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How to Choose the Appropriate Physical Activity for a Child with Autism Spectrum Disorder

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Abstract

This theoretical study aimed to provide insights into how to select the most suitable physical activity for children with Autism Spectrum Disorder (ASD). The study concluded that identifying the specific type of autism the child is affected by is crucial in guiding the selection of the appropriate physical activity, which helps in managing or reducing the disorders characteristic of children with autism. Additionally, diagnosis is an essential element that cannot be overlooked in this process. In this regard, the study explored the different types of autism and the sports suitable for each type, based on the characteristics associated with the level of disturbance in individuals with ASD, while also identifying the appropriate physical activities for each stage. The study also clarified the methods and stages of diagnosing autism cases, relying on the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), and highlighted the necessary medical specialties required for diagnosis

1. Introduction :

The Autism Society of America (1999) mentioned that Autism Spectrum Disorder (ASD) has become the third most common developmental disorder, surpassing the number of individuals affected by Down Syndrome. The global number of people with ASD is estimated to be 7 million (Jamal Al-Khatib et al, 2008).

One of the key facts about Autism Spectrum Disorder (ASD) is that one in every 160 children is affected by the disorder. ASD typically manifests in childhood but tends to persist into adolescence and adulthood. Psychological and social interventions, supported by environments such as behavioral therapy activities, can mitigate difficulties in communication and social behavior, positively impacting well-being and quality of life. It is crucial that interventions targeting individuals with ASD are accompanied by broader measures aimed at making environments more accessible, inclusive, and supportive in terms of material, social, and behavioral aspects. Moreover, individuals with ASD are often subjected to stigma, discrimination, and human rights violations globally, and they lack sufficient access to services and support worldwide. (World Health Organization, 2000, Autism Spectrum Disorder)

Autism is a disorder that requires continuous supervision and monitoring, as well as a variety of programs, whether therapeutic, counseling, or training. Autism affects some children, making them unable to form natural social relationships and develop communication skills. As a result, the child with autism becomes isolated from their social environment, enclosed in a closed world, and is characterized by repetitive movements, excessive activity, and aggression.

Many studies have demonstrated the possibility of training children with autism, teaching them life skills, improving their behavior, or treating them, and integrating them into regular educational institutions, clubs, and sports organizations. This process helps equip them with various skills, including verbal and non-verbal communication, as well as purposeful behavior. Physical activity and sports are considered important for humans in general and especially for children in this category in particular, as they offer several benefits. These benefits are not limited to the physical aspect but extend to psychological, cognitive, and motor domains as well. According

to (Gaballah & Zbishi Nour El-Din, 2020, p.288), psychologists and sociologists have ranked swimming as one of the top sports activities because, as stated by (Amal Omrani et al, 2021, p.180), swimming is an enjoyable and desirable exercise for children. It does not feel like a routine or boring task for them and can be used to treat certain speech and communication disorders, especially those related to respiratory issues.

This led us to ask the following question:
How to Choose the appropriate Physical Activity for a Child with Autism?
We will attempt to reach an explanation for this phenomenon through our theoretical study, in which we will rely on literature and descriptive studies that have addressed this topic.
Based on the question asked, we assumed that:

There are diagnostic stages that parents must follow to identify the associated disorders in their child with autism and assess their severity in order to choose the appropriate physical activity.

1.1. Keywords:

1.1.1. Concept of Autism Spectrum Disorder (ASD):

It is defined by (Hamadou Massouda&Maheria Khalida, 2021, p. 419) as a deficit in linguistic and social communication, a lack of imagination, and impaired cognitive abilities. In other words, it is a disorder in social interaction, verbal and non-verbal communication, along with fear, anxiety, sleep and eating disturbances, mood swings, aggression, self-harm, lack of initiative, and spontaneity in communication with others, as well as an inability to innovate during leisure time.

