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A comparative study of some motor abilities and body mass index among healthy children with Down syndrome (9-12 years)

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Abstract:

Through this research, we aim to identify the differences between healthy and mentally disabled children with Down's syndrome with simple mental disabilities in some motor abilities and body mass index ,We hypothesized that there were statistically significant differences between the two samples so we used the comparative descriptive method . We conducted a series of tests on a sample of 20 healthy students and 20 mentally disabled children with Down syndrome, the results were obtained to show the existence of statistically significant differences in most of the kinetic capacities of balance, flexibility, agility and mass of the body where the results were consistent with those obtained with many studies and similar research.

Consequently, the results showed that mental disability affects some motor abilities, which is in line with what we have assumed. Therefore, our research results can be considered as a factor to serve this mentally disabled group as well as to develop special programs that serve this group and are in line with their potentials and abilities.

key words: Motor capacity, BMI, Down syndrome.

Introduction.

Nowadays, education is no longer limited to the normal people, but educational and educational efforts have become aimed at everyone, regardless of their mental levels and abilities, so all children, whether they are normal or not, can learn but in different ways and have the ability to mature and grow, at different rates and levels. Children with Down syndrome have the ability to learn, but slowly, so they need more time to learn, develop and

develop basic skills compared to normal children, so they need special educational curricula in the field of physical education that are commensurate with their mental abilities, researchers have named the age stage (9-12) years as late childhood and it is characterized by many psychological, cognitive, social, sensory and emotional characteristics, so the child in this stage is very active, tends to play, thirst for knowledge and many questions He loves competition and boasts, he is able to work for a long time, he is characterized by physical flexibility and adapting the body according to movement, as well as many dreams and wishes, and this is what we must exploit for the benefit of children in general and the disabled in particular.

Al-Khouli, 1982 also stressed that it is one of the most important considerations that help the success of the management and implementation of the motor education program for the mentally retarded. Focus on learning basic skills such as standing, walking, running, jumping, and hanging as necessary for his environmental adaptation, while not trying to teach him special sports motor skills that require many cognitive dimensions or a high level of compatibility between body parts.

Physical education has an important impact on the development of the lives of the mentally retarded, and taking care of the development of the physical, motor, psychological and social abilities of the affected individuals with Down syndrome is necessary if we

provide them with activities in which they use their senses, muscles and limbs in walking, running, and jumping, and their self-confidence and the degree of their dependence on them increases, which helps to reduce the effects of disability and increases their chances of integration and adaptation to society. 2005).

Through this research, we will study the different differences in some motor abilities of healthy children, children with intellectual disabilities with mild disabilities, non-Down syndrome, and the mentally handicapped with Down syndrome (9-12 years), study the causes, analyse the data to come up with results, and contribute to the development of suggestions and solutions that contribute to enriching the studies on this group of society.

1- Research Problem:

As a result of mild mental retardation, there is an imbalance in the mechanical relationship between the various body systems that reduce the efficiency of the work of joints, muscles and bones and thus affect the vital systems of the body and a lack of motor abilities that causes poor muscle tone and unbalanced growth of muscle groups, as well as multiple physical diseases and weight gain, so early intervention is necessary in mentally retarded children in order to improve their various physical, cognitive, cognitive and linguistic skills and follow them up, as mentally retarded individuals if they receive training Good work that suits their limited abilities and capabilities, this helps to acquire social and practical experiences and skills that help them face life, from this point of view, we try in our research to answer the following questions:

Are there statistically significant differences in some motor abilities and body mass index between healthy children and those with intellectual disabilities with Down syndrome?

Sub-questions:

• Are there statistically significant differences in some motor abilities between healthy children and those with intellectual disabilities with Down syndrome?

• Are there statistically significant differences in BMI between healthy children and those with Down syndrome?

2- Hypotheses:

2-1 General Hypothesis:

There are statistically significant differences in some motor abilities and body mass index between healthy children and those with intellectual disabilities with Down syndrome.

2-2 Sub-hypotheses:

1- There are statistically significant differences in some motor abilities between healthy children and those with intellectual disabilities with Down syndrome.

2- There are statistically significant differences in body mass index between healthy children and those with intellectual disabilities with Down syndrome.

3- Research Objectives:

• Identify differences in some motor abilities between healthy children and mentally handicapped children with Down syndrome.

• Identify differences in BMI between healthy children and children with Down syndrome.

4 - The importance of the research:

Through this research, they aimed to highlight the differences in motor abilities and body mass index among healthy and mentally handicapped children with Down syndrome, in order to know the level of motor performance and estimate the motor abilities of children with Down syndrome, and thus propose adapted training programs to develop motor abilities based on the level of this category, which we derive from this study, as well as compare the body mass index between the two categories because of the nature of the body related to motor abilities and propose future programs and solutions to obtain The best levels.

5- Research Terms:

1- Disabled:

Majida El-Sayed Obaid defined him as "any person who suffers from a sensory, mental, physical, or social condition that does not allow him to participate in activities practiced by other members of society" (Al-Sayed Obeid, 2000).

A person with a disability is any person who has become unable to rely on himself or herself to carry out or to perform any other work or has been reduced to do so as a result of organic, sensory impairment or congenital disability since birth.

2- Mental retardation:

Mahmoud, 1977 defined mental retardation as a significant decrease in a person's general mental performance accompanied by a deficit in adaptive behaviour, which appears in the developmental stage, which negatively affects educational performance.

So mental retardation is a condition in which the growth of brain cells is incomplete or the growth of brain cells is stunted from birth or in the early years of childhood

due to some reason. Mental retardation is not an independent or specific disease, but rather a set of diseases, all of which are characterized by a low IQ in the child's IQ and an inability to adapt.

3- Down syndrome:

(Medhat, 2005) Down syndrome is defined as a chromosomal abnormality that leads to an abnormality in the brain and nervous system and results in mental disability and a disorder in the body's cognitive and motor skills, and this abnormality also leads to the appearance of congenital features and defects in the organs and functions of the body (Al-Malaq, Rehabilitation of the Disabled, 2001), which is not a disease but a symptom with which the child is born, and Down syndrome can be defined as a set of physical and psychological traits resulting from a problem in genes that occurs at an early stage Before birth. Boys with Down syndrome have distinctive facial features, but they generally range from very mild to moderate.

4- Motor abilities:

Motor abilities are defined as "abilities that a person acquires or exists from the environment, such as flexibility, agility, and balance, and training and practice are the basis of them and develop according to the individual's physical, sensory, and cognitive abilities (Wajih, 2000).

Motor abilities are qualities that an individual acquires from his or her surroundings or may be innately present and develop according to the individual's physical, sensory, and cognitive abilities through training and practice.

5- Body Mass Index:

The Body Mass Index (BMI) is a global measure of whether the human body is thin, normal, or fat compared to its ideal weight, and it is the relationship between weight and height. Body mass index (BMI) is an indicator that compares an individual's weight relative to their height, as it is calculated by dividing the weight in kilograms by height in square meters, and it is possible to use it to determine whether an individual is normal weight or thin, overweight, or obese in relation to his height.

6- Studies and similar researches:

1- Study of Mash'an bin Zabin Al-Harbi et al. (2000):

Study Topic: "Health-Related Physical Activity and Fitness Levels in Mentally Retarded Children Compared to Normal Children".

The aim of the study was to identify the levels of physical fitness associated with health and physical activity in mentally retarded male children with and without Downen syndrome and compare them with their normal peers. The study sample consisted of three groups: those with Downing syndrome (n=14, age = 11.1+1.1), those without Downing syndrome who are mentally retarded and learnable (n=20, age = 11.3 + 0.97), and normal people (n = 20, age = 11.1 + 1.1). Height, weight, and body fat percentage were measured by measuring the thickness of the skin folds in three areas of the body, as well as the health-related fitness elements (muscle strength by grip strength and thigh muscle strength, flexibility by the flexibility box, muscular endurance – through the sedentary test from the recumbent test, and cyclic respiratory endurance by running/walking 600 meters). The level of physical activity was also measured by monitoring the heart rate during 12 continuous hours twice a week, one in the middle of the week and the other at the end, and the results of the study showed that the percentage of obese children who are mentally retarded exceeded (50%) compared to the normal population (25%). The results also indicated a decrease (D at the level of 0.05) in muscle strength, respiratory circulation endurance and muscular endurance in mentally retarded children compared to normal children, but children with Downing syndrome showed increased flexibility compared to normal children, due to the relaxation of the ligaments and muscles in children with Downing syndrome. The results also indicated a decrease in maximum heart rate in children with Downing syndrome (172.7 + 3.2). The level of physical activity was also shown to be lower in mentally retarded children with and without Downen syndrome compared to normal children, as there were significant differences in average heart rate within 12 hours between normal children and mentally retarded children. Finally, the results of the analysis of the association between lipid percentage and physical activity level indicators showed that the relationships ranged from weak to moderate and not statistically significant in the three study groups, and the correlation between the level of physical activity and cardiorespiratory fitness was higher in mentally retarded children compared to normal children. The results of this study indicate the need to pay attention to increasing the levels of physical activity in mentally retarded children.

