

## THE EFFECT OF AQUATIC EDUCATIONAL PROGRAM WITH INCLUSION METHOD ON THE LEVEL OF CATECHOLAMINE URINE AND CERTAIN PHYSICAL VARIABLES FOR AUTISTIC CHILDREN

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### Abstract

**Purpose.** This research aims to identify the effect of a water training program with inclusion style at the level of catecholamine urine and some physical variables (sprint 20m - countermovement jump - push a medicine ball 500g, shuttle run 10 x 5m) for autistic children.

**Methods.** The research sample was chosen intentionally from the Social Rehabilitation Association in Sohag. The strength of the research sample was (22) autistic children, and (4) autistic children were excluded to conduct the exploratory study on them, so that the basic research sample (18) autistic children, were randomly divided into two equal groups, one is experimental. Compact and the other is not experimental. The strength of each sample is (9) autistic children. The researchers used (9) children from the same age group to participate with the combined experimental group. The researchers conducted the homogeneity in age, height, weight, degree of autism, and levels of catecholamine urine.

**Results.** Statistical analyses showed that: significant differences between the post- measurements of the combined experimental groups and not included in the physical variables, the payment of a medical ball 500 g and the wide jump of stability and the shuttle run 10 x 5 m for of the post- measurements of the combined experimental group where the value of the tabular value was less than the calculated value of t, and the absence of statistically significant differences between Post- measurements of the combined and non-incorporated experimental groups in the degree of autism, 20 m, and Vanillylmandelic acid

### Conclusions.

Under the conditions of our study, movement education program into the water with inclusion style to 10 weeks resulted in an improvement of the level of catecholamine urine and some physical variables (sprint 20m - countermovement jump - push a medicine ball 500g, shuttle run 10 x 5m) for autistic children. These results must be considered by teachers to better understand and implicated of these concepts for technical effects of teaching.

**Key words:** physical variables, CARS, autistic children.

### Introduction

The extent to which societies provide services and facilities to groups with special needs and the positive trends they provide to them, to the extent that this shows the extent of the sophistication, civilization and humanity of these societies and these services whether they are educational, medical, social, cultural or sport, the goal is to facilitate the ways of life in front of them to The fullest extent possible, and help them obtain their rights to lead a normal and dignified life within our large community.

(A. Abdel-Salam, 1995) indicate that global interest has increased recently in the education and rehabilitation of the handicapped and work to take advantage of their potential to be an effective and

productive force in the society in which they live.

(A. Rabie & A. Tareq, 2006) indicate that in recent years efforts have begun to direct towards the rehabilitation and care of children with disabilities as a result of development in human thought, equal opportunities, equality and children's rights so that they can live happily according to their capabilities and capabilities.

(S. Simon, 2008) believes that mental disability is one of the most important problems facing developed and developing countries where the mentally handicapped are a burden on these countries and their families, because they are an unproductive consumer energy, and they always need those who depend on them and take care of them, and therefore

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the developed countries took care in Recently, he directed scientific research to study the phenomenon of mental disability, to identify the capabilities and capabilities of the mentally handicapped, and to provide treatment programs to develop the remaining abilities that they have so that they can rely on themselves partially or completely in matters of their lives instead of remaining dependent on their families and society.

(R. Deborah, 2004) notes that autism is a disability that continues throughout the life of an individual and affects the way in which he talks and establishes a link with those around him, and it is difficult for children and adults with autism to establish clear and strong links with others. Usually, they have a limited ability to make friends and to understand how others express their feelings.

He adds that often children with autism can have learning disabilities, but all people with this disease share difficulty in understanding the meaning of life.

The Diagnostic Statistical Manual of Mental Disorders (DSM IV) (1994) classified autism as one of the most prevalent developmental disorders in the world.

While (C. Houston-Wilson, & L. J. Lieberman, 2003) believes that there are three types of mental disability that are the most common and widespread in all of the world, and that such patterns are arranged according to the proportions and rates of their spread, so mental retardation comes at its beginning, followed by autism, then Next comes Down syndrome.