According to (Ayd Abu El-Ma'ati Al-Dessouki et al, 2021, p. 292), these disorders cause issues in social, emotional, and communicative skills, making their communication, learning, and social interaction methods different from those of typically developing children. A wide range of educational abilities, thinking skills, and problem-solving capabilities can also be observed.

1.1.2. Concept of Physical Activity and Sports :

According to (Abu Al-Ala Ahmed Abdel-Fattah, 1994, p. 14), physical activity and sports are a means to achieve many goals by adapting to various fields of culture. It serves healthy objectives if practiced with this in mind,

supports high athletic performance, and provides recreation for the general public.

Khalil Bahar defined it as a set of exercises, games, and competitions performed by humans for thousands of years for the purpose of entertainment and bodily recreation (Bahaa El-Din Ibrahim Salama, 2002, p. 113).

The goal of engaging in physical and sports activities is to help the player achieve a sense of balance and harmony with themselves and the environment, as well as to overcome isolation. It offers an opportunity for social interaction, integration, and acceptance among peers who share the activity.

1.1.3. Concept of Childhood :

According to (Hussein Abdel Hamid Ahmed Rashwan, 2007, p. 1), childhood, from the perspective of sociologists, is the early stage of human life during which the individual is entirely dependent on their parents for survival. It is a period of learning and preparation for the following stages. Childhood is not important in itself but serves as à bridge through which the child transitions to economic, physiological, mental, psychological, social, moral, and spiritual maturity. During this period, human life is embodied as à social being, from the earliest stages of life to adolescence.

Additionally, (Adnan Abu Muslih, 2006, p. 320) noted that most researchers agree that this stage begins after the infancy period and continues until the early adolescent phase (from 18–24 months to 12–14 years old). Childhood is divided into two main stages : the early childhood stage, which begins at the end of infancy and continues 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 middle and late childhood, which spans from 6 years old to adolescence. This stage is marked by rapid physical growth, the emergence of cognitive abilities, and an expansion in social activity.

1.2. Previous and Similar Studies :

1.2.1. Study by Hamdawi sofiane (2024):

Titled : "Adapted Physical and Sports Activities for Children with Autism in Semi-Pedagogical Centers : Perspectives of Specialists and Popular Beliefs (Field Study at the Semi-Pedagogical Center for Children with Autism in Biskra".

The study aimed to assess the effectiveness of engaging in physical and sports activities within semi-pedagogical centers as a treatment for children with autism, based on the opinions of specialists and the perspective of parents according to popular beliefs. The researcher relied on observation and interviews, with the original sample consisting of 7 children with autism, 4 specialists, and 7 parents. The researcher concluded that adapted physical and sports activities have positive benefits and found the following :

- Development of cognitive growth aspects.
- Adapted physical and sports activities guide the behavior of children with autism toward performing a specific task.
- They regulate inappropriate behaviors, which in some cases are associated with autism disorder.
- They provide a sense of enjoyment, relaxation, and recreation, potentially helping to alleviate the internal psychological pressures experienced by individuals with autism, which are often difficult to detect due to their ambiguity.
- They enhance the ability of children with autism to respond correctly to the intended action.

1.2.2. Study by Ahmed Ibrahim:

Titled : "Autism: The Necessity of Early Diagnosis and Its Challenges," 2020.

This theoretical study aimed to introduce Autism by outlining the historical stages of its emergence, providing various definitions from different references, the global prevalence rates of the disorder, the characteristics of individuals with Autism Spectrum Disorder, the causes of the disorder, steps for diagnosing the condition, and identifying the differences between autism and other mental disorders, among other aspects.

1.2.3. Study by Eid Abu Al-Ma'ati Al-Dessouki and Fidaa Sayed Ahmed Ghanem (2021) :

Titled : "Proposed Activities for Integrating Individuals with Autism Spectrum Disorder in Primary Education (A Descriptive Analytical Study) ".