2- The study of Dr. Adel Nassif Jabr et al. (2010):

Study Subject: "A Comparative Study in One of the Elements of Physical Abilities (Speed) among Healthy and Mentally Handicapped Children at the Age of (6-7) Years".

The research aims to identify the differences between healthy children and mentally handicapped children in speed ability, and the research problem is focused on studying the fact of the convergence of healthy and

mentally handicapped children in speed ability, and the researchers assumed that there were no statistically significant differences between the speed test of the two research groups, and the conclusion was identical to the research hypothesis, that there are no differences in speed ability between the children of the two groups, and recommended the need to focus on developing the speed ability of disabled children in order to prepare them to represent the country in local and international meetings.

3- Samira Mohamed Ibrahim's study (1997):

Study Topic: "Comparison between the Normal and the Mentally Retarded on the Effect of the Level of Intelligence and Training on the Acquisition of Some Athletics Skills".

Samira Mohamed Ibrahim conducted a study entitled: "A Comparison between the Normal and the Mentally Retarded on the Effect of the Level of Intelligence and Training on the Acquisition of Some Athletics Skills" This study aims to find out the effect of intelligence on the acquisition of some athletics skills and compare the effect of training on raising the level of motor skills in mentally handicapped and normal children and develop a proposed program to learn some athletics competitions for mentally handicapped children. From high, medium and low IQ and the group of mentally handicapped children with minor disabilities, all of whom are aged from 9 to 12 years old, and the experiment lasted 3 months and 3 weeks with 3 units per week for each group, and one of the most important findings of the study is that mentally handicapped children are no different from their normal peers in the possibility of training them to learn some athletics skills.

4- Karen Castagno's (2001) Study:

Study Topic: "Uniform Sports in Special Olympics Changes in Male Athletes in the Basketball Season"

This study aims to describe the variables that occur in mentally handicapped athletes with simple disabilities and normalcy during participation in standardized sports in Special Olympics, and Karen Castagno, 2001) has conducted a study entitled "Standardized Sports in Special Olympics: Changes in Male Athletes in the Basketball Season" This study aims to describe the variables that occur in mentally handicapped athletes with mild disabilities and normalcy during participation in standardized sports in Special Olympics, and the researcher has used the experimental method for one experimental group and reached The sample number was 58 individuals, including 24 mentally disabled individuals and 34 normal people in the age group from 12 to 15 years, and the implementation of this program took eight weeks at a rate of three units per week, and the most important results of the research were the presence of improvement rates in basketball skills and self-esteem for all sample members participating in the program.

• **Commenting on similar studies**:

- Previous studies have dealt with multiple aspects related to the mentally handicapped as well as those with Down syndrome, including (speed) in a study (Adel Nassif Jabr, 2010), athletics skills in a study (Samira Mohamed Ibrahim, 1997) and basketball skills in a study (Karen Castango, 2001) in which the same samples were studied, as well as a study (Ben Zeidan, 2015) that compared the motor abilities of the mentally handicapped and the normal and their study concluded that hearing impairment has a negative effect on motor abilities. Our study was largely a study (Mishaan bin Zabin Al-Harbi, 2000) in which he dealt with the same samples of our research, and his study concluded with results that were consistent with the results we obtained, where it was concluded that people with Down syndrome are better than healthy people in terms of flexibility as well as in terms of obesity, while healthy people outperform them in terms of physical fitness, while (Adel Nassif Jabr, 2010) hypothesized that there are no differences between the healthy and the mentally handicapped in the element of (speed) and the results were identical to the imposition of his research and (Samira Mohamed Ibrahim, 1997) which It concluded that the mentally handicapped are no different from their normal peers in the possibility of training them to learn some game skills, while Karen Kastango (2001) applied a program in acquiring some basketball skills for the mentally handicapped and healthy, and his study concluded that there were improvement rates in basketball skills and self-esteem for all the sample members participating in the program.

