties of water, including its pressure, induce physiological changes in the body's internal systems and have psychological effects due to the unfamiliar environment and the emotional responses it may trigger.

- Adapted Sports

As defined by (Jean Piat Philippe, 2018:p10): Adapted sports, known as adapted physical activities, are sports tailored to the specific needs of individuals with mental, psychological, or neurological disabilities, differentiating them from para-sports, which focus on physical disabilities. Adapted sports cater to individuals with intellectual, behavioral, and attention disorders, as well as adaptation challenges.

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- Childhood

(Hussein Abdel Hamid Ahmed Rashwan ,2007: p. 1) explained that childhood, from the perspective of sociologists, is the early phase of human life where individuals are entirely dependent on their parents for survival. During this period, children learn and prepare for later stages of life. It acts as a bridge leading to economic, physiological, intellectual, psychological, social, moral, and spiritual maturity. Childhood spans from the early years of life to adolescence.

(Adnan Abu Musleh, 2006: p. 320) also pointed out that most researchers consider this stage to begin after the weaning age and continue until early adolescence (from the age of 18–24 months to 12–14 years). Childhood is divided into two main stages:

the early childhood stage, which starts at the end of infancy and lasts until the age of 6 years. This is the first stage of socialization attempts, characterized by the child's motor independence, development of social behavior, and awareness of individuality. The second stage is the middle and late childhood stage, which begins at 6 years old and continues until adolescence. It is characterized by rapid physical growth, the emergence of cognitive abilities, and an expansion of social activities.

4 - Previous and Related Studies:

Study by Ben Smisha Al-Eid (2020):

titled "The Role of a Small Motor Games Program in Reducing the Degree of Autism in Children with Moderate Autism (5-7 years)."

The study aimed to explore the role of small motor games in reducing the degree of autism in children with moderate autism (ages 5-7), and to assess its impact on improving social interaction and attention focus. The researcher used the experimental method with a sample of 8 children, representing 40%. The results showed that the motor games program had a positive effect on the motor skills of children with moderate autism. Most participants in the sample moved from a moderate to a mild autism level. Improvements were observed in social interaction, visual attention, and balance among the sample. The researcher recommended the establishment of a well-designed physical education program alongside general therapeutic programs for autism, the use of small motor games to improve various skills in children with autism, and the creation of centers dedicated to this group, with proper tools and equipment for simple motor activities within these centers.

Study by Ben Shuwita Belkacem and Belm Issam (2018):

titled "Proposal for an Adapted Physical Program in Swimming for the Rehabilitation of Children with Autism."

The research aimed to propose an adapted physical program in swimming for the rehabilitation of children with autism spectrum disorder. The researchers used the experimental method, which is considered one of the most accurate types of scientific research. The research tool consisted of proposing a program to rehabilitate autistic children at the Pedagogical Psychosocial Center for Physically Disabled Children in Algeria. The researchers concluded that the

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proposed adapted swimming program had a positive impact on the rehabilitation of children with autism

Study by Ahmed Ibrahim (2020):

titled: *"Autism: The Need for Early Diagnosis and Its Challenges."* This theoretical study aimed to introduce autism by identifying the historical stages of its emergence, providing various definitions of autism from different references, examining the global prevalence rates, exploring the characteristics of individuals with autism disorders, identifying the causes of the disorder, and discussing the steps for diagnosing the disease. The study also aimed to distinguish between autism and other mental illnesses.

Study by Eid Abu Al-Maati Al-Dasouki and Tafida Sayed Ahmed Ghanem (2021):

titled "Proposed Activities for Integrating Children with Autism Spectrum Disorder in Primary School (Analytical and Descriptive Study)."

The study aimed to highlight the need for activities to assist in learning and integrating children with autism spectrum disorder (ASD) in primary schools. A list of dimensions was prepared (linguistic, cognitive, motor, sensory-motor integration, and socio-behavioral), totaling 5 dimensions, with 40 core skills and 134 sub-skills, which were evaluated by 15 experts.