(E. Donald & B. Del Siegle, 2008) notes that children with autism usually encounter three main types of difficulties, and these difficulties are known as triple disability:

- Social interaction (difficulty in social relationships, such as if a person seems conservative and indifferent to others)
- Social communication (difficulty in verbal communication and non-verbal communication as not fully understanding the meaning of common gestures, facial expressions, and voice tones).
- Imagination (difficulty developing imagination and playing with others, such as having a limited number of imaginary activities and possibly copied and pursued in a strict and repeated manner).

(C. Huettig & B. Darden-Melton 2004) adds that in addition to this triple, repetitive behavior, and

resistance to any change in daily routine are often characteristic of this disease.

The cause or causes of autism are still unknown, but research shows the importance of genetic factors. Research also confirms that autism can be linked to a group of disorders that affect brain development. Among the most important disorders that accompany children with autism is metabolic disorder, which affects levels of catecholamine that It is secreted from the inner part of the adrenal glands.

(P. Ferrari, et al. 1989) that catecholamine is made up of Adrenaline, noradrenalin Dopamine, and can be inferred in urine by identifying vanillylmandelic acid.

He adds that autistic children have lower levels of catecholamine urine compared to ordinary children.

(B. Dianne, 2005) states that training programs for autistic children should consider improving levels of catecholamine urine.

(A. Abdel-Muttalib, 2005) notes that the educational and educational care programs for people with mental disabilities are limited to two basic systems, namely, the isolation system and the inclusion system.

According to (G. Kauffman, 2000) the inclusion system is one of the modern trends in special education, and it includes placing mentally handicapped children with a slight degree in regular schools, and taking measures to ensure that they benefit from the educational programs offered.

(A. Sonja et al. 2008) indicates that the method of inclusion is considered the cornerstone of academic and non-academic activities for autistic children, as it helps in their inclusion within the fabric of society and thus society accepts them in addition to the educational and social influences that affect autistic children in developing their life skills, bearing in mind that special programs Them in light of their physical, and mental needs, capabilities, and abilities.

For disabled individuals, sport is the ideal means for the speedy return of the disabled to his society and his interaction with him, and for swimming is of many importance and benefits to disabled individuals, as psychologists and social scientists put them in the first place among sports because they give an atmosphere of joy and pleasure and work to improve the organic, social, psychological and emotional aspects.

(I. William et al. 2002) that sport plays an important role in the lives of autistic children, as it contributes significantly to improving the increase in the area of language, increasing social skills, freedom

to interact in situations of playing with others, helping to develop self-care skills, and employing excess energy positively, Increased ability to pay attention to long periods, increased reaction speed, and ability to plan and organize.

Hence the importance of sports training in developing their cognitive skills and physical abilities, which are reflected in developing their mental abilities, through special programs that consider the characteristics of this group.

Water exercises have enjoyed a large share of the tremendous scientific development, as they have not been used to improve physical fitness only or as therapeutic exercises for sports injuries, but have gone much further as they have become involved in a large share in the rehabilitation of groups with special needs.

Water exercises are distinguished from terrestrial exercises that water exercises help to lower the body's load on the knees during performance. An autistic child, no matter how much weight, does not feel the weight of this weight on the knees in the water as the water acts as a pillow for the joints during performance, which makes them merge in the performance of a heavy athletic effort without That causes pain or pressure on the joints.

In this regard, (D. Donna, 1986) indicates that water exercises are also characterized by the additional effect of water resistance, water pressure, buoyancy, and the positive effects they reflect on an individual's body.

(M. Wafika, 1997) adds that swimming is part of therapeutic programs as an auxiliary factor because the body floats and is carried by water, which reduces the effort on the muscles compared to the position of the vertical position with less influence of gravity as it aims to develop the skill of being able to keep the body in the water while moving Some limbs and muscles.

Based on the above, and through access to the global information network (the Internet) and what the researchers has made available from sources and studies in this direction, the researchers notes the multiplicity of opinions and views regarding the inclusion of the mentally handicapped, especially children with autism in public education schools, there are those who support him while someone criticizes him.

This is confirmed by (A. Abdel-Raqib, 2005) that one of them strongly supports the application of full integration of all groups of mental disabilities due to the amount of positive benefits that accrue to the disabled, and the other team opposes the application

of the method of integration based on the fact that the training and educational environment is not suitable for its application on the ground, This is confirmed by a foreign study conducted on (7000) teachers about their opinions on the method of inclusion, its results indicated that 45% of teachers support the method of integration, compared to 55% who reject it, due to the lack of proper application of the method of integration.

In addition to that, the researchers noted, within the limits of his knowledge, that the studies that dealt with sports training in general and water training in particular focused on the categories of mental disability that are easy to deal with as mentally handicapped to a simple degree such as the study of (A. Azza, 2001) entitled the effectiveness of a proposed water games program on Learning some basic swimming skills for mentally handicapped children, and one of the most important results was that a water games program has an effective effect on learning mentally handicapped children whose IQ ranges (50-70) in some basic swimming skills. The study of (F. Maria et al. 2008) entitled The effect of a water antenna training program using groups on the periodic respiratory tolerance of the mentally handicapped, the sample strength reached (16) children with disabilities, (11) boys, (5) girls, ages 6-11 years, and a water antenna program was applied for a period of time (14) weeks by (2) training units per week, with a total of (28) training units. One of the most important results was the absence of injuries to the sample in question and an improvement in the efficiency of respiratory cyclical endurance of 80%.

Studies that dealt with the merger method focused heavily on the mentally handicapped and did not address the category of autism as a study by (Y. Noha, 2002) entitled The effect of integration between mentally handicapped children and normal children on learning basic skills in swimming, and the study of Abdul Hakim Al Matar (2000) with the aim of identifying the effect of integration In physical education lessons on the qualitative and quantitative performance of the basic motor skills of children with Down syndrome and their ordinary peers in the Kingdom of Saudi Arabia, or I dealt with the integration method by focusing on group games such as the study of Castagno, (2001) entitled The effects of uniform sports in the Special Olympics on male athletes in Basketball, studying Martin, et al. (2004) aimed at identifying trends in integrating people with special needs with normal players in softball, A study by Donald & Del Siegle, (2008) entitled The Effects of Unified Basketball Sports on the Self-Concept of

People with Special Needs. (G. Ninot, et al. 2005) entitled The effects of isolationist and integrated mathematical practice on the physical self of the mentally handicapped, or addressed social values as a Siperstain study, (2002) with the aim of identifying the effect of mathematical inclusion (standard sports) on the social values and athletic skills of Special Olympics athletes, or dealt with adaptive behavior as a (E. Rosegard, et al. 2001) entitled The effects of mathematical inclusion on the adaptive behavior of the mentally handicapped.

One study examining the effect of sports training on autistic children is (KH. Pitetti, et al. 2007) entitled The effect of a training program on moving for a period of (9) months on some physical variables and weight reduction for autistic children, and the sample strength reached (10) autistic children, they were divided into two groups, one experimental (5) children and the other control (5) Children, and the experimental group performed walking exercises for walking for a period of (9) months, and the control group performed the traditional physical exercises in the physical education lesson, and the most important results were that the monthly track measurements showed improvement of the control group during the period of walking time A significant decrease in BMI in favor of the experimental group compared to the control group.

Based on the foregoing, the researchers conducted this study under the title "The effect of water exercises with a fusion method on the level of catecholamine urine and some physical variables for autistic children.

This research aims to identify the effect of a water training program with inclusion style at the level of catecholamine urine and some physical variables (sprint 20m - countermovement jump - push a medicine ball 500g, shuttle run 10 x 5m) for autistic children.

### Methods

The research sample was chosen intentionally from the Social Rehabilitation Association in Sohad. The strength of the research sample was (22) autistic children, and (4) autistic children were excluded to conduct the exploratory study on them, so that the basic research sample (18) autistic children, were randomly divided into two equal groups, one is experimental. Compact and the other is not experimental. The strength of each sample is (9) autistic children. The researchers used (9) children from the same age group to participate with the combined experimental group. The researchers

conducted the homogeneity in age, height, weight, degree of autism, and levels of catecholamine urine.

