

The Use of Occupational Therapy in Oral Motor Disorders and Dysphoria in Children with Down Syndrome

WALID T. MANSOUR, Ph.D.¹; SALAHUDDIN ABDUL QADIR, Ph.D.²; MAHA H. ELGHARIB, Ph.D.³ and RANA E. AMER, M.Sc.⁴

The Department of Physiotherapy for Neurological Diseases and Surgery, Faculty of Physiotherapy, Benha University¹, Department of Mental Health, Faculty of Specific Education, Benha University², Department of Pediatrics Physiotherapy, Faculty of Physiotherapy, Benha University³ and Educational & Psychological Sciences, Faculty of Specific Education, Benha University⁴

Abstract

Background: Children with Down syndrome are in a big scale, but the studies on occupational therapy in oral motor disorders and dysphoria are very limited. There is a great dearth of proper statistical data to show the incidence of using of occupational therapy in oral motor disorders and dysphoria in children with Down syndrome.

Aim of Study: The aim of the current research is to use occupational therapy in oral motor disorders and apraxia of speech with Down syndrome.

Material and Methods: A case study was used, a form for evaluating verbal performance, a form for evaluating the fine motor performance of the speech organs, a form for evaluating sensory oral processing, a form for training activities for the speech organs, a form for training activities based on oral massage, a form for physiological evaluation of the of speech organs, an indicative program (prepared by the researchers) and the one-group experimental approach was used.

Results: The results indicated the success of the therapeutic program based on the use of occupational therapy in reducing apraxia of speech and oral motor disorders, and the success rates were variable, according to the pathological condition of each child.

Conclusion: Considering the use of occupational therapy in oral motor disorders and apraxia of speech with Down syndrome to specialists in this field, take actions such as: Providing various means that help carry out the activities in children with Down syndrome, providing training courses for parents to help them monitor the level of their children with Down syndrome to enjoy more opportunities for an independent life.

Key Words: Occupational therapy — Oral motor disorder — Apraxia of speech — Down syndrome.

Correspondence to: Dr. Walid T. Mansour, The Department of Physiotherapy for Neurological Diseases and Surgery, Faculty of Physiotherapy, Benha University

Introduction

DOWN syndrome (DS) is one of the most common chromosomal aberrations affecting many different organs, including the oral and facial regions. The aim of this research was to assess the prevalence of soft tissue lesions of the mouth and lips, with a special focus on the incidence of fissured tongue, fissured lips, and angular cheilitis, among individuals with DS [1].

Robyn Markel [2] in his 2015 study stated that individuals with Down syndrome are at risk of developing what is commonly known as oral and facial functional disorders, or OMD. OMD can affect feeding in its oral stage, oral resting positions, and oral placement skills for speech clarity. OMD problems require palpable therapies which include myofunctional therapy and oral placement therapy (OPT).

The production of speech of persons with DS is defective by several motor speech difficulties caused by an inability to centralize motor control and a failure to program, integrate, arrange, coordinate, and gradation of the fine motor movements necessary for correct and accurate articulation [3].

Kumin [4], 2000, state that oral motor skills refