RESEARCH ARTICLE

The effectiveness of using recreational activities in developing motor skills in children with autism in the era of technology and globalization

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Abstract

The studyaimed to explore the impact of a proposed program based on recreationalmotoractivities in developing certain motor skills in childrenwithautismspectrum isorder, in the context of modern technology. The researcher used a quasi-experimental design with a one-group experimental design, conductingpre- and post-assessments. The studysampleincluded 20 children (ages 4-8) who were capable of learning and had an intelligence quotient (IQ) rangingbetween 50 and 70. The researcherapplied the gross and fine motorskillsscale, whichhe haddeveloped. The studyfoundstatisticallysignificantdifferences at the 0.05 level between the mean ranks of the pre- and post-test scores of the samplechildrenwithautism on the motorskillsscale (bothgross and fine motor skills, as well as the overall scale).

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Introduction and Problem of the Study:

Children with autism spectrum disorder (ASD) are among the special education categories that have received increasing attention recently. This is due to the fact that autism is considered one of the most complex and challenging developmental disorders. It affects many different aspects of development, causing the child to withdraw into his or her inner world and

become self-absorbed, weakening his or her connection to the outside world. Autism spectrum disorder is among the disabilities that require special care and attention. In this context, Al-Abbadi (2006) indicates that autism appears in a child's early years and negatively impacts social, linguistic, cognitive, and behavioral aspects, significantly impacting the child's ability to learn and their overall adaptation to the surrounding environment (Al-Abbadi, 2006, p. 11). For her part, Susan Shaker (2005) confirms that autism is one of the most difficult and most influential disabilities on a child's behavior, and on his ability to learn, socialize, or train. It also limits his ability to achieve a level of social independence or self-care (Shaker, 2005, p. 43)

Al-Sabi (2009) indicates that children with autism are susceptible to behavioral modification procedures. With training and education, they can acquire many intellectual, psychological, behavioral, and motor skills, and their problems can be corrected, thus facilitating their ability to live in society with ease (Al-Sabi, 2009, p. 14). Radhi (2004) also views autism as a developmental disability characterized by cognitive impairment and delayed or stunted growth. It is characterized by an introverted, withdrawn tendency that isolates the child from the surrounding community, making them almost insensitive to those around them, or to the people and events surrounding them. It is a type of comprehensive developmental disorder (Radi, 2004, p. 493). Given the increasing proportion of these children, the need for different assessment methods is constantly increasing, in addition to the necessity of providing successful intervention programs and strategies that are appropriate for this category, with knowledge of the skills that these programs should target to increase the chances of improvement to help them adapt and integrate to the maximum extent possible with their abilities and readiness, and because purposeful voluntary movement is the basic template and form through which we can help the child to realize his body image, his awareness of his body, express his thoughts and feelings, and express himself in general, and it is the oldest form of communication and emotional participation, and this is what was confirmed by the study of each of the study (Green, et al. 2002), the study (Jansiewicz, et al. 2006), the study (Dziuk et al. 2007), the study (Provost et al. 2007), the study (Green, et al. 2009), the study (Pan, & Chu 2009), and the study (Staples, & 2010). Reid, Liu (2012), Whyatt & Craig (2012), Liu & Breslin (2013), and Lloyd, et al. (2013) indicated that awareness of body movement helps children acquire cognitive aspects and form concepts, given that children with autism spectrum disorder (ASD) are characterized by clear deficiencies in gross and fine motor skills. Through the researcher's review of the literature, standards, and programs that focus on modern intervention methods related to motor activities with children with autism spectrum disorder (ASD), it became clear that there are new methods, techniques, and activities based on motor education and the active participation of children with autism in educational programs. These methods stem from their needs and strengths, in order to influence their weaknesses and enrich their motor skills. The results of numerous studies and research conducted in the field of motor activities for children with autism spectrum disorder (ASD), such as Bass et al. (2009), Hameury et al. (2010), and: (2010Pan, and a study) (2011) (Nicholson, et al., emphasize the importance of early intervention programs whose objectives focus on developing motor skills in these children. This results in growth in gross motor skills and fine motor skills, as well as improvements in social and cognitive abilities, verbal and nonverbal communication skills, and sensory skills.