From all these studies, we conclude that the mentally handicapped have abilities that can be improved and developed, and sometimes their abilities are not much different from normal people, and the best example of this is the quality of flexibility in people with Down syndrome, and the most important thing recommended by previous research is the need to take care of the mentally disabled, provide them with the appropriate atmosphere and possibilities to practice motor activity, and develop special curricula that serve the group of society.

7. Methodological procedures for research:

7-1 Research Methodology:

Based on the subject of our study, which is the comparison between some motor abilities of the mentally retarded and the healthy, we followed the

descriptive-causal comparative approach to suit the nature of the research and its problem.

7-2 Research Population and Sample:

7.2.1 Research Community:

The study population represents the social group on which we want to conduct the applied study according to the chosen and appropriate methodology, and in this study, the research population consists of the 83 primary school students (Boujnan Ghalem-Boujlida) in the province of Tlemcen, as well as the students of the "Psychological Pedagogical Center for the Mentally Handicapped" in Remchi, Tlemcen province, who are 52 students with intellectual disabilities.

7.2.2 Research Sample:

An important thing to consider in scientific research is to select a sample that truly represents the indigenous community.

- Then, the age sample was selected from the community of origin of males only and aged between (9-12) years, and the research sample included (40) students distributed among the following groups:

 20 healthy pupils from the school (Boujnan Gallem Boujlida) Tlemcen (83), representing 24.09%.

 20 children with mental retardation with minor intellectual disability other than Down syndrome from the Psycho-Pedagogical Center for the Mentally Handicapped in Remchi (52), which represents 38.46%.

We deliberately selected them for children who do not have: chronic diseases, motor disabilities, multiple disabilities.

7.3 Research Areas:

• The Human Field:

Three samples were selected as follows: The first sample: 20 male students (9-12 years old) from the school (Boujnan Ghalem Boujlida) in Tlemcen and this is from a total of (83) in the school, while the second sample: 20 male children who are mentally retarded, mild disabled and do not have Down syndrome from the Pedagogical Psychiatric Center in Remchi in the province of Tlemcen with a total of (52) disabled.

• Spatial Domain:

The field study was conducted at the level of the school (Boujnan Ghalem Boujlida) in Tlemcen and the psycho-pedagogical center for the mentally handicapped in the province of Tlemcen.

• Time Zone:

The research was launched upon the approval of the supervisor of the research in October, we started collecting information related to the theoretical aspect of the research, and from February 2017 to April 2017, the applied work was started.

7-4 Adjustment of Random Variables:

It is the one that the researcher adjusts so that it does not affect the dependent variable. Thus, we will try to adjust the variables of:

Age: Children must be between one age (9-12) years old.

Gender: Male.

Experience: Normal children who are not practitioners on sports teams.

Test conditions: Same test conditions for all children.

7.5 Research Tools:

In order for researchers to be able to complete their work to the fullest, it is necessary to use the tools and means that help them, which means all the means and tools that the researcher will use in all stages of his research.

7.5-1 Tools and Means Used:

The success of the researcher in achieving his goals depends on several factors, the most important of which is the correct and appropriate selection of means in order to obtain data, and for this reason, the selection of the appropriate tools is a key factor in scientific research, and for this reason, we have relied on the following means and tools: a standard tape for length, cones, a wooden box with a height of 20 cm, a medical scale "decameter" and a record pen.

7.5.2 Tests Apply:

A test program was developed to measure some motor abilities as well as a test to measure body mass index (BMI), after developing a form that nominated a group of tests and presented them to a group of doctors who are acclaimed to be competent to choose the most appropriate test in each physical attribute. Some of the tests were nominated and some of them were canceled, and the tests that were selected were as follows:

7.5.2.1 Balance test: Dynamic balance test (walking on the balance beam).

Test Description: The tester stands at the edge of the balance beam (A) when the signal advances rapidly to the end of the balance beam (B). Then it goes back to edge (A) and then the direction of movement changes and it goes back to edge (B). Distance (15 m)

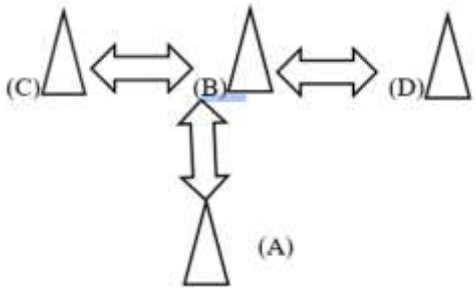
Measurement: According to the time taken in seconds.

