Contributions of the Sports Recreation Program in Reducing Sensory-Motor Disturbances among Children with Autism – Psycho-Pedagogical Center for Mentally Hnadicapped Children, Martyr Markafesbouhjar, Hammam Bou Hadjar-Ain Temouchent Province

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Abstract

The study aimed to investigate the contribution of the sports recreational program in reducing sensory-motor disturbances among children with autism. The study was conducted at the Psychopedagogical Center for Intellectually Disabled Children, Martyr MercavusBouhjar Center, Hammam-Bou-Hadjar Ain-Temouchent Province. The experimental method was employed using a purposive sample of 32 individuals, and the data were processed using appropriate statistical tools. The study's results revealed that the sports recreational program plays a role in reducing sensory-motor disturbances due to its positive impact, as indicated by the statistically significant differences between the control group and the experimental group.

Keywords: Autism, recreational program, sensory-motor disturbances.

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1. Introduction

Childhood is considered a measure of societal development, and the age range of 3 to 10 years holds its own distinct characteristics in terms of the potential to demonstrate cognitive, psychological, social, and motor abilities in children with autism spectrum disorder. This stage has received significant attention in advanced societies. Sensory-motor abilities are considered specific indicators of a child's growth and their correlation with the learning ability, whether in the motor or cognitive domains. Movement is influenced by perception (response) in the sensory-motor schema system, which reflects the degree of perceptual-motor integration in a child's behavior in general. Therefore, specialists in physical education have devoted great

attention to this field, as it has become an urgent necessity in the upbringing of a child. Numerous educational and psychological studies emphasize the importance of physical activity as a means of promoting physical and mental growth, supported by a range of scientific research methods and capabilities.

It is worth mentioning that there are differences and variations in the quantity, quality, and services provided to children with autism spectrum disorder and intellectual disabilities. Overall, these services are characterized by a decreased level of cognitive functioning in adaptive skills related to adaptive behavior, communication, self-care, social skills, and self-direction. The assessment of cognitive functioning is typically conducted using individual intelligence measures, through which it is possible to improve the child's intelligence quotient. On the other hand, the evaluation of sensory-motor abilities involves assessing factors such as distractibility, impulsivity, and excessive activity. Often, teachers and parents describe these children as being unable to sustain attention and focus on a task for an extended period, especially in the absence of appropriate strategies.

Within the context of consistent psychological factors accompanying autism spectrum disorder, there is a wide range of symptoms exhibited by children with autism. They may have heightened sensory sensitivity, intellectual performance that falls within the range of intellectual disability, severe difficulties in establishing relationships with others and experiencing social isolation, as well as deficits in verbal and non-verbal communication. The impairment of sensory-motor abilities is a significant factor responsible for the learning difficulties experienced by children with autism. Therefore, children with autism require special care due to the lasting impact of their disabilities. Among the implemented approaches in caregiving, we find the existence of recreational sports programs that primarily focus on enhancing the fundamental sensory-motor skills of individuals with intellectual disabilities. The extent of their impact is assessed through pre- and post-evaluations. Numerous studies have emphasized the contribution of physical activity in rehabilitating children with autism spectrum disorder who exhibit sensory-motor system impairments. This is achieved by integrating motor signals with sensory receptors. As a result, the performance of various cognitive, sensory, and perceptual functions is influenced by the level of motor skills, whether they are locomotor skills (such as walking, running), control and manipulation movements (such as bouncing or catching a ball), or stability and balance movements (such as standing on one leg). Movement therapy is considered an important treatment modality for individuals with autism, and it is an approach commonly adopted by pioneers in the field of autism rehabilitation and treatment. It involves developing recreational sports programs that positively impact cognitive performance and motor control.

Research Problem:

There has been significant development in the concept of sports in recent decades, as it works towards improving the functional capacity of various body organs. Among the important programs targeted towards children with autism spectrum disorders is recreational sports programs, due to their positive effects on behavior, psychological well-being, and social adaptation, ultimately improving their relationships by enhancing their social interactions. However, despite the variations in the disabilities within the autism spectrum, the presence of sensory and motor impairments hinders the adaptation process and emotional stability of individuals with autism. The recreational sports program aims to serve as a means of care and an outlet for emotional release, facilitating the regulation of balance and ensuring effective communication with the environment through various reactions and responses, whether positive or negative. It plays a fundamental role in shaping upbringing, acquiring social values, and mitigating internal conflicts. On the other hand, psychologists have given special attention to the role of sports activities, which contribute to the programming of sensory-motor, cognitive, social, psychological, and morphological development in children with autism. Considering that it is considered the primary treatment modality for affected individuals.