The study aimed to highlight the need for activities that facilitate learning and integration for students with Autism Spectrum Disorder in primary education. A list was developed that included five dimensions :

(Linguistic, cognitive, motor, sensory-motor integration, and social behavior), ith a total of 5 dimensions, 40 main skills, and 134 sub-skills. These were evaluated by 15 reviewers.

The following results were obtained :

- Identifying the needs of students with Autism Spectrum Disorder based on differences in linguistic, cognitive, social, and motor abilities to learn skills such as : communication and social skills, play, self-reliance skills, cognitive skills, community adaptation skills, and motor skills.
- Determining specific learning aspects for students with Autism Spectrum Disorder required for their integration in primary education.
- Developing the final version of the list of main and sub-skills included in the learning dimensions (linguistic, cognitive/academic, motor, social behavior, and non-cognitive) needed to integrate students with Autism Spectrum Disorder in primary education.
- Developing the proposed vision for classroom and extracurricular activities within the "Discover" curriculum of the new education system (2.0) in primary education (grades 1 and 2) to achieve the learning dimensions for integrating students with Autism Spectrum Disorder. This includes the following :
- The necessity of the proposed vision, the purpose of the proposed vision, educational activity constraints, and the method of designing educational activities.
- Preparing a set of educational activities related to the following learning dimensions : cognitive dimensions, social behavioral dimensions, and functional dimensions of daily life activities.

- Planning educational activities connected to learning dimensions and specifying the details and components of educational activities to develop life skills based on the first and second-grade curriculum of the new education system (2.0) for the academic year 2019/2020.

From the findings of previous studies and the study conducted by *(Muammar Riad and Kaddour Bai Belkheir, 2024)*, it was concluded that an adapted sports program has a positive impact on addressing psychomotor issues in children with autism. This highlights the significance of physical activities and adapted sports, as well as motor exercises and games, in improving gross motor skills that aid in maintaining body balance, enhancing walking and running movements, and addressing deficiencies in visual-motor coordination. Additionally, the importance of improving fine motor skills is emphasized, particularly in hand control and the ability to interact with objects in the child's environment.

1.3. Research Objectives :

- To explain how to choose the appropriate physical and sports activities.
- To define Autism Spectrum Disorder and its levels.
- To raise awareness among the community, including doctors, counselors, and parents, about the importance of physical and sports activities for this group.
- To emphasize the importance of providing facilities such as halls, swimming pools, and pedagogical tools to facilitate educational, corrective, or therapeutic interventions for specialists in the field.
- To work towards the integration of children with Autism Spectrum Disorder into society.

1.4. Research Significance :

- The autism spectrum population is among the most marginalized in our society ; hence, we have focused on this group to uncover and understand the hidden aspects of their experiences.
- Increasing awareness within families specifically, and society at large, about the importance of engaging in physical and sports activities, and guiding the selection of appropriate activities for each individual case within the autism spectrum.
- Enhancing the psychological, physical, and cognitive aspects of children with Autism Spectrum Disorder by encouraging participation in suitable physical and sports activities, ultimately facilitating their integration with

their typically developing peers and enabling them to become active contributors to society.

2. Types of Autism and Corresponding Physical Activities Based on Disorder Severity:

Mary Coleman (1976) proposed a classification system for children with autism spectrum disorder, categorizing them into three primary groups. This classification suggests that autism is not a singular syndrome, as noted by Kanner, but rather consists of three subtypes, We will mention two of them as follows :

Type 1 : Classic Autistic Syndrome

Children in this category exhibit early symptoms without noticeable neurological impairments. According to Coleman, gradual improvement typically begins between ages five and seven.

Children in this group can participate in many of the same sports as neurotypical children, as their autistic traits are relatively mild. Physical activities can significantly aid their treatment and rehabilitation, fostering social integration. The benefits of physical activity for this group include :

- Reduction of compulsive behaviors
- Improved flexibility and balance
- Decreased behavioral disturbances
- Enhanced social integration
- Development of sensory-motor skills
- Support for academic abilities
- Boosted self-confidence
- Improved body perception
- Enhanced psychological and physical well-being
- Improved spatial awareness
- Strengthened cooperative and social skills.

Type 2 : Autistic Syndrome with Neurological Impairments

This type is characterized by observable neurological disorders. Additionally, Matson and Sevin proposed an alternative classification system comprising four subgroups :

A. Atypical Group :

Individuals in this group exhibit fewer autistic traits and tend to have higher intelligence levels.

For children with ASD in this category, **adapted physical activities**—either individual or group-based—are recommended, including basketball, swimming, horseback riding, and team sports. These activities help improve

- **Psychological disorders**
- **Sensory processing issues**
- **Motor impairments**

Specific benefits include :

- **Motor development :** Balance, fine motor skills, coordination, range of motion

- **Physical and mental health :** Emotional stability, self-confidence, psychological comfort, overall well-being

- **Social skills :** Social integration, cooperation with peers, trust-building

- **Cognitive functions :** Sensory information processing (visual, perceptual), spatial and temporal orientation

- **Executive functions :** Task planning, organization, attention, initiative

B. Mild Autism Group :

This group exhibits significant social difficulties and a strong need for repetitive behaviors. Children in this category often have mild intellectual disabilities.

Key characteristics :

- Limited social responses.
- Pronounced compulsive behavioral patterns.
- Restricted functional language.

- Mild intellectual delay.

Providing adapted physical activities is essential for improving behavioral challenges in this group. To achieve positive outcomes, the following considerations should be made :

- **Allow sufficient time to build trust** between the coach and the child, fostering better social and emotional interactions.

- **Assign a single coach** to oversee the child's training sessions.

- **Utilize demonstration-based learning** to encourage imitation.

- **Minimize verbal explanations** and prioritize hands-on instruction.

- **Select exercises suited to the child's cognitive and motor abilities.**

- **Account for individual differences** among children.

C. Severe Autism Group :

Children in this group experience profound social isolation and have significant communication difficulties. Intellectual delays are also common.

For this group, **individualized sports** such as swimming and horseback riding are recommended, with an emphasis on :

- **Assigning a dedicated coach** to the child throughout the training process.

- **Minimizing coach turnover** to ensure continuity.

- **Maintaining a structured training environment** with consistent organization of materials.

- **Creating a distraction-free learning environment** to support engagement.

- **Adapting training plans** to meet the child's specific needs.

- **Selecting simple, practical motor skills exercises** tailored to their abilities.

3. How to Diagnose Individuals with Autism :

According to (Al-Shami Wafaa Ali, 2004, p. 208), there are no biological indicators that appear in all individuals with Autism Spectrum Disorder (ASD), meaning there is no medical test to diagnose it. Instead, the diagnosis relies solely on behavioral criteria. Therefore, individuals are

diagnosed when behaviors that align with the diagnostic criteria for ASD are observed. In reality, this process is not straightforward, as verifying the presence of these behavioral traits requires collaborating with the child's parents to explore all stages of the child's development and conducting specific tests to indicate the presence of ASD. These may include tools such as the Childhood Autism Rating Scale or general psychological tests (not specifically for autism), or general behavioral observations.

(Hamado Massouda and Maheria Khalida, 2021, p. 424) added that all the medical, metabolic, and neurological tests conducted on individuals with Autism Spectrum Disorder are aimed at confirming that these conditions are associated with the disorder and not the cause of it.

4. Diagnostic Criteria :

According to (Al-Shami Wafaa Ali, 2004, p. 208), the diagnostic criteria refer to a set of behavioral, psychological, and physical characteristics, or a combination of these three elements, that must be present in all individuals with the same condition. In other words, when the full diagnostic criteria for a disorder or disease are evident in a person, it indicates that the individual is experiencing the disorder for which the diagnostic criteria have been met.