7.5.2.2 Flexibility test: Bending the stump forward from standing (stump flexibility).

Test Description: Using a table with a numbered ruler (zero point on the edge of the table), the tester stands on top of a wooden box 20 cm high from standing without bending the knees, slowly bending the stump down trying to bend as much as possible.

Measurement: Calculates the distance from the ground to the nearest finger.

7.5.2.3 Compatibility Test: Running in Figure 8.



Four cones with a height of 30 cm, the player stands in the starting line, and at the signal, the player starts towards point B, touches the indicator, then heads towards (C), then D, then heads towards point (B), circles around it, and then heads towards the starting line (A)

Measurement: The time taken is calculated in seconds.

7.5.2.5 Calculation of BMI: Calculated by dividing the weight (kg) divided by height × length (m^2).

- Less than 18 kg = Slim

- From (18.5 - 24.9) = Normal.

-From (25 - 29.9) = weight gain.

- Over 30 = weight gain.

7.5.3 Statistical Methods of the Study:

- Arithmetic mean.

- Standard deviation.

- Pearson correlation coefficient.

- Student's test for independent samples.

7.5.4 Survey Study:

The purpose of the exploratory study is to:

• Identifying the sample from the study population and trying to get closer to it.

Purpose: To measure an individual's ability to change posture as they move forward rapidly.

Test Description: Standing high jumping 3 meters apart, a beam with a height of 1.20 m, the tester stands on the right side of one of the standers when he hears the start signal and runs in the shape of the number 8.

Measurement: The time in which the four cycles have been completed is recorded for the laboratory.

7.5.2.4 Agility Test: T-Shaped Running:

Test Description: The agility test is done by running in the shape of a T. In an obstacle-free area 10×10m

• Testing the effectiveness of research methods according to what suits the research sample and what serves the study.

• Knowing the extent to which the sample members responded to the tests applied to them or making changes according to the suitability of the sample members if necessary.

• View children's medical files.

• Contact the specialists and doctors at the center in order to inform them about the subject of the study.

• Taking a clear idea about practicing sports activity at the center.

Through our interview with the director of the center and the primary school and the officials in charge of them, we saw from them great cooperation and response to the topic of our study, and this serves and enriches our research more.

7.5.5 Scientific Foundations of the Tests Used:

7.5.5.1 Validity of the test:

The truthfulness of the measurement used in the research (no matter how different the method of measurement) means that it is able to measure what it was designed for or is to be measured, and Curtin defines honesty as an estimate of the correlation between the raw scores of the test and the completely established fact (Hassan Allawi, 1981). We asked each of them to give their opinion on the suitability of the tests for the

purpose for which they were prepared, and in light of the observations made by the judges, some tests were deleted and others were enriched until they came out in their final form to become as follows: four tests to measure motor abilities (balance, agility, flexibility and coordination) and one test to measure body mass index.

In the exploratory study, we also relied on a group of (10) students as well as a group of (10) mentally retarded people with Down syndrome, and based on the opinions of the judges and the results of the exploratory experiment, some tests were modified and others were omitted to make it more suitable for the sample.

7.5.5.2 Test Consistency:

Consistency is the accuracy, consistency and stability of a result if it is applied to a sample of individuals on two different occasions (Moghaddam, 1993). We used the retest method because it is one of the best and most effective methods in calculating the stability coefficient for tests in the sports field, and we conducted preliminary reconnaissance tests on two samples consisting of 10 mentally retarded people with Down syndrome (minor disability) from the Psycho-Pedagogical Center for the Mentally Handicapped Remchi - Tlemcen - as well as a sample of 10 students from the school (Boujnan Ghalem Boujlida) Tlemcen and then the first tests were conducted on the following day: 14/02/2017 All tests (agility and balance, compatibility and flexibility), and physical measurements were performed to calculate body mass index (BMI) and the tests were repeated on the same sample a week later, i.e. on 21/02/2017, in the same places, with the same equipment, under the same conditions, and in the same way as in the pre-tests to test the clarity of the tests, the devices that are prescribed for them, and the time taken to implement them. Their results were excluded from the results of the baseline study. After performing the tests, we processed the results statistically using a simple correlation coefficient known as the "Pearson correlation" at the significance level of 0.05. The statistical treatment confirmed the results recorded in the following table:

The first sample: healthy children.