Based on the previous information, we establish the following research question:

To what extent does the recreational sports program contribute to mitigating sensory-motor impairments in children with autism?

Primary Hypothesis:

-The recreational sports program positively contributes to reducing sensory-motor impairments in children with autism.

Secondary Hypotheses:

- The recreational sports program contributes to improving fundamental motor skills in children with autism.
- The recreational sports program contributes to the development of social skills and achieving socialization in children with autism.

1. Definition of Terms:

1.1. The Recreational Sports Program:

- Program: A plan followed by an individual for carrying out specific tasks, often referring to a daily work program (Hassan, 2009, p. 139).
- Recreation: According to Gordan and Foulquie, it is an activity undertaken by an individual or a group during leisure time (Gordan, 1967, p. 88). It is chosen by the individual based on personal motivations (Foulquie, 1967, p. 203), with the aim of acquiring physical, social, and cognitive value (Petller, 1969, p. 265).
- Recreational Sports: A type of program involving physical and sports activities that have physical and physiological effects on the individual, including games and sports (Huda Hassan Mahmoud, 2000, p. 71).

- Recreational Sports Program: It encompasses a set of organized recreational activities conducted by a trainer, targeting behavior change among participants during leisure time, aiming to develop skills, knowledge, and foster positive attitudes towards specific occupations (Taha, 2006, p. 52).

2.1.1. Operational Definition: It is a method that involves a series of organized motor activities with a playful nature, aimed at improving the physical aspect of children with autism spectrum disorder. This approach is implemented by the trainer to alleviate pressures and psychological issues.

The Sensory-Motor Impairments (Attention Deficit Hyperactivity):

1.2.1. Terminological Definition: It refers to excessive bodily movements that exceed the normal and reasonable limit. It is characterized as excessive impulsive behavior that is inappropriate for the situation and lacks a direct purpose. It develops inappropriately for the child's age and negatively affects their behavior and academic performance. It is more prevalent in males than females (Hatem Al-Ja'afra, 2008, p. 9).

2.2.1. Operational Definition: It refers to the lack of motor stability that exceeds the natural boundaries for children with autism, such as attention deficit and impulsivity...

Autism:

1.3.1. Terminological Definition: According to the Individuals with Disabilities Education Act (IDEA), it is a developmental disability that affects verbal and non-verbal communication and social interaction in children. Typically, this disorder manifests around the age of three and is accompanied by characteristics such as engagement in repetitive activities, stereotyped movements or behaviors, resistance to change, and unusual responses to sensory experiences (Daniel, James, 2008, p. 638).

It involves isolation, impairment, or deficiencies in communication, including a collection of stereotyped and repetitive movements, resistance to change, and atypical responses to sensory experiences (Al-Rahim, 2012, p. 12).

The Operational Definition: According to our study, autism represents the motor-sensory cognitive impairments in children with autism spectrum disorder at the psychological and pedagogical center for intellectually disabled children, Martyr MarkafasBouhjar, Tlemcen Province.

2- Previous Studies:

1.2. Study by Rabah Djeghbala (2003): Titled "The Role of Recreational Sports Activities in Guiding the Behavior of Children with Autism," the study aimed to investigate the role of recreational sports activities in guiding the behavior of children with autism in a sample of educators from psychological and pedagogical centers in the Mascara province. The researcher employed a descriptive approach, using a questionnaire consisting of 21 items to measure the role of recreational sports activities and their impact on guiding the behavior of children with autism. The questionnaire was administered to a sample of 30 participants, and statistical methods were

employed to analyze the data on recreational sports activities and their impact on guiding the behavior of children with autism (Rabah Djeghbala, 2003).

2.2. Study by Shalal Ismail Mustafa (2022): Titled "The Effect of a Sensory-Motor Program on Developing Cognitive-Motor Abilities in Children with Autism," the researcher employed an experimental methodology as a suitable approach to test and verify the research hypotheses. Thus, a pre-test and post-test design was implemented on a sample of 10 children with moderate autism, aged between 6 and 9 years. The sample was divided into two equal and equivalent groups. The researcher utilized the Bordeaux tests to measure cognitive-motor abilities, and statistical measures such as means, standard deviations, t-tests, and correlation coefficients were employed (Shalal Ismail Mustafa, 2022).

Study by Mourad Melliani (2022): Under the influence of a proposed recreational sports program using motor games in developing motor balance in children with autism spectrum disorder, the study aimed to examine the extent of the impact of a proposed recreational sports program using motor games on the development of motor balance in children with autism spectrum disorder. The study was conducted at the Association of El-Chorouk for Autism Children in Ain Defla province. The researcher employed an experimental methodology on a purposive sample consisting of 8 children. After collecting and statistically analyzing the results, it was found that the program demonstrated effectiveness in developing motor balance in children with autism (Mourad Melliani, 2022).

3- The Theoretical Framework:

Firstly, the Recreational Sports Program:

Renowned German physical education pioneer "Johann Mauss" recognizes the recreational value of a sports program in his book "Recreational Training Games for the Body and Mind" (B.F., 1975, pp. 221). The program must adhere to certain principles, including:

•Motor Perception: It refers to the integration of sensory information that results in a motor response based on the apparent motor stimulus. It involves several stages, including:

- Discrimination of information through its respective channels.
- Transmission of information to a specific area and storage in the brain based on prior brain experiences.

•Sensorimotor perception: It represents the specific sensory perception of body parts, their conditions, extensions, and orientations, which are known as perceptual motor skills.

Sensory-motor perception holds a significant position in the field of physical education, as perception and sensation have a direct impact, especially in every game or sports program. Considering that sensory perception is the process of interpreting sensations, it provides information about our external world. The importance of sensory perception in the sports field is highlighted by its crucial role in successfully executing complex motor skills, as the relationship between perception and movement is a causal one (Dassa, 2021, p. 109).

Types of Recreational Sports:

The recreational sports program is divided into:

1. Simplified organization of games and competitions: These games and competitions stimulate the interests and inclinations of children and young individuals, aligning with their physical and mental capabilities, as well as their interests and preferences. Examples of such activities include ball games, agility games, dance and singing games, and treasure hunt games.

• Individual sports: This reflects individual enjoyment due to the difficulty of coordinating with teammates. Examples include cycling.

• Team sports: These require the participation of two or more individuals to play together or ensure successful participation in the activity.

Objectives of Recreational Sports Program:

• Physical objectives:
  - Maintaining physical fitness and preventing diseases.
  - Nervous and muscular relaxation.
  - Developing body flexibility.

• Educational objectives:
  - Developing individual willpower and self-improvement.
  - Utilizing leisure time effectively.
  - Providing various life experiences through the development of an integrated personality.

• Psychological objectives:
  - Psychological relaxation.
  - Expression and release of pent-up emotions and stimulation of individual motivation.
  - Reducing psychological and nervous tension and achieving internal relaxation (Ghandir, 2012, p. 294).

Secondly: Autism Spectrum Disorder:

The term "autistic" is used in research. The first research papers in the field of autism were published in 1943-1944 by two physicians. The first was Leo Kanner, who conducted his research in English, and the second was Hans Asperger, who conducted his research in German during World War II (Daniel, 2007, p. 635). According to Scheuermann and Weber, Kanner studied eleven children from the Child Psychiatry Unit at Johns Hopkins University. He identified the following characteristics:

• Inability to establish relationships with others and extreme autistic isolation from the outside world, with resistance from parents.

• Language impairments, including echolalia, which is the pathological repetition of speech.

• Desire for repetition and sameness.

• Limited spontaneous activities, such as repetitive play and repetitive body movements like spinning.

In light of his research, Kanner concluded that these children suffer from schizophrenia.

As for Asperger's study, he examined four cases of children he observed at a summer camp. He noticed their preference for solitary play and lack of interaction with others. These children were characterized by average intelligence but had a strong focus and obsession with specific cognitive or perceptual activities in narrow areas, such as mathematics. Their language development appeared to be normal, although research indicated the presence of some mild linguistic abnormalities. Asperger's study concluded that these children suffer from "autistic disorder." Forty years later, Lora Wing republished the research and referred to Asperger's original study.