In mid-2013, the American Psychiatric Association (APA) released the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), after 14 years of research review and recent updates in the field of psychiatry. This classification is used by doctors and researchers to diagnose and classify mental illnesses. The new guide brought about changes in the diagnosis of certain mental disorders, differing from those in the previous fourth edition, DSM-IV-TR, published in 2000. One of the most significant changes was in the diagnosis of Autism Spectrum Disorder (ASD).

The new revised diagnosis of Autism Spectrum Disorder (ASD) announced that it is more accurate and provides greater medical and scientific benefits in diagnosing individuals with Autism Spectrum Disorders.

Table 1. Shows the distinguishing stages of Autism Spectrum Disorder symptoms according to DSM-5, as per (Hamado Massouda and Khleida Maheria, 2021, p. 425).

Name of the disorder	Autism Spectrum Disorder (DSM-V, 2013)
Categoryname	Autism Spectrum Disorder
Category structure	Connected to three extended categories according to the severity level of the symptoms.
Components of the category	A single category that includes what was previously known as: autism, Asperger's, and pervasive developmental disorder not otherwise specified, all within a single category
Diagnostic criteria	Criteria: Social interaction and communication / Stereotypical behaviors
Intensity level	Determining the level of intensity according to three levels requires (providing support, providing substantial support, providing significant substantial support) within one category
Associated with other disabilities	Defined: intellectual disability, language disorders, medical and genetic conditions, behavioral disorders, catatonia
The age range for the onset of symptoms	Early childhood (8 years old)

5. Stages of diagnosing a child with Autism Spectrum Disorder :

Autism Spectrum Disorder has gone through several stages in its diagnosis. There were factors that were once considered but are no longer relevant in diagnosing autism, which confirms that the disorder is still undergoing changes up to the present time. This is due to our incomplete understanding of the causes of this disorder, as well as the emergence and disappearance of certain symptoms. Additionally, there are differences in environments, with the Arab environment differing from the Western one. Furthermore, some disorders that were previously considered types of autism are now categorized differently. The diagnostic age and number of criteria in DSM-V, the fifth edition, have also changed.

According to (Al-Jalamda Fawziya, 2015, p. 176), we now have a single diagnosis, Autism Spectrum Disorder, which includes the four previous diagnoses :

- Autism
- Asperger's Disorder
- Childhood Disintegrative Disorder
- Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)

Autism Spectrum Disorder (ASD) is now categorized <u>according to the Intensity of symptoms into three levels</u> :

- Level 1: Requires support.
- Level 2: Requires substantial support.
- Level 3: Requires very substantial support.

This classification is based on the latest DSM-V edition published by the American Psychiatric Association in May 2013. This change has made diagnosing autism more challenging, requiring expertise and a multidisciplinary team to determine whether a child has ASD.

There are no specific medical tests for diagnosing autism. As a result, the child's condition should be closely monitored by specialists to assess:

- Communication level.
- Behavioral level.
- Growth level.

Due to the similarity of the symptoms of Autism Spectrum Disorder (ASD) with those of other disorders, it is essential to subject the case to medical tests to rule out other conditions.

The diagnosis of a child with ASD involves several specialists and takes place in multiple stages. These stages are as follows:

A. Consulting the parents (of the child with ASD) with a child mental health specialist.

B. After the diagnosis, the child is referred by the mental health specialist to three other specialists:

- A psychomotor specialist.
- A psychologist.
- A speech therapist (orthophonist).

The process carried out by the psychomotor specialist and the psychologist is referred to as the clinical psychological educational process.

The parents take the reports from the psychomotor specialist, the psychologist, and the speech therapist (orthophonist) to the child psychiatrist (Pédopsychiatre). After reviewing these reports, the child psychiatrist performs a differential diagnosis.

