

Effectiveness of a program based on physical and sporting classes activities in the development of social interaction in autistic children
فعالية برنامج قائم على أنشطة الحصص البدنية والرياضية في تنمية التفاعل الاجتماعي لدى أطفال التوحد

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Abstract:

الملخص:

The current study aimed to find out the role of physical education and sports activities in developing social interaction among autistic children.

The study sample consisted of 30 children with autism with a degree of autism (mild – moderate) and their ages ranged from 5-7 years (this study was conducted at the Autistic Children's Association of Blida Province).

The results indicated that there were statistically significant differences in the degree of social interaction in favor of the experimental group, which confirms this contribution of the physical education and sports activities program to developing social interaction in autistic children.

هدفت الدراسة الحالية إلى معرفة دور أنشطة التربية البدنية والرياضية في تنمية التفاعل الاجتماعي لدى أطفال التوحد.

تمت الدراسة بجمعية أطفال التوحد لولاية البليدة على عينة من 30 طفل ذوي التوحد بدرجة التوحد (خفيف – متوسط) وتراوح أعمارهم بين 5 و7 سنوات.

خلصت الدراسة إلى وجود فروق دالة إحصائية في درجة التفاعل الاجتماعي لصالح المجموعة التجريبية مما يؤكد على مساهمة برنامج أنشطة التربية البدنية والرياضية في تنمية التفاعل الاجتماعي لدى أطفال التوحد.

الكلمات المفتاحية: توحد، فعالية، تنمية ، تربية بدنية ورياضية، تفاعل اجتماعي.

Keywords: autistic, Effectiveness, development, physical education class, social interaction, Children.

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1. Introduction

Autism spectrum disorder (ASD) refers to a broad range of neuro developmental conditions. Individuals with ASD commonly experience challenges in social communication and interaction, with differences varying in degree from person to person. They may also display distinctive patterns of behavior and interests, such as strong attention to specific details, difficulty shifting between tasks, or unusual responses to sensory input like sounds, lights, or textures.

ASD is the clinical term used to describe autism. According to the DSM-5-TR, it is identified as a variation in brain development that influences how a person relates to others and expresses themselves. For instance, someone with ASD might use eye contact, facial expressions, or gestures in ways that differ from neurotypical individuals.

These neurological differences can also shape behavior and daily activities. A person with ASD may engage in repetitive movements or vocalizations—often called self-stimulatory behaviors—to manage emotions or cope with overwhelming situations. Many individuals also prefer predictable routines and may find unexpected changes stressful or challenging (American Psychiatric Association, 2022).

Difficulties in social interaction are among the most frequently reported characteristics of individuals with autism spectrum disorder (ASD). Social skills refer to the set of learned behaviors that enable individuals to function effectively within social contexts and to establish and maintain positive interpersonal relationships. According to the DSM-5-TR, a diagnosis of ASD is primarily defined by persistent deficits in social communication and social interaction across multiple settings. These deficits may manifest as challenges in initiating and sustaining reciprocal conversations, as well as difficulties in understanding and appropriately responding to nonverbal communicative cues such as facial expressions, gestures, and tone of voice.

Moreover, ASD is often associated with differences in executive functioning, including impairments in cognitive flexibility and emotional regulation. Such executive functioning challenges can further limit an individual's capacity to adapt to dynamic social situations, thereby exerting

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

a significant impact on the development and effective use of social skills(Howard and al., 2023).

Efforts to support children diagnosed with autism spectrum disorder have increasingly involved interdisciplinary collaboration, with the shared objective of facilitating their inclusion within broader peer groups and educational settings. Professionals from fields such as psychology, education, speech and language therapy, and occupational therapy have worked collectively to design comprehensive intervention approaches that address the diverse needs of these children.

Among the various intervention strategies, structured recreational activities have emerged as particularly effective. The incorporation of organized play-based programs has been widely recognized as a valuable approach for enhancing developmental outcomes and promoting participation in social contexts. Such programs provide opportunities to strengthen communication abilities, encourage adaptive behaviors, and foster engagement with others in supportive environments.

In recent years, there has been growing interest among caregivers, educators, and clinicians in the role of physical activities in supporting children on the autism spectrum. Movement-based programs extend beyond their contribution to physical well-being; they are also associated with improvements in emotional adjustment, behavioral regulation, and social competence. Nevertheless, families often encounter challenges related to sensory processing differences, motor coordination difficulties, and limited access to inclusive community initiatives, which may complicate participation in such activities(Jones, M., and al. 2021).

A growing body of research has examined the impact of physical exercise on children diagnosed with autism spectrum disorder (ASD). Among these investigations, the Motor Competence Assessment (MCA) has been utilized as a standardized instrument to evaluate motor performance outcomes. Within this framework, a structured motor intervention was developed to determine the effects of a trampoline-based gymnastics program on the motor proficiency and sports participation of children with ASD. Trampoline-centered activities have been applied across multiple therapeutic and educational contexts, given their potential to enhance balance, coordination, and overall motor skill acquisition in pediatric populations.

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children**
Azzag Rokaia/ chetoui youcef

Accordingly, the present project seeks to examine the potential advantages of implementing a trampoline gymnastics program for children with ASD, with particular emphasis on its influence on motor development and overall quality of life. It is anticipated that the findings will provide further insight into the contribution of structured physical activity interventions in this population and support the development of more effective, evidence-based strategies tailored to their specific needs (Lourenço, C.; and al. 2015).

Finally, due to the positives that physical activity and sports provide on the physical, mental, and even social levels for autistic children.

To determine the problem of our study, we formulated the following questions:

*Do physical education and sports activities play a role in developing social interaction in autistic children?;

*Does group cooperation help develop social interaction among autistic children?;

*who practice physical education and sports activities?;

*Does a sense of responsibility contribute to the development of social interaction among autistic children who practice physical activity and sports?

2-Research hypotheses

- Physical education and sports activities play a role in developing social interaction in autistic children;
- Teamwork helps develop social interaction among autistic children who practice physical education and sports activities;
- A sense of responsibility contributes to developing social interaction in autistic children who practice physical activity and sports.

3- Study objectives

- Highlighting the importance and role of physical education and sports activities in developing social interaction among autistic children;
- Improving the social interaction of autistic children and providing them with some desirable skills;

Effectiveness of a program based on physical and sporting classes activities in the development of social interaction in autistic children

Azzag Rokaia/ chetoui youcef

- Explaining the psychosocial impact of practicing physical activities and sports on the autistic child;
- Shedding light on a special group of society, which are children with autism disorder, the prevalence of which has increased significantly recently;
- Gaining clinical experience.

4- The importance of the study

The importance of the current study is that it:

- Knowing the importance of physical activity and sports in developing interaction in autistic children;
- Implementing a physical and sports program that relies on skills and methods to develop social interaction in autistic children.

5- Define concepts:

5-1-Physical education and sports:

Physical education constitutes a structured and sequential component of the formal school curriculum, delivered within allocated instructional time and accessible to all students. It encompasses a comprehensive pedagogical process aimed at fostering both motor proficiency and broader educational outcomes. This dual orientation includes “learning to move,” which refers to the systematic development of physical competence and motor skills, and “moving to learn,” whereby movement serves as a medium for acquiring cognitive, social, and affective competencies, such as cooperation, problem-solving, and interpersonal understanding. Within this framework, physical activity provides the contextual basis for learning, exposing students to a diverse range of experiences, including sports, dance, and other movement-based practices(Guthold, R., and al. 2019).

Procedurally: It is the educational process that takes place when practicing physical activity

5-2-social interaction:

Social interaction may be conceptualized as a dynamic process characterized by mutual influence and reciprocal responsiveness among two or more individuals. These processes span from early foundational exchanges, such as those occurring between caregivers and infants, to

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

increasingly complex patterns of engagement involving multiple participants across the lifespan. Social interaction encompasses the development of collaborative and competitive behaviors, the impact of social hierarchies and role expectations, and the mechanisms underlying group dynamics, including leadership, social influence, and normative alignment.

Sustained and repeated exchanges between particular individuals contribute to the establishment of enduring social bonds. Through systematic and careful examination of interactive patterns, it becomes possible to infer broader forms of social organization and the structural frameworks that shape collective life (American Psychological Association. APA Dictionary of Psychology, 2018).

Procedurally: According to the author of the scale used in our study, Dr. Moa wad, it is the score obtained when applying the social interaction scale. A score of 0-33 is low, 23-67 is medium, and 68-100 is high

5-3-autism

Autism spectrum disorder (ASD) is a neuro developmental condition marked by impairments in social communication and the presence of restricted interests and repetitive patterns of behavior. In 2013, the publication of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) introduced revised diagnostic criteria for ASD, superseding the criteria outlined in the fourth edition. This update refined the conceptualization of ASD, consolidating previously separate subtypes into a single spectrum and emphasizing the continuum of severity and symptomatology across affected individuals. (DSM-IV)

6- Field study:

6-1- Getting closer to the field:

There is no doubt that to ensure the smooth running of any field research, the researcher must approach the field and take an overview of the aspects of the field study of his research and contact the specialists in this field in order to provide sufficient data and familiarity with the subject from all aspects so that he can form a comprehensive and complete idea Hence, we conducted a field study at the level of the Challenge Association for Autistic Children in the state of Blida at the beginning of January 2024,

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

where we visited the association and spoke with the director of the association and with the specialists and educators present there, as well as presented the problem of our research to them. The process of determining the sample on which we will conduct the study was also completed, consisting of 30 samples, divided into two groups: The first group, which is the experimental group that underwent the program application, numbered 15 children and is the group in which no change occurred, and the second group, which is the control group that did not undergo the program application, also numbered 15 children and is the group in which no change occurred.

The program was applied to the experimental group and the study time took 5 months. We started by applying the pre-test and ended by applying the post-test. Then the scores were monitored and the data was entered and processed statistically using the SPSS statistical program.

The two students of the Master, Alaskri Romesa and Thabti Iman, were used in field application and transcribing the standards

6-2- The method used in the study:

We relied on it in our study because it provides us with the necessary information about the members of the study sample, as it provided us with the information we rely on to improve social interaction and provided us with the results of the tests applied to the members of the selected sample.

6-2-1- Research areas:

- **Spatial field:** We conducted the field study at the "Challenge Association for Autistic Children" in Blida Province.

-**Time domain:** The field study period extended from January 6, 2024, to May 6, 2024, over approximately 5 months, 4 to 5 times per week, with each session lasting from half an hour to an hour.

6-2-2-Research community:

This is the part on which we project the study, and this research population is represented by autistic children at the level of the Challenge Association in the state of Blida.

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

6-2-3- Research sample:

Table N°1: Characteristics of the study sample

Sample selection	intentional
The sample is directed	Autistic children
Age group	5 – 7 years
Sample number	30 children

6-2-4- Study tools:

Social Interaction Scale: It is a scale designed by Moawad (1986)

To measure children's social interaction, this is because it is compatible with our research topic in terms of the environment it is directed to and the age group (5-7) years. It contains 50 phrases distributed over 4 areas.

Table N°2: The dimensions of social interaction.

fields	Dimensions
Contact	15
Expectation	10
Role perception and representation	14
Symbols with significance	50

6-2-5- Scale instruction

My fellow teacher: Since you are responsible for teaching and caring for this group of children in the introductory stage, you are undoubtedly able, through your experience and observation of them, to determine the extent to which the types of behavior mentioned in all paragraphs of the scale appear in each of the children in this group, and using the scale for each child.