This highlights the importance of recreational motor activities, exercises, and games in improving gross motor skills, which help maintain body balance. Children with autism face major difficulties in motor education programs due to their inability to handle auditory and visual stimuli and difficulties in transferring learning. Children with autism also experience difficulties in interpersonal relationships. They do not accept or seek affection, avoid playing with peers or friends, and avoid participating in recreational motor activities. Individuals with autism are characterized by stereotypical or self-stimulating behaviors, and an inability to relate to others and situations. Individuals with autism exhibit low levels of functioning. Motor acuity, a trait associated with low levels of motivation and low gross and fine motor skills. Furthermore, educators at educational centers do not use any educational programs to develop gross and fine motor skills, which children must learn before they can learn many other related skills, such as mental, social, and self-care skills.

Most autism centers and institutions in Algeria have not implemented any early intervention programs focused on developing gross and fine motor skills, to the best of the researcher's knowledge. This is despite the interest shown by developed countries in this regard and their emphasis on the importance of movement in controlling inappropriate behaviors in children with autism. In light of the above, the study problem can be formulated in the following question:

What is the effect of a proposed program using recreational motor activities on developing certain motor skills in children with autism?

The following questions branch out from the previous main question:

-To what extent does the proposed program using recreational motor activities affect the development of gross motor skills in children with autism?

-To what extent does the proposed program using recreational motor activities affect the development of fine motor skills in children with autism?

.1Study objectives:

-To develop an estimation scale to determine the extent to which an autistic child perceives and performs gross and fine motor skills.

-To develop a motor activity program to develop an autistic child's ability to perceive and perform gross and fine motor skills.

-To identify the effect of using the proposed program, utilizing recreational motor activities, on developing gross and fine motor skills and performance in children with autism spectrum disorder.

1.1Study Hypotheses:

-There are statistically significant differences at the 0.05 level between the mean scores of the pre- and post-tests of the study sample of autistic children on the motor skills scale (gross, fine, and the scale as a whole), in favor of the post-test.

-The effectiveness of the proposed program, using recreational motor activities, in developing some gross and fine motor skills in children with autism spectrum disorder.

1.2Terms and concepts used in the study:

1.2.1 Autism Spectrum Disorder:

The researcher adopted the definition of the American Autism Society (2008) as the operational definition of autism spectrum disorder in the current study. Autism spectrum disorder is a type of developmental disorder that appears during the first three years of a child's life. The neurological consequences of these disorders affect brain function and, consequently, various aspects of development, leading to difficulty with verbal or nonverbal social communication in these children. They often respond more to objects than to people, are disturbed by any change in their environment, and frequently repeat body movements or syllables in a repetitive, automatic manner.

1-2-2 Proposed Program:

The researcher defines the proposed program procedurally in the current study as: organized procedures for a group of sessions containing various recreational motor activities and games, planned, integrated, and organized under the guidance and supervision of the researcher. The goal is to assist and encourage the maximum growth of children aged 4–8 with autism spectrum disorder (ASD). This goal is to develop certain gross and fine motor skills, along with the procedural objectives that fall under them, with the aim of implementing preventive and therapeutic policies to reduce the incidence or severity of the causes of disability or impairment.

1.2.3 Recreational Motor Activities:

Recreational motor activities can be defined procedurally in the current study as logically organized activities characterized by being simple and clear, relying on directed gross or fine muscle movement, based on educational strategies appropriate

for children with ASD, and including physical, visual, and linguistic cues to guide learning and achieve specific and clear goals, achieved through simulation, imitation, and guidance.

1-2-4 Gross and Fine Motor Skills:

The researcher defines gross and fine motor skills procedurally in the current study as the sum of body movements in which the child uses gross muscles, such as walking, running, standing, sitting, and jumping, and body movements in which the child uses fine muscles to manipulate objects with the hands and fingers, such as grasping and picking up objects, using scissors and pens, and modeling with dough.

2.The Applied Aspect:

2.1Methodological Research Procedures:

The current study relied on the use of a quasi-experimental approach with a single-group experimental design for pre- and post-measurement, given its suitability to the nature of the study and its sample.

The researcher deliberately selected the study sample from all the children of the Al-Wafa Association in the city of Tiaret, as a representative sample of the original study community. The number of children with autism in that center was (42) boys and girls, ranging in age from (4-8) years. The researcher used the records of the Al-Wafa Association to determine chronological age, and selected those aged (4-8) years, and those with a mental age of (5-8) years. He also selected those with an IQ of (50-70) and autism scores, and selected those capable of learning. He also applied a scale of motor skills (gross and fine) to the entire sample, in order to exclude children with autism who were capable of learning and those with high and low gross and fine motor skills, and to obtain homogeneous sample members in terms of chronological age, mental age, IQ level, autism scores, and gross and fine motor skills scores from children with autism who were capable of learning. The researcher took into account that The children had spent a full year with the association, so they would have acquired some skills, or their skills would have improved as a result. After excluding children with different chronological age, mental age, IQ, autism spectrum disorder, and high and low gross and fine motor skills, the sample size reached (30) children, both boys and girls, ranging in age from (4-8) years, with a mental age ranging from (5-8) years.

Procedures for homogeneity among sample members:

Table 01: Shows the arithmetic mean, standard deviation, and t-value for the chronological age, mental age, intelligence level, and gross and fine motor skills of the study sample individuals.

Significance level	t-value	standard deviation	Average score	N of children	Measurement
Not statistically significant	0,64	0,41	6,72	30	Chronological age
Not statistically significant	0,39	0,64	6,63		mental age
Not statistically significant	0,49	1,76	60,82		IQ level
Not statistically significant	0,35	0,92	41,08		gross motor skills
Not statistically significant	0,38	0,68	31,34		fine motor skills

The value of "t" at a degree of freedom of (29) and a significance level of (0.05) = (2.04)

Source: Prepared by researchers.

Study Areas:

-Human Domain:

Children with autism of both sexes, aged 4-8 years, at the Al-Wafa Association for the 2020/2021 academic year in the city of Tiaret.

-Spatial Domain:

Al-Wafa Association for Children with Autism in the city of Tiaret.

-Temporal Domain:

A- Gross and Fine Motor Skills Scale (prepared by the researcher)

The researcher prepared a scale for gross and fine motor skills for children with autism who are capable of learning. The scale aims to identify the gross and fine motor skills of children with autism who are capable of learning. After reviewing the scales related to motor skills, reviewing the published literature and previous Arab and foreign studies in the field of autism, and studying the scales specific to the development of children with autism who are capable of learning, the researcher also identified the areas of development most closely related to and affected by autism at this stage. The gross and fine motor skills were then presented to experts and referees to ensure their suitability for the study sample and its subject. It was possible to identify the two domains of the scale and the phrases each domain contains. The scale consists of two main axes: the first axis addresses gross motor skills and consists of (30) phrases on a binary scale (achieved, not achieved). The second axis addresses fine motor skills and consists of (25) Phrases, on a binary scale, (achieved, not achieved), and the response (achieved, not achieved) on a binary scale (2, 1), respectively.

B- Description of the proposed program (prepared by the researcher:

The program consists of (30) main activities based on recreational motor activities that work to develop gross and fine motor skills in children with autism. The proposed program is based on improving the fitness and movement skills of the study sample, improving and controlling, and developing balance and motor coordination skills, in addition to coordination skills in the autistic children in the study sample.

-Verifying the Validity of the Proposed Program:

After its preparation, the proposed program, which included recreational motor activities to develop some gross and fine motor skills in children with autism, was presented to a group of doctors specializing in physical and motor education, special education, and mental health. This was done to verify the program's suitability for its intended purpose and its application to the experimental sample, taking into account the characteristics of children with autism and methods of communicating with them. It also sought to verify the suitability of its content to the aptitudes, abilities, and tendencies of the study sample of autistic children. The selected motor skills were also appropriate for the age, abilities, and characteristics of the study sample, and were not dangerous to them. Furthermore, the content of each activity was designed to achieve the objectives set for this study.

Thus, the program, in its final form, consisted of (30) basic activities, with three sessions per week, with each session lasting 45 minutes.

-Exploratory Study Sample:

The researcher selected the exploratory study sample from the final homogeneous sample using a simple random method to ensure the validity and reliability of the study tools. The exploratory study sample consisted of (10) boys and girls with autism who were capable of learning, from the Al-Wafa Association in the city of Tiaret.

-Statistical Characteristics of the Scale:

The scale was then presented to a group of judges, including doctors in the field, special education, and mental health, to ensure the appropriateness of the scale's objectives for the purpose for which it was designed, the clarity of the scale's phrases and their suitability for the target group and the nature of the disability, and the appropriateness of gross and fine motor skills for the age group.

-Scale reliability:

The researcher administered the gross and fine motor skills scale to a sample of (10) boys and girls with autism who were capable of learning, excluding the primary study sample, at the Al-Wafa Association in the city of Tiaret. The scale was then re-administered to the same group of children (10) days later. The researcher calculated the correlation coefficients between the children's scores in the first application of the scale and their scores in the second application, as shown in Table (2)

Table 2 :shows the correlation coefficients between the children's scores in the first and second applications of the gross and fine motor skills scale and the significance level.

Self-honesty	Computed correlation coefficients	Sample size	Scale
0,94	0,88	10	Gross Motor Skills
0,93	0,86		Fine Motor Skills
The tabular value of "r" at the significance level (0.05) and under the degree of freedom (0.09) = 0.66			

Source: Prepared by the researcher.

Study Sample:

The researcher selected the remaining homogeneous final sample to apply the study tools. The primary study sample consisted of (20) boys and girls with autism who were capable of learning, at the Al-Waqia Association in the city of Tiaret.

-Scale Reliability:

The researcher determined the method for answering the scale and its scoring. The researcher evaluated the child's performance, and grades were calculated as follows: one if the child did not perform the skill at all, and two if the child

performed the skill. This means that the highest total score for the gross motor skills axis was (60) points, and the lowest (30) points. The highest total score for the fine motor skills axis was (50) points, and the lowest (25) points. The highest total score for the scale as a whole was (110) points, and the lowest (55) points. An increase in the child's scores indicates a high level of mastery of the skill, and vice versa.

-Statistical Methods Used:

-T-test. - Pearson's correlation coefficient.

-Mann-Whitney test - Z-value.

-Presentation, analysis, and discussion of the results:

Table 3:Demonstrates the significance of the differences between the mean ranks of the scores of the pre- and post-tests of the study sample of autistic children on the motor skills scale (gross, fine, and the scale as a whole)

Statistical significance	"Z" value	Total ranks	Average rank	deviation	Average	N	Measurement	Scale dimensions
Statistically significant	3,25	330	10,50	0,97	26,02	20	tribal	gross motor skills
				1,22	41,50	20	The distant	
Statistically significant	3,32	330	10,50	0,81	19,62	20	tribal	fine motor skills
				1,12	32,38	20	The distant	
Statistically significant	3,28	330	10,50	1,03	42,15	20	tribal	Total score of the scale
				1,64	65,27	20	The distant	
The tabular value of "Z" at a significance level of (0.05) = 1.96								

Source: Prepared by researchers.