Table (01) shows the stability coefficients and their significance for motor abilities tests and body measurements for healthy children.

Number	Variables	Stability Coefficient	Truth Coefficient	Tabular t	Significance Level at 0.05
1	Agility running in the shape of a T	0.89	0.94	0.60	Significant
2	Balance	0.87	0.93		Significant
3	Compatibility	0.86	0.92		Significant
4	Flexibility	0.93	0.96		Significant
5	Body mass index (BMI)	0.98	0.98		Significant

From Table (01), it is clear to us that all the values of Pearson's correlation coefficient are positive and high, as they are limited to (0.86 and 0.98), which is greater than the tabular t, estimated at 0.60 at the significance level of 0.05, and the degree of freedom (n-1) = 9. This indicates the stability of the tests used for healthy children.

This is what we observe when calculating the validity coefficient using the square root of the stability coefficient, where the values came from 0.92 to 0.98, which is greater than the tabular t (0.60), which indicates that the tests have high validity.

The second sample: Mentally disabled children with Down syndrome**.**

Table (02) shows the stability coefficients and their significance for motor abilities tests and physical measurements of mentally handicapped children with Down syndrome.

Number	Variables	Stability Coefficient	Truth Coefficient	Tabular t	Significance Level at 0.05
1	Agility running in the shape of a T	0.92	0.86	0.60	Significant
2	Balance	0.93	0.87		Significant
3	Compatibility	0.91	0.84		Significant
4	Flexibility	0.94	0.90		Significant
5	Body mass index (BMI)	0.99	0.99		Significant

From Table (02), it is clear to us that all the values of the correlation coefficient of Pearson are positive and high, as they are limited to (0.84 and 0.99), which is greater than the tabular t, estimated at 0.60 at the significance level of 0.05, and the degree of freedom (n-1) = 9. This indicates the stability of the tests used for mentally disabled children with Down syndrome.

This is what we observe when calculating the validity coefficient using the square root of the stability coefficient, where the values came from 0.91 to 0.98, which is greater than the tabular tq (0.60), which indicates that the tests have high validity.

7.5.5.3 Objectivity of the Tests:

She points out that the test is not affected by the subjective factors of the arbitrators in charge of that test (Marwan Abdel Majeed, 2003), and it is considered one of the factors of scientific foundations in the field of scientific research, and includes the non-interference of personal factors and bias in the setting of the tests or the paragraphs concerned in the research, through all of this it is clear to us that the tests in practice have the quality of honesty, consistency and objectivity, so they have the scientific foundations of the tests.

7.5.6 Basic Experience:

We applied tests of motor abilities (balance, agility, compatibility and flexibility) as well as measuring body mass index in two different places, namely Primary School (Boujnan Gallem-Bouglaida) in the province of Tlemcen, and the Psychological Pedagogical Center for the Mentally Handicapped in Ramchi in the province of Tlemcen, and we saw great help from the managers and managers, as well as all the conditions and aids were provided to conduct the tests in the best conditions, and the tests were completed according to the following steps:

1- Healthy people: The tests were applied to them at the primary school (Boujnan Ghalem - Boujlida) in the province of Tlemcen on 26/02/2017.

2- Mentally Handicapped People with Down Syndrome28/02/2017.

As for the statistical methods we used, they are:

- Arithmetic mean.

- Standard deviation.

- Pearson correlation coefficient.

- Student's test for independent samples.