These studies show that autism spectrum disorders involve disruptions in the functional performance of the brain. It is considered neurological rather than personal. The diverse range of symptoms and varying levels of severity indicate that there is no single neurological cause responsible for autism spectrum disorders. Instead, there are multiple neurological factors contributing to them (Daniel, 2007, p. 642).

Characteristics of Autism:

The characteristics of individuals with autism spectrum disorders are characterized by the following:

•Social Characteristics: Individuals with autism typically exhibit resistance to social interaction and have difficulty expressing emotions towards others due to deficits in basic communication skills. They often display non-adaptive play behaviors (Sakr, 2014, p. 50).

•Behavioral Characteristics: Individuals with autism prefer a rigid adherence to routines and experience anxiety in response to changes. Children may exhibit deficits in their motivation towards environmental stimuli.

•Cognitive Characteristics: Children with autism frequently use idiosyncratic language to refer to specific objects and often encounter difficulties in visual and cognitive abilities, understanding relationships, and utilizing symbols (Adaff, 2012, p. 75).

Thirdly, the contributions of recreational sports programs in improving certain sensory-motor disorders in children with autism:

Autism spectrum disorder (ASD) is among the contemporary disorders, which has resulted in limited studies compared to other behavioral disorders, particularly in the field of motor education. This could be attributed to the lack of theoretical reference in the sports domain that addresses the relationship between autism and physical and sports activities. On the other hand, numerous studies have demonstrated that children with autism have sensory-motor system impairments. Recreational sports programs play a significant role in achieving physical, psychological, and cognitive balance. The American Association for Health, Physical Education, and Recreation (AAHPER) highlights the contributions of recreational therapy in various biological, psychological, and social dimensions. Therefore, recreational sports programs are generally important for individuals with autism spectrum disorder. This is evident through:

•Achieving biological function:

Physical education for children plays a role in this regard, as a regular activity program affects body composition. It increases the growth of active tissues and reduces body fat mass (Al-Khawli, 1992, p. 150). It also has positive effects (Al-Hammami, 1998, p. 37), including:
ODeveloping physical fitness and maintaining an appropriate level of its components.
OAchieving joint flexibility and addressing pain.
OEnhancing the efficiency of the circulatory and respiratory systems.
OPreventing mental fatigue.
•Achieving psychological function:
In this regard, three prominent approaches can be identified:
The first: Sigmund Freud emphasizes two important criteria:

- The necessity of allowing children to express themselves through play.
- Designing recreational activities that contribute to behavior development based on communication and interaction.

The second: The Gestalt school, which emphasizes the importance of the five senses in the recreational sports program.
The third: Maslow's hierarchy of needs, where the recreational sports program works towards self-actualization and affirmation for the child with autism by satisfying psychological needs such as the need for security and safety, and the need for belonging and esteem (Al-Qazwini, 1978, p. 20). Therefore, recreational sports contribute to addressing sensory-motor disorders in children with autism by fulfilling their inclinations and motivations related to play and hobbies, developing emotional well-being, and restoring their psychological balance (Al-Hammami, p. 40).

- Achieving social function:

Coakly discusses the social aspects of the contributions of recreational sports programs for children with autism, which include:

- Fostering sportsmanship, acceptance of others, cooperation, and social development. This leads to developing leadership skills, adaptability, social elevation, and adaptation (Barkat, 1984, p. 65).
- Working on developing social values through play or in groups.
- Training in leadership through role exchange in groups (Al-Hammami, p. 38).

Fourthly:
4-1. Methodology:
The applied methodology to investigate the extent of the contribution of the recreational sports program in reducing sensory-motor disorders in children with autism at the Martyr MarkafessBouhjarPsychopedagogical Center for Intellectually Disabled Children in Hammam-Bou-Hadjar Ain Temouchent, Algeria, relied on the most precise experimental approach in our study, as it is "the only method capable of testing the true assumptions of cause and effect relationships" (Alawi, 1999, p. 217).

4-2. Study Population and Sample:

The study included children with autism and intellectual disabilities at the Martyr MarkafessBouhjarPsychopedagogical Center for Intellectually Disabled Children in Hammam-Bou-Hadjar Ain Temouchent, Algeria. Their ages ranged from 4 to 10 years old. The total number of children at the center was 72 intellectually disabled children. The study sample was determined to be 32 individuals through pre- and post-measurements.

4-3. Study Variables Control:

- Independent Variable: The proposed recreational sports program for the study sample.
- Dependent Variable: Sensory-motor disorders in individuals with autism spectrum disorder.

4.4. Research Scope:

- Spatial Scope: Martyr MarkafessBouhjarPsychopedagogical Center for Intellectually Disabled Children in Hammam-Bou-Hadjar Ain Temouchent, Algeria.
- Temporal Scope: The field study was conducted from August 7th to November 7th, 2023.

4-5. Practical Procedures for the Main Study:

A. Tool Reliability: It is considered one of the essential criteria for testing, assuming that a test should yield approximately the same results when re-administered to the same study participants. The reliability coefficient of the Heywood test for sensory-motor abilities was conducted on a sample of 32 individuals, and the reliability coefficient was found to be (0.713), indicating good stability for measurement.

B. Tool Validity: To ensure the validity of the tool, the coefficient of self-validity was calculated by determining the squared root of the test coefficient, which was (0.81).

Objective of the Test:

The proposed recreational sports program aims to reduce sensory-motor disorders in individuals with autism spectrum disorder. The program is built on the basis of considering the psychological and physiological safety of each participant in the study, taking into account the following principles:

•Conducting a directed test to assess motor abilities and work on developing skills that enable body control.

•Conducting a specific test for sports activities and games.

•Tailoring the program content to the level and abilities of the target group.

•Implementing the program in a recreational environment (fun and enjoyment) using methods and techniques that align with it, while also paying attention to the physical and psychological aspects associated with the achievement of certain components of the proposed recreational sports program.

5. Presentation and Discussion of Study Results:

Table No. 01: Presents the statistical results of pre-test and post-test measurements for basic motor skills in the control group.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled 0.01	Degree of freedom	Statistical significance
Vertical jump	32	43.66	3.2	32	44.8	2.90	0.357	2.98	19	Non S
Running	32	0.94	0.46	32	0.91	0.43	0.649			Non S
Stand on one foot	32	10.70	0.99	32	10.80	0.93	0.448			Non S
Bouncing	32	9.60	1.42	32	9.80	1.35	0.592			Non S
Kicking the ball	32	16.90	1.97	32	17.30	1.45	0.878			Non S

The results from Table No. 01, which represents the pre-test and post-test measurements for basic motor skills in the control group, indicate no statistically significant differences. This is evident as the calculated "T" values are less than the critical value (2.98) at a significance level of 0.01. Therefore, we accept the null hypothesis that there are no statistically significant differences between the mean scores of the control group's pre-test and post-test measurements. This suggests that the basic motor skills did not show any positive changes. From this, we can conclude that the proposed recreational sports program did not have a significant impact on the basic motor skills of the study sample.

Table No. (02): Shows the results of the statistics of the pre- and post-measurement of the basic motor skills of the experimental group.

Results auditi	Sample	Arithmetic mean	Standard deviat	Sample	Arithmetic mean	Standard deviat	Calculated	Scheduled 0.01	Degree of freed	Statistical signific

ons			ion			ion			om	ance
Vertical jump	32	44.40	3.06	32	45.8	1.80	3.013 -	2.98	19	S
Running	32	0.91	0.52	32	1.80	0.63	5.986 -			S
Stand on one foot	32	10.80	1.22	32	13.90	0.63	43.77 -			S
Bouncing	32	9.66	0.99	32	11.30	0.95	5.654 -			S
Kicking the ball	32	16.40	2.33	32	19.16	1.59	4.852 -			S

The results from the statistical analysis of the pre-test and post-test measurements for basic motor skills in the experimental group indicate the presence of statistically significant differences. This is evident as the calculated "T" values are greater than the critical value (2.98) at a significance level of 0.01. Therefore, we reject the null hypothesis and accept the alternative hypothesis that there are statistically significant differences between the mean scores of the experimental group's pre-test and post-test measurements. This suggests that there has been a development in the performance of basic motor skills in the study sample.