Table (03) shows the results of the Mann-Whitney test, which indicate the presence of statistically significant differences at a significance level of (0.05) between the average ranks of the scores of the pre- and post-measurements of the study sample of autistic children on the motor skills scale (gross, fine, and the scale as a whole), in the application of the proposed program using recreational motor activities to develop some gross and fine motor skills in children with autism disorder, in favor of the post-measurement, as the "Z" values between the pre- and post-measurements of the study sample members in the gross motor skills axis reached (3.25), and in the fine motor skills axis (3.32), and in the total score of the scale (3.28), and they are all greater than the tabular (Z) value at a significance level of (0.05), which is equal to (1.56), which confirms the presence of fundamental differences between the average ranks of the scores of the study sample

members of autistic children in the pre- and post-applications in the application of the proposed program using recreational motor activities to develop some gross and fine motor skills in children with autism disorder. Autism, on the motor skills scale (gross, fine, and overall), used in the current study for the benefit of the posttest. The results of this study are consistent with the studies of (2007) (Provost, et.al.), (2009) Pan, et.al., (2012) Whyatt, &Graig, which confirmed that these children suffer from a delay in the levels of basic movement and its skills, which leads to these children facing great difficulty in understanding different concepts and acquiring sound motor skills during different age stages, and constitutes a difficulty in helping them in all aspects of social, linguistic and motor development, and this of course negatively affects the formation of their personality and future life. The study of both the National Research Council (2001) and the Corsello (2005) also confirmed the importance of having early intervention programs to develop motor skills.

This type of program is the most effective with children with autism disorder, as it improves body movement, which affects the child's motor skills, such as control, control and motor balance, and supports the development of self and awareness of others. All of this contributes to the child's being, appreciation and respect for himself, and his feeling of comfort and confidence in his body and abilities, which makes him Able to defend themselves against any harm that may befall them.

The results of the current study, after implementing the proposed program, which includes a number of individual and group recreational motor activities, revealed statistically significant differences between the pre- and post-tests of gross and fine motor skills, in favor of the post-test for the children in the study sample after the program was applied to them. These results are consistent with the findings of the study (Ferrari et al., 2000), which confirmed that movement and the sense of personal space are significantly related to functional and motor organization, relationships with others, and direct connection to the environment in autistic children. The results of the study (Asagi& Yoshifumi, 2007), which concluded that motor activities and programs, achieved through group activities, influence motor improvement in children with varying degrees of disabilities.

While implementing the proposed program, the researcher used a variety of activities to teach various gross and fine motor skills, such as artistic, recreational, motor, and play activities. This result is also due to the researcher's keenness to use various types of reinforcement. This had a positive impact on improving gross and fine motor skills in children with autism. This improvement can be attributed to the researcher's use of appropriate educational tools and methods to achieve the procedural objectives of the proposed program. The more appropriate the method is for the child and the intended goal, the greater its value in achieving that goal. The researcher also ensured that the educational methods used were safe to use.

Conclusions:

- Statistically significant differences were found at the (0.05) level between the mean scores of the pre- and post-tests of the study sample of children with autism on the motor skills scale (gross and fine, as well as the scale as a whole), in favor of the post-test.

- The effectiveness of the proposed program, based on recreational motor activities, in developing some gross and fine motor skills in children with autism spectrum disorder (ASD) was demonstrated.

Recommendations:

- It is necessary to diagnose autism spectrum disorder at an early stage to determine appropriate treatment plans and programs based on the diagnosis results. This contributes to providing early intervention tailored to the child's needs.
- It is necessary to include recreational motor activities in the programs of autism care centers, as an essential part of the treatment plan, given their positive impact on the development of the child's motor and social skills.

- It is necessary to raise awareness among families about the importance of recreational motor activities in enhancing the capabilities of children with autism, and how these activities can improve the child's weaknesses and help strengthen their strengths.
- It is necessary to train families and educators on how to use recreational motor activities effectively, and to provide them with a variety of activity models that suit the child's individual characteristics, which contributes to improving and developing their deficiencies.
- It is necessary to provide the necessary means and tools to implement recreational motor activities in specialized institutions and centers, to ensure an appropriate environment to support the development of children with autism spectrum disorder.

Conflict of interest

There is no any conflict of interest

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