8. Presentation, analysis and discussion of the results:

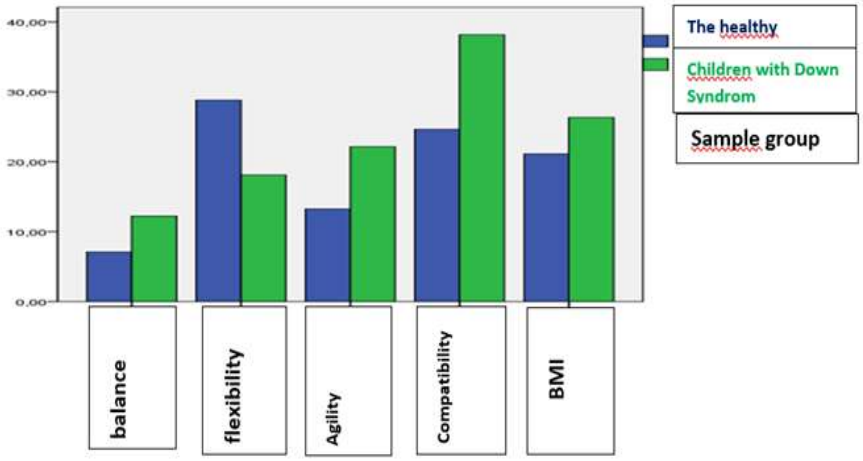
Comparison of motor abilities and BMI in healthy and mentally handicapped children with Down syndrome:

Table (03): A table that represents a comparison between the results of the tests of motor ability and body mass index for normal and mentally handicapped children with Down syndrome:

Motor Abilities and Body Mass Index	Healthy children		Mentally Handicapped People with Down Syndrome		Calculated t	Tabular t	Significance Level at 0.05
	Medium Arithmetic	Standard deviation	Medium Arithmetic	Standard deviation			
Balance (s)	7.08	0.82	12.21	1.95	10.79	1.68	Significant
Agility(s)	13.24	1.25	22.15	2.54	14.02	1.68	Significant
Elasticity (cm)	28.80	6.67	18.10	4.11	6.10	1.68	Significant
Compatibility(s)	24.62	1.77	38.16	1.46	26.30	1.68	Significant
Body Mass Index (kg/m²)	21.13	2.94	26.33	2.23	6.30	1.68	Significant
Significance Level: 0.05 and Freedom: 38							

Through Table (03), which shows us a comparison between the results of the tests of motor ability and body mass index for normal and mentally handicapped children with Down syndrome, it is clear to us that the value of (v) calculated for the tests of balance (10.79), agility (14.02), flexibility (6.10), compatibility (26.30) and body mass index (6.30) while (v) the tabular value of all tests is equal to 1.68 at the significance level of 0.05 and the degree of freedom 38, thus the value of (v) calculated for the tests of balance, agility, flexibility, compatibility and BMI is greater than the tabular (t) Thus, there are statistically significant differences in all tests.

Figure (01) shows the level of significance of the statistical differences in motor abilities and body mass index between healthy and mentally handicapped people with Down syndrome.



Through Figure (02), which represents the level of significance of the statistical differences of the arithmetic averages of motor abilities and body mass index between the healthy and mentally handicapped people with Down syndrome, it is clear to us that there are differences between the two samples in the tests of balance, agility, balance, flexibility and BMI measurement, all of which are clear differences, especially the compatibility test. In the test of balance, agility and compatibility, there was a difference in favor of healthy children with the best time, while flexibility and BMI were in favor of those with intellectual disabilities with Down syndrome.

We note from the previous results that there are significant differences between healthy people and those with Down syndrome in the compatibility of agility, followed by a lesser degree of balance, and this is in favor of healthy people, as we observed fear in those with Down syndrome in these tests, while in the flexibility tests, the results were in favor of those with Down syndrome, as (Mishaan bin Zain Al-Harbi, 2000) explained that this is because children with Down syndrome show looseness in the ligaments and muscles, which makes them more flexible than others. Body mass The result was in favor of people with Down syndrome.

9. Matching the results with hypotheses:

9.1 Discussion of the first hypothesis:

The first hypothesis stated that there are statistically significant differences in motor abilities between healthy children and mentally handicapped people with Down syndrome, and through Table (03) and shown in Figure (01), we find that there are significant differences in the tests of balance of agility, compatibility in favor of healthy people, which is explained by the hypothesis, while the results of flexibility came contrary to the hypothesis that was put forward, and this is because there are no statistically significant differences between the two samples. As for our result, it is largely consistent with a study (Maysa Latif Salman Al-Mohammadi) entitled: *The Effect of a Proposed Approach on the Development of Physical and Motor Abilities at Different Levels of Intelligence* The researcher used the experimental method on the research sample of 15 male students who were distributed to two experimental groups that were unequal in the level of intelligence. The first is from distinguished students and the second is from disabled students (mild mental disability), and the researcher assumed that there are no significant differences in the rate of development of physical abilities and also assumed that there are significant differences in the rate of development of motor abilities in favor of gifted students. It concluded that intelligence has an effect on the percentage of development of physical and motor abilities. These results converge with the findings of (Yasmina Halayli, 2002), whose study concluded that there are no physical characteristics that distinguish mild mental retardation from their normal peers in weight and height, but in general, the lower the IQ score is closer to (50), the more differences in the level of physical and motor development begin to appear, which is indicated by (Abdel Azim Shehata, 1991) and added that the cases of learning disabilities or cases of mild mental deficits are often devoid of these deviations.