For example, if we want to answer the paragraph: (He cooperates skillfully with others, and this behavior always happens, we put a mark (7) in front of the paragraph in a field that always appears), but if the behavior appears but not permanently, we put (7) in front of the paragraph in a field that sometimes appears), but if the behavior does not appear, we put a mark (7) in front of the paragraph in the (does not appear) field.

-Please answer all paragraphs as accurately as possible.

There are positive items, which are as follows:
16/14/13/12/10/9/8/9/7/14/2/19/17/20/21/
.49/48/46/44/43/41/41/40/39/37/34/32/27/26

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

Table N°3: How to correct positive items:

always appears	sometimes appears	does not appear
2	1	0

There are negative items, which are as follows:
23/22/19/18/15/11/6/5/3/5/24/25/28/29/
.50/47/45/38/36/35/33/31/30

Table N°4: How to correct negative items for the social interaction scale:

always appears	sometimes appears	does not appear
0	1	2

To determine and extract levels of a specific scale:

Class length =
$$\frac{\text{total score}}{\text{number of alternatives}}$$

Class length =
$$\frac{100}{3}$$

Sports program:

The set of educational units adapted to help achieve a level of social interaction and communication with the rehabilitation of autistic children is based on various activities and exercises that attract the principle of activity and vitality.

Al-Qarawiyy, Al-Sartawi, and Al-Samawi defined it as: The program is a plan that includes activities with multiple achievements and their goals, and includes works that have clear beginnings and endings, and the programs are considered the mechanism for implementing the strategy, or they are what translate the strategy into practical reality(Al-Qaryouti, Al-Saratawi, Al-Samadi, 2009, p. 12).

Program: The program was created by specialists and experts in the field of physical education and sports on a sample of autistic individuals.

-A practical program designed to develop social interaction, improve communication, and work on independence and spatial stability in autistic children.

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

Table N°5: Field of physical education and sports

Mondays	Mondays	Tuesday	Wednesday	Thursday
Time from to	11:30 to 12	9:30 to 10	10 to 11	1-3
fields	swimming	Sports	Horse riding	Handicrafts workshop

Table N°6: Program working sessions

Monday	Tuesday	Wednesday	Thursday
Swimming: Duration: 30 minutes -Change clothes -Preparing children	Sports: -Football activities -Basketball -Handball -Throwing and jumping skills -Competition between children -Aiming skills -Education: Giving instruction to the child and trying to make him understand the skills of playing, while repeating the instruction until it is compatible with the game	Horse riding: -Objective of the activity: -Getting close to and touching horses Horse riding	Handicrafts workshop: -Objective of the activity: -Getting close to and touching horses Horse riding

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

6-2-6- Analyze and interpret results in light of hypotheses

First hypothesis:

Table N°7: The level of social interaction among the control sample of autistic children

Statistical processing	sample	Default average	arithmetic average	standard deviation	T value	Statistical significance
Variables	15	50	47.06	4.93	-2.302	Statistically significant at 0.01

Through Table N°7, which shows the level of social interaction among the control sample, we find that the arithmetic mean is equal to (47.06), which is greater than the value of the default arithmetic mean, which is equal to (50), and the value of the standard deviation was equal to (4.93), and the value of T is equal to (-2.302), which is a statistical function, meaning that the level of social interaction is lower than the arithmetic mean.

After presenting the results of the table, it became clear to us that the degree of social interaction in the pre-measurement in the control group is lower than the arithmetic average, and therefore it is not statistically significant.

The second hypothesis:

Table N°8: The level of social interaction among the experimental sample of autistic children.

Statistical processing	sample	Default average	arithmetic average	standard deviation	T value	Statistical significance
Variables	15	50	46.96	4.54	-2.501	No Statistically significant at 0.01

Through Table N°8, which shows the level of social interaction in the experimental sample, we find that the arithmetic mean is equal to (46.96), which is greater than the value of the default arithmetic mean, which is equal to (50), and the value of the standard deviation was equal to (4.45), and the value of T is equal to (2.501), which is a statistical function,

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

meaning that the level of social interaction is low in the experimental sample.