Key findings include:

- Identifying the needs of students with autism spectrum disorder based on differences in language, cognitive, social, and motor abilities, for learning skills such as communication, social skills, play, independence, cognitive skills, social adaptation, and motor skills.
- Determining some learning aspects necessary for integrating students with ASD in primary school.
- Finalizing the list of sub-skills included in learning dimensions (linguistic, cognitive/academic, motor, socio-behavioral, and non-

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academic) necessary for integrating children with ASD in primary school.

- Developing a proposed framework for classroom and extracurricular activities based on the "Discover" curriculum in the new educational system (2.0) for primary school (first and second grades) to achieve the learning dimensions for integrating children with ASD. This includes:

- * The necessity of the proposed framework, its objectives, educational activity constraints, and the method of designing educational activities.

- * Developing a set of educational activities related to cognitive dimensions, socio-behavioral dimensions, and functional activities for daily life.

- * Planning educational activities tied to the learning dimensions, detailing the elements of these activities to develop life skills according to the first and second-grade curriculum under the new educational system (2.0) for the 2019/2020 academic year.

- The importance of physical activities, training, and movement-based games in improving gross motor skills that help stabilize body balance, improve walking and running movements, and develop coordination in visual-motor processes. The necessity of improving fine motor skills, such as hand control and handling surrounding objects, is also emphasized.

5- Importance of the Research:

- The autism group is considered the most marginalized in our society. Thus, we focus on this group to understand the hidden aspects they experience.

- Increasing awareness, particularly within families and the general community, about the necessity of practicing adapted sports and swimming for children with autism.

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- Improving the psychological, physical, and intellectual aspects of children with autism spectrum disorder through adapted activities and swimming to integrate them with their peers and make them active members of society.

6- Symptoms of Autism: The symptoms of autism spectrum disorder vary in intensity and number from one child to another, affecting language, social relationships, sensory issues, play, and behavior.

- **Communication:** Language development is slow and may not develop at all. Words are used differently than by other children, with words connected to unusual meanings. Communication might occur through gestures instead of words, and attention spans are short.

- **Social Interaction:** The child spends less time with others, shows less interest in forming friendships, and has fewer responses to social cues like smiling or eye contact. There is a lack of social gestures and speech during the first few months. Children who do not speak have difficulty in conversations, and their speech characteristics such as tone, pitch, speech rate, rhythm, and intonation are abnormal.

- **Sensory Issues:** Abnormal responses to physical sensations, such as being overly sensitive to touch or less sensitive to pain, sight, sound, or smell.

- **Play:** There is a lack of spontaneous or creative play. The child does not imitate others' movements or attempt to start imaginative or creative games.

- **Behavior:** Activity may be excessive or less than usual, with instances of inappropriate behavior (such as head-banging or biting) without clear cause. The child may insist on holding onto something or fixating on a particular thought. There is a noticeable lack of understanding of normal situations, and violent, aggressive, or self-destructive behaviors may emerge. These symptoms vary from person to person and can differ in severity.

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Overall Behavioral Symptoms of Autism:

- * The child behaves as though they do not hear or care about their surroundings.
- * They do not like being hugged.
- * They resist traditional teaching methods.
- * They do not fear danger.
- * They exhibit excessive or exaggerated activity.
- * They do not play with other children.
- * They laugh or become excited at inappropriate times.
- * They cry or have intense tantrums for unknown reasons.
- * They resist changes in routine.
- * They do not look into the eyes of those interacting with them.
- * They have an unnatural attachment to strange objects.
- * They lack imagination and creativity in their play.
- * They exhibit repetitive and unnatural movements like rocking their head, body, eyes, or hands.

- Speech and Language Problems in Children with Autism: Many specialists believe that 5% of children with autism cannot understand jokes or sarcasm. Children with autism often have early life difficulties with tactile experiences and uncoordinated movements.

- Children with Autism and Their Early Life Stages According to (Ihab Mohamed Khalil et al., 2009: p.22), children with autism share similar difficulties during their early life stages,

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including issues with the sensory system, tactile sensitivities, grip problems, and uncoordinated movements.

7- Types of Autism:

(Mary Coleman, 1976) proposed a classification system for children with autism, dividing them into three main groups. It appears that this classification is not a single syndrome, as emphasized by Cather, but is made up of three subcategories, which are as follows:

- **Type 1:** Known as "Classic Autistic Syndrome." In this type, children show early signs of autism without noticeable neurological impairments, although improvements in behavior are observed between the ages of five and seven, as described by Coleman.
- **Type 2:** Referred to as "Neurologically Impaired Autistic Syndrome," this type is marked by the presence of an organic brain disorder.

Additionally, Matson Sevin proposed a classification of four groups:

- * **Abnormal Group:** Individuals in this group show fewer autistic traits and have a higher level of intelligence.
- * **Simple Autistic Group:** Individuals in this group display social difficulties and a strong need for routine and structured events. They also experience mild intellectual disabilities.
- * **Simple Autistic Group:** Individuals in this group exhibit:
 - Limited social responses.
 - Extreme stereotypical behaviors.
 - Limited functional language.
 - Intellectual disabilities.

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*** Severe Autistic Group:** Individuals in this group are socially isolated and lack communication skills, with notable intellectual impairment.

(Fahd bin Mohamed Al-Maghlouth, 2006: p.48)

8- Difficulties Faced by Children with Autism Spectrum Disorder in Classical Sports: According to (Jean Piat Phillipe, 2018: p.5)

*** Social Aspects:**

- Deficits in social and emotional interactions.
- Dislike of sharing with others.
- Difficulty predicting the future or imagining events.
- Lack of sportsmanship.
- Preference for individual sports.
- Intolerance to failure.
- Failure to develop friendships.

*** Cognitive Aspects:**

- Lack of initiative.
- Difficulty maintaining attention on a single task.
- Challenges with orientation.
- Illusory perception of time (misunderstanding the time gap between events).
- Illusory perception of space.

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- Difficulty maintaining coordination.
- Difficulty understanding different roles (team member vs. competitor).

*** Motor Aspects:**

- **Fine Motor Skills:** Precision in movement; adjusting strength.
- **Gross Motor Skills:** Range of motion; movement capacity.

*** Sensory Aspects:**

- **Hearing:** Noise, rapid movement.
- **Sight:** Light.
- **Smell:** Sweat.
- **Touch:** Texture of fabrics, objects, sweat.
- **Vestibular (balance):** Loss of balance, dizziness.

*** In Terms of Laws:**

- Implicit; vague/unclear instructions.
- Oral instructions; comprehension; memory.

*** Behavioral Difficulties:**

- **Stereotypical Behaviors:** Flapping, rocking the head, body, eyes, or hands, repetitive movements.
- **Emotion Regulation:** Frustration, loss, etc.
- **Escape Behaviors.**

9- Benefits of Adapted Sports for Children with Autism Spectrum Disorder: According to (Jean Piat Phillipe, 2018: p.7)

*** Motor Aspects:**

- Balance; fine motor movements; coordination; range of motion.

*** Physical and Mental Health:**

- Emotional stability; self-confidence.
- Mental well-being; health.

*** Social Aspects:**

- Social integration: with team members and peers.
- Cooperation; trust in others.

*** Cognitive Functions:**

- Information Processing:

- Visual, cognitive, spatial orientation (spatial awareness), and time awareness.

- Related Executive Functions:

- Planning simple tasks; organizing; attention; initiative.

In conclusion, adapted sports benefit children with autism spectrum disorder according to (Jean Piat Phillipe, 2018: p.9) in:

Aspieconseil: who provides adapted sport?