### Tools

- Calibrated medical scale - for measuring body weight.
- Restamer - for measuring body height from the ground.
- CARS: Childhood Autism Rating Scale.
- tape measure
- Data registration form
- Stopwatch
- Test tubes
- Coleman has ice to store urine samples
- cones
- Medicine balls
- Swimming pool
- Buoyancy tools and facilities

### Research tests:

#### Physical tests

- sprint 20 m
- Payment of a medical ball, 500 gm
- countermovement jump
- Shuttle Running 10 x 5 m

#### CARS Child Autism Scale:

The scale consists of five tables, so that by calculating a set of points after answering a set of questions pertaining to the child, we can obtain a score and grade for the child that indicates the possibility of autism in the child or the degree of autism if the child has autism, and the first table includes questions about The child's skills in establishing relationships with people, the second table includes a set of information that indicates how the child deals with his body, the third table on the child's ability to adapt to changes, and the fourth table on the child's skill in answering the questions addressed to him, and the fifth table on the child's ability On the use of verbal phrases, it is used for children over two years of age until adolescence.

#### Program settings

◀Duration of the program (10) weeks.

◀The number of weekly training units (3) training units.

The total number of training units (30) training units.

Steps to implement the search:

The researchers pulled urine samples to measure the Vanillylmandelic acid to identify

#### catecholamine levels

- 1- Performing pre- measurements for physical tests.

- 2- The researchers trained the combined experimental group by three days (Saturday, Monday, and Wednesday), and the second experimental group trained by three days (Sunday, Tuesday, and Thursday) to facilitate the control of children inside the pool.
- 3- Starting the implementation of the water training program, where the program took 10 weeks to implement, and it consists of (30) training units, at the rate of (3) training units per week for each group.

- 4- Performing post-measurements immediately after completing the application of the basic experiment.

#### Statistical treatments

The researchers used the following statistical treatments:

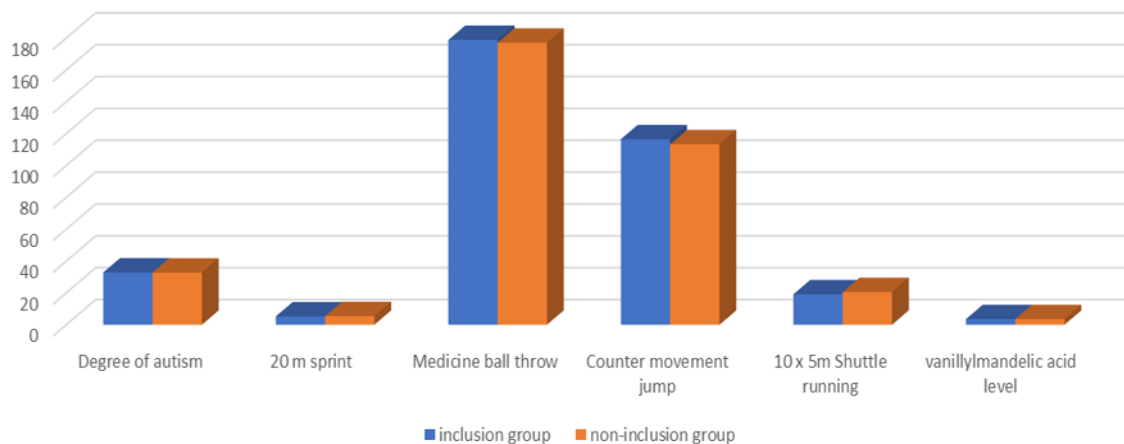
- Average
- standard deviation
- Ratios of improvement
- T-test
- Correlation coefficient

### Results

**Table 1. Variables of the sample (Mean  $\pm$  SD)**

Subject	N	Age [years]	Height [cm]	Weight [kg.]	Degree of autism	20 m sprint	Medicine ball throw	Counter movement jump	10 x 5m Shuttle running	vanillylmandelic acid level
	97	9.87 $\pm$ 1.65	137.12 $\pm$ 3.81	35.91 $\pm$ 4.12	36.54 $\pm$ 2.09	5.13 $\pm$ 0.83	180.53 $\pm$ 3.40	110.78 $\pm$ 3.07	21.13 $\pm$ 1.55	8.90 $\pm$ 0.87

Table 1 shows the variables of the sample. There were no significant differences observed in these variables for the subjects.