Table No. (03): Shows the results of the statistical pre-measurement of the basic motor skills of the control and experimental group.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
Vertical jump	32	43.66	3.2	32	43.50	2.96	0.267 -			Non S

Running	32	0.94	0.46	32	0.91	0.52	0.343 -	2.98	19	Non S
Stand on one foot	32	10.70	0.98	32	10.80	1.22	0.401 -			Non S
Bouncing	32	9.60	1.42	32	9.66	0.98	0.263 -			Non S
Kicking the ball	32	16.90	1.96	32	16.40	2.33	0.870			Non S

The results from the statistical analysis of the pre-test measurements for basic motor skills in both the control and experimental groups indicate no statistically significant differences. This is evident as the calculated "T" values are greater than the critical value (2.98) at a significance level of 0.01. Therefore, we accept the null hypothesis that there are no statistically significant differences between the mean scores of the pre-test measurements for both the control and experimental groups. This suggests equivalence between the two groups in terms of the results obtained prior to the implementation of the proposed recreational sports program in the study sample.

Table No. 04: Presents the statistical results of the post-test measurements for the basic motor skills of the control and experimental groups.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
Vertical jump	32	43.9	2.90	32	45.8	1.80	2.694 -	2.98	19	Non S
Running	32	1	0.43	32	1.80	0.63	5.830 -			S

Stand on one foot	32	10.80	0.93	32	13.90	0.63	14.18 -			S
Bouncing	32	9.80	1.35	32	11.30	0.95	4.538 -			S
Kicking the ball	32	17.30	1.45	32	19.25	1.59	4.437 -			S

The statistical results of the post-test measurements for the basic motor skills of the control and experimental groups indicate the presence of statistically significant differences. This is evident as the calculated "T" values are greater than the critical value (2.98) at a significance level of 0.01 in all tests conducted as part of the study. Therefore, we accept the alternative hypothesis that there are statistically significant differences between the mean scores of the post-test measurements for both the control and experimental groups, except for vertical jumping. This implies that the proposed recreational sports program plays a role in the growth, change, and acquisition of basic motor skills for some movements in individuals with mental disabilities.

Table No. 05: Presents the statistical results of the pre-test and post-test measurements for social skills in adaptive behavior of the control group.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
collaboration	32	1.60	0.70	32	1.40	0.80	1.154	2.98	19	Non S
Social interaction	32	2.70	0.72	32	2.65	0.84	0.351			Non S
Initiative	32	2.30	0,75	32	2.30	0.75	0,100			Non S
Leisure time	32	0.80	0.65	32	0.90	0,70	1.199-			Non S

activities										
Consideration of others	32	03	0.70	32	2.90	0.92	0.100			Non S

The statistical results of the pre-test and post-test measurements for social skills in adaptive behavior of the control group indicate no statistically significant differences. This is evident as all calculated values are lower than the critical value (2.98) at a significance level of 0.01 in all tests conducted as part of the study. Therefore, we accept the null hypothesis that there are no statistically significant differences between the mean scores of the pre-test and post-test measurements for the control group's social skills.

Table No. 06: Presents the statistical results of the pre-test and post-test measurements for social skills in adaptive behavior of the experimental group.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
collaboration	32	1.75	0.68	32	2.25	0.50	3.274-	2.98	19	S
Social interaction	32	2.70	0.72	32	3.20	0.40	3.346-			S
Initiative	32	2.20	0.75	32	2.95	0.55	4.373-			S
Leisure time activities	32	0.85	0.63	32	0.95	0.62	1.305-			Non S
Consideration of others	32	3.05	0.90	32	3.40	0.30	7.421-			S

The statistical results of the pre-test and post-test measurements for social skills in adaptive behavior of the experimental group indicate the presence of statistically significant differences. This is evident as all calculated values are greater than the critical value (2.98) at a significance level of 0.01 in all tests conducted as part of the study, except for the "Leisure Activities" test. Therefore, we accept the alternative hypothesis that there are statistically significant differences between the mean scores of the pre-test and post-test measurements for the experimental group's social skills, except for the Leisure Activities test. This implies that there is growth in the studied social skills during the field experiment phase, and consequently, the proposed training program has a positive impact on the development of social skills in adaptive behavior within the study sample.