Thus, we can see that the hypothesis has been partially realized.

9.2 Discussion of the second hypothesis:

- Through Table (03) and shown in Figure (01), which shows the existence of statistically significant differences between the two samples in the BMI test, it came in favor of those with Down syndrome, and thus the second hypothesis was achieved, which stated that there were statistically significant differences in the BMI test between healthy children and those with Down

syndrome. A study (Mash'an, 2000) whose subject was: * Levels of physical activity and health-related physical fitness in mentally retarded children compared to normal people* concluded that the percentage of obese children with Down syndrome exceeded 50% compared to normal children who did not exceed 25%, which is the same results that we found.

The second hypothesis was thus realized.

9.3 Discussion of the general hypothesis:

Returning to Table (03) and Figure (01) shown therein, it is clear to us that there are statistically significant differences in some motor abilities and body mass index between healthy children and those mentally handicapped with Down syndrome, and all the results were in favor of healthy people, except for the flexibility tests and body mass index, which was in favor of those with Down syndrome, and through the study conducted by (Nashwan, 2003) under the title of * The Effect of a Proposed Approach to Motor Education on the Development of Some Abilities. Physicality and sense of kinesicity are characteristics of those with Down syndrome* and the study was conducted with the same sample of our research, and it was concluded that the program has an effect on the elements of strength and flexibility, while it did not affect agility and balance, which are the same elements that we observed decreased in people with Down syndrome, and a study (Maysa Al-Mohammadi, 2006) that concluded that intelligence has an effect on the percentage of the development of physical and motor abilities to them, which supports our conclusion.

10. Conclusions:

After presenting, analyzing, and discussing our findings, we concluded that:

1- The results showed that there are clear differences in some motor abilities (balance, agility and coordination) in favor of healthy children at the expense of the mentally handicapped with Down syndrome.

2- The results showed that children with Down syndrome showed great potential in resilience compared to healthy people.

3- The results showed that children with Down syndrome outperformed their healthy counterparts in body mass index.

11. Recommendations:

Based on our findings, we recommend the following:

- Paying attention to health-related fitness programs provided to mentally retarded children with Down syndrome to improve the physical level of this group.

- Taking into account the differences between the disabled, the degree of disability, and the type of disability when conducting health-related physical fitness tests.

- Trying to treat excess weight in children with Down syndrome.

- Employing adapted physical sports activity at a young age, and this is due to the great response we have observed among the disabled to recreational and physical activities.

- Programming the practice of adapted physical activity for the mentally handicapped within the institutions for the mentally handicapped

- Preparing specialized physical education curricula for the mentally handicapped with Down syndrome, according to the available possibilities.

- Conducting future research for a similar comparison in females in order to enrich the study further.

Conclusion:

The category of the mentally handicapped with Down syndrome is a special category of all psychological, physical, mental, motor aspects, its specificities must be studied for its most important needs, and thus propose programs that can develop this category in all aspects and integrate it more into society. Down so we assumed that there were differences between the two samples in motor abilities and body mass index, for this we used the descriptive-causative comparative approach to suit the nature of the study, where we conducted a set of tests for motor abilities and measuring body mass index on two samples of 20 healthy children and 20 people with Down syndrome with mild disabilities, and after statistical treatment of the raw results, the results obtained showed that there are statistically significant differences between the studied samples in most of the motor abilities represented in agility. Flexibility, balance and compatibility as many previous studies and similar research have confirmed these findings. The results showed that there were differences in most motor abilities in favor of healthy people, while those with Down syndrome excelled in flexibility as well as body mass index. From this point of view, the results obtained are considered to be helpful factors in the preparation of special programs for the development of motor abilities of the mentally handicapped according to the type, degree and potential of the disability.

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