According to (Ahmed Ibrahim, 2020, p. 40), the goal of differential diagnosis is to reach the most accurate medical explanation for a rare or complex medical condition. This initial step helps in identifying the appropriate treatment, and from there, the true diagnosis is reached by filtering out the differential diagnoses until only one remains, which is considered the most accurate description of the condition according to DSM-IV.

The disorders include :

A. Attention Deficit Hyperactivity Disorder (ADHD), which is a neurodevelopmental disorder.

B. Hyperactivity, which is a neuropsychiatric disorder.

C. Language delay.

D. Psychomotor delay, which is a psychomotor disorder.

However, according to DSM-5, which relies on new diagnostic criteria, differential diagnosis for Autism Spectrum Disorder is no longer used. Instead, the focus is on the Intensity of symptoms. As such, addressing these individuals in specialized intellectual disability centers is considered beneficial for the group that requires support. Autism is now treated similarly to mild intellectual disability (Hamado Masouda and Maheria Khalida, 2021, p. 425).

6. How to Choose the Appropriate Sport for a Child with Autism Spectrum Disorder :

According to (Jean Mission, Le sport et l’autisme, 2005), after the child with autism completes all diagnostic evaluations, the child’s mental health professional can guide the child towards a suitable sports activity based on their condition. This guidance comes after diagnosing the autism symptoms,

preferences, and morphological structure, and then developing appropriate plans and programs based on the findings from the diagnosis.

7. According to (Jean Piat Philippe, Autisme et sport adapté, 2018), the physical education sessions (educational, corrective, therapeutic) for children with Autism Spectrum Disorder have several key features, including :

Physical education and sports sessions for children with Autism Spectrum Disorder should be characterized by :

- Engaging and distinctive sessions.
- An environment that facilitates the demonstration of their abilities.
- A space for exploration, fun, and adventure.
- A sense of enjoyment within the environment.
- Leaving a positive impression on the specialists.
- An environment that fosters psychological, sensory, and motor development.
- A space that promotes interaction with objects and people.

8. Conclusions and Recommendations :

Through our theoretical research, which aimed to provide insights into selecting appropriate physical activities for children with autism spectrum disorder (ASD), we found that identifying the specific type of autism affecting the child is crucial in guiding them toward suitable physical activities. These activities contribute to either alleviating or managing the behavioral challenges associated with autism. Diagnosis, therefore, plays an essential role in directing children toward appropriate sports.

In this context, we explored the different types of autism and their corresponding physical activities, based on the characteristics related to the severity of the disorder. Additionally, we outlined the diagnostic process and its stages, referencing the **DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition)** criteria. We also identified the necessary medical specialties involved in the diagnosis.

Ultimately, our findings highlight the importance of obtaining a medical interpretation of diagnosed cases and the role of both the medical team and coaches in selecting appropriate sports activities. Furthermore, we examined the characteristics of therapeutic, rehabilitative, and adaptive physical activity sessions.

We have extracted the following key suggestions:

- The necessity of early diagnosis for children with autism to save time and direct them toward the most suitable physical activity for their condition.

- The importance of training specialized coaches in various physical activities to help them adapt to the unique needs of each child, thereby supporting their development.

- The development of individualized therapeutic programs by coaches, aligning with the child's cognitive, motor, and mental growth. These programs should be based on reports from an interdisciplinary team (psychologists, educators, and medical specialists) and implemented after consulting these experts.

- The need to establish comprehensive programs aimed at enhancing the overall development of children with autism, facilitating their social integration.

- Sports programs should focus on behavioral modification and incorporate principles of applied behavior analysis (ABA) to promote engagement.

- Raising awareness among families and society about the significance of physical activity for children with autism, emphasizing its alignment with their strengths and its role in addressing their challenges.

- Encouraging family involvement in designing early intervention plans to prevent or mitigate developmental issues.

- Establishing specialized centers dedicated to children with ASD, equipped with the necessary resources and tools for implementing motor and physical activities.

- Forming specialized committees under the supervision of the relevant ministry to design sports programs tailored to the type and severity of autism.

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