- Reduction of stereotypes
- Improvement of flexibility and balance
- Reduction of behavioral disorders

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- Promotion of social integration
- Development of sensory skills
- Development of academic skills
- Self-confidence
- Improvement of body perception
- Well-being
- Improvement of spatial awareness
- Cooperation

10- The Goal of Swimming for Children with Autism Spectrum Disorder:

(Jean Piat Phillipe, 2018: p.13)
The aquatic environment is known for children with autism spectrum disorder, but adapting to it is not easy. Despite this, it is considered a special space that can help improve various aspects, including:

*** Psychological disorders.**

*** Sensory disorders**

*** Motor disorders**

To achieve the desired goals:

- It is recommended to conduct therapeutic sessions individually, as this is more engaging for children with autism compared to group sports.
- The rules in the aquatic environment are not important for children on the autism spectrum; they work according to their own rhythm.
- Swimming sessions are characterized by their short duration.
- Confidence is the key factor for the success of therapeutic sessions.
For the child to develop confidence:
 - The framework for this group must be precise in defining the goals.

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- Several preparatory sessions are required for children on the autism spectrum.
- Parents are responsible for preparatory sessions at home to help the child accept going to the pool, as the aquatic environment is complex for them.
- The preparatory process for a child with autism involves washing the face and pouring water on the head in the home bath multiple times.
- Once the child is accustomed to water, we move to the second stage, which involves teaching breathing and exhalation while their face is submerged in water using a large container filled with water.

11- What should be considered and avoided during the adapted swimming program:

- The child needs time to build a trusting relationship with the trainer (building social and emotional relationships).
- The child should be cared for and supported by one trainer in swimming, and changing trainers frequently is not recommended.
- Model behavior with the child so they can replicate it after the trainer.
- Minimize verbal explanations of games and provide performance models.
- Choose exercises that match the child's intelligence level.
- Choose exercises that match the child's physical ability.
- Consider individual differences.
- Ensure safety and security during training.

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- Use plastic, cork, or rubber materials.
- Use attractive equipment in terms of color and shape.
- Maintain the pool structure and equipment location in each session.

12- Reasons for behavioral problems in children on the autism spectrum during the adapted swimming program:

- Changing the location of learning tools in each session or not organizing them.
- Changing the trainer or the team from time to time.
- The pool water temperature (too cold or too hot).
- Lack of resources and equipment leads to withdrawal and daydreaming.
- The child's discomfort due to not using the bathroom or not eating before the session.
- Inflexibility in the training plan.
- Difficulty with motor skills and games presented during the session.
- Lack of diagnosis, leading to inappropriate plans and programs.

Conclusion:

Through our theoretical research, which aimed to introduce children on the autism spectrum, their types, and symptoms distinguishing them from other patients, we explored the importance, benefits, and goals of adapted sports, particularly swimming. We also identified the main problems faced by trainers, what should be avoided, and the reasons for behavioral problems during the adapted program. It was concluded that swimming improves disorders in children on the autism spectrum by enhancing their educational abilities, language

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development, sensory skills, social growth, communication, and motor skills, as well as motor and sensory coordination.

We have extracted the following key recommendations:

- The necessity of early diagnosis for children with autism.
- The need for specialized trainers in adapted swimming to help address the individual nature of the child and promote the development of their weaker areas.
- The necessity for trainers to build programs based on reports from the comprehensive educational, psychological, and medical team.
- The importance of guiding the family on the significance of swimming for children with autism and its role in improving certain weaknesses.
- The necessity of creating integrated programs for the developmental aspects of children with autism to facilitate their integration into society.
- The importance of family involvement in developing an early intervention plan to address and prevent developmental issues.
- Providing the necessary tools and resources to implement water-based physical activities for children with autism in pools designed for this group.
- Adapted swimming programs should aim to modify behavior and include practices based on learning principles and applied behavioral analysis.

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