This means that the hypothesis is not statistically significant between the average pre-measurement scores in social interaction among autistic children, before implementing the program.

The third hypothesis

Table N°9: The differences between pre-measurement and post-measurement in the experimental sample

Statistical significance	T value	standard deviation	arithmetic mean	sample	Statistical processing Variables	
Statistically significant	8.95	4.93	47.06	15	Pre-measurement	social skills
		4.50	60.40		Post-measurement	

Through Table N°9, which shows the differences in social interaction between the pre-measurement and the post-measurement in the experimental sample, we find that the arithmetic mean in the post-measurement is equal to (60.40) and the arithmetic mean in the pre-measurement is equal to (47.06). We also find that the standard deviation value in the pre-measurement is equal to (4.93) and the standard deviation in the post-measurement is equal to (4.50). The value of T was equal to (8.95), which is Statistically significant: This indicates that there are statistically significant differences in social interaction between the pre-measurement and the post-measurement in the experimental sample.

After presenting the results of this table, we conclude that there are differences between the average scores of the pre- and post-measurement in the social interaction of autistic children to whom the program was applied. Thus, the hypothesis is realized, which indicates the existence of differences between the pre- and post-measurement in the experimental group and in the interest of the post-measurement in developing social interaction after the physical education and sports activities program was applied to them from the age group of 5-7 years These results revealed the role of physical education and sports activities in developing social interaction among autistic children, which had a positive impact on the experimental group.

**Effectiveness of a program based on physical and sporting classes
activities in the development of social interaction in autistic children
Azzag Rokaia/ chetoui youcef**

Table N°10: The differences between pre-measurement and post-measurement in the control sample

Statistical significance	T value	standard deviation	arithmetic mean	sample	Statistical processing	
Statistically significant	0.45	4.54	46.96	15	Variables	social skills
		4.76	46.86		Pre-measurement	

Through Table N°10, which shows the differences in social interaction between the pre-measurement and the post-measurement in the control sample, we find that the arithmetic mean in the post-measurement is equal to (46.86) and the arithmetic mean in the pre-measurement is equal to (46.96). We also find that the standard deviation value in the post-measurement is equal to (4.76) and the standard deviation in the pre-measurement is equal to (4.54). The T value was equal to (0.45) It is not statistically significant, which indicates that there are no statistically significant differences in social interaction between the pre-measurement and the post-measurement in the control sample.

After presenting the results of this hypothesis, it was found that there were no differences between the average pre- and post-measurement scores in the control group in social interaction among autistic children, females and males in the age group of 5-7 years, such that this group was not subjected to a program of physical education and sports activities.

- General conclusion:

In light of the results we reached, and from the results of the Social Interaction Scale, it was found that there are statistically significant differences between the pre- and post-measurement in autistic children, as our study achieved good results with the experimental group that underwent the application of the program, meaning that the program contributed significantly to increasing social interaction on this experimental group, which helped them to understand social situations As for the control group, they did not achieve results in terms of social interaction because they did not undergo this sports program that aims to train them in the social skills appropriate for social interaction.

We attribute this to the positive impact of the program used, which contributed significantly to developing social interaction among autistic

Effectiveness of a program based on physical and sporting classes activities in the development of social interaction in autistic children

Azzag Rokaia/ chetoui youcef

children, as our study aimed to find out the role of physical education and sports activities in developing social interaction among autistic children. When applying the Social Interaction Scale for Autistic Children, we say that physical education and sports activities have a role in developing social interaction in autistic children. This is confirmed by the results of the Lyon Study (2008) and the Wolf berg Study (2014) on the importance and effectiveness of group play activities in developing group skills, cooperation, waiting for the turn, and other social skills that help autistic children integrate effectively into the social environment and even in Their family and colleagues, and the results of the current study are consistent with Jordan Rita's study (2007), which aimed to identify the effect of the play therapy program on developing the social skills of autistic children, the results of which indicated an improvement in the social skills of autistic children after implementing the play program.

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