**Figure 1.** statistically significant differences between the post- measurements of the combined experimental groups and not included in the physical variables, the payment of a medical ball 500 g and the wide jump of stability and the shuttle run 10 x 5 m for of the post- measurements of the combined experimental group where the value of the tabular value was less than the calculated value of t, and the absence of statistically significant differences between Post- measurements of the combined and non-incorporated experimental groups in the degree of autism, 20 m, and Vanillylmandelic acid.

#### Discussion

The presence of statistically significant differences between the post- measurements of the combined experimental groups and not included in the physical variables, the payment of a medical ball

500 g and the countermovement jump and the shuttle run 10 x 5 m for the post- measurements of the combined experimental group where the value of the tabular value was less than the calculated value of t, and the absence of statistically significant differences between Post- measurements of the combined and non-incorporated experimental groups in the parameters of autism and the sprint of 20 m and Vanillylmandelic acid.

The researchers attribute these differences to the effect of the proposed water training program in the merger method on improving. Water training is an effective medium through which to improve the degree of autism and physical variables and levels of Vanillylmandelic acid in urine for autistic children, as it works to encourage them to integrate into society and enjoy the joys of life alongside. Along with

normal children, they have a sense of belonging to the group and their active role in it, and their practice and progress in it for autistic or normal children makes them more active and able to absorb and think and also make them more self-confident and more acceptable in the society in which they live.

In this regard, (H. Karen, 2006; R. Leaf, & J. McEaching 1999) emphasizes that exercising collectively for autistic children with their normal peers has significant social benefits as it increases the bonds of love, brotherhood, cooperation, respect for laws and regulations, and the love of competition and conquest. On the self, the autistic child gains cognitive and physical skills as well as increases affiliation, self-confidence and the art of interacting with others.

(D. Patrick, et al. 2003) however, that the normal child is considered a feasible way to perform tasks for the coach, as he plays the role of the cheerleader, corrector, and model for autistic children.

He agreed with (F. Maria et al. 2008) that the integration leads to the speedy acquisition of the child with autism skills and educational capabilities as a result of their investment by their normal peers, the autistic child works to imitate the normal child and learn from him and try to compete with him to reach the maximum performance similar to the performance of the normal child.

The results of the study are consistent with the study (E. M. Dykens, & D. J. Cohen, 1996; I. Duvdevany, 2002; KH. Pitetti, et al. 2007) that sports activity in general and water training reduce the degree of autism and improve the sensory, cognitive, and physical abilities of an autistic child.

The researchers attributed these differences to the effect of the proposed water training program in improving the degree of autism, broad jump of stability, shuttling 10 x 5m and Vanillylmandelic acid.

This is confirmed by (P. Joseph, 2004) that water exercise is an important therapeutic recreational tool for autistic children, as it works to reduce the behavioral disorders of this group by improving their motor performance.

He agreed with (G. Monica Lepore, et al. 2007) that water exercises are a good educational, training and qualification medium for autistic children. The weight of the autistic child's body within the water decreases by 90% of the child's normal weight, which results in less pressure on the joints of the body and thus a wide field of movement with freedom to perform.

The results of the study coincide with the study of (A. Azza, 2001) in that the water games program has

an effective effect in the learning of mentally handicapped children some basic swimming skills.

The researchers attributed this to these differences because of the inclusion method.

This is confirmed by (C. Maurice, et al. 2001) that integrating autistic children with the normal in sports activities programs is more effective for developing motor skills compared to isolating them.

The results of the study are consistent with the study (D. Netherton, et al. 2009) that autistic children are motivated to perform better in the water in the presence of their normal peers than in the presence of their teachers.

### Conclusion

Under the conditions of our study, movement education program into the water with inclusion style to 10 weeks resulted in an improvement of the level of catecholamine urine and some physical variables (sprint 20m - countermovement jump - push a medicine ball 500g, shuttle run 10 x 5m) for autistic children. These results must be considered by teachers to better understand and implicated of these concepts for technical effects of teaching.

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