Table No. 07: Presents the statistical results of the pre-test measurements for social skills in adaptive behavior of both the control and experimental groups.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
collaboration	32	1.60	0.70	32	1.75	0.68	0.865 -	2.98	19	Non S
Social interaction	32	2.70	0.70	32	2.70	0.72	0.100 -			Non S
Initiative	32	2.30	0.75	32	2.20	0.75	0.633 -			Non S
Leisure time activities	32	0.80	0.65	32	0.85	0.63	0.216 -			Non S
Consideration of others	32	03	1.02	32	3.05	0.90	0.279 -			Non S

The statistical results of the pre-test measurements for social skills in adaptive behavior of both the control and experimental groups indicate no statistically significant differences. This is evident as all calculated values are lower than the critical value (2.98) at a significance level of 0.01 in all tests conducted as part of the study. Therefore, we accept the null hypothesis that

there are no statistically significant differences between the mean scores of the pre-test measurements for both the control and experimental groups. These statistical results contribute to understanding the acquisition or lack of acquisition" of social skills in adaptive behavior within the study sample.

Table No. 08: Presents the statistical results of the post-test measurements for social skills in adaptive behavior of both the control and experimental groups.

Results auditions	Sample	Arithmetic mean	Standard deviation	Sample	Arithmetic mean	Standard deviation	Calculated	Scheduled	Degree of freedom	Statistical significance
collaboration	32	1.40	0.70	32	2.80	0.50	5.395 -	2.98	19	S
Social interaction	32	2.65	0.74	32	3.20	0.40	3.571 -			S
Initiative	32	2.30	0.75	32	3.95	0.54	3.703 -			S
Leisure time activities	32	0.90	0.70	32	1.05	0.62	0.401 -			S
Consideration of others	32	02	1.02	32	3.40	0.30	2.269 -			Non S

The statistical results of the post-test measurements for social skills in adaptive behavior of both the control and experimental groups indicate the presence of statistically significant differences. This is evident as all calculated values are greater than the critical value (2.98) at a significance level of 0.01 in all tests conducted as part of the study. Therefore, we accept the alternative hypothesis that there are statistically significant differences between the mean scores of the post-test measurements for both the control and experimental groups. From this, we can infer that the average scores of the experimental group in the post-test are higher than the average scores of the control group in the pre-test. Hence, the proposed sports recreation program has a positive impact on changing and developing social skills in adaptive behavior within the study sample.

Findings of the Study:

Based on the foregoing, the effectiveness and extent of the proposed sports recreation program in reducing sensory-motor disturbances in the study sample are evident. This is because the proposed program works towards developing and improving sensory-motor awareness, which, in turn, leads to the enhancement of motor cognitive competence. This is attributed to the inclusion of fundamental motor skills and social movements in the program. What is noted is that:

•The proposed sports recreation program has a positive impact on the development of motor skills, according to the study's tests (vertical jump, running, hopping, ball kicking, one-legged stance) for the study sample.

•According to the study results, there are statistically significant differences between the mean scores of the pre-test and post-test measurements for both the control and experimental groups in terms of basic motor skills, favoring the post-test measurements.

•There are statistically significant differences between the control and experimental groups in the post-test measurements for social skills, favoring the experimental group.

•Through measuring the progress ratios of basic and social motor skills, the experimental group outperformed the control group, confirming the positive role of the proposed sports recreation program.

Accordingly, the results of our study align with the proposed hypothesis, indicating that the proposed sports recreation program contributes positively to reducing sensory-motor disturbances in children with autism spectrum disorder. Training intellectually disabled individuals in activities that lean towards recreational aspects, especially sports activities, helps mitigate these disturbances and improves personal and social compatibility.

Conclusion:

The study on the contributions of the sports recreation program in reducing sensory-motor disturbances has highlighted its significance. Consequently, it is imperative to consider special education programs that incorporate psychomotor activities by providing the necessary resources, qualifications, frameworks, and competent staff. This should be accompanied by integrating scientific principles and ensuring diversity in sports activity programs, while staying up-to-date with the latest advancements in the field of autism spectrum disorder.

Recommendations:

•There is a need to implement sports recreation programs in autism centers, daycare centers, and special schools due to their impact on motor skills development and reduction of sensory-motor disturbances.

•It is important to expand the scope of research studies on the effects of sports recreation programs by employing methods that align with the cognitive, intellectual, and motor abilities of individuals with autism.

•Conducting training courses and motivational workshops for professionals working with children on the autism spectrum can contribute to reshaping an educational and recreational curriculum that enhances sensory and motor skills.

•Utilizing purposeful physical games aimed at improving sensory-motor abilities in children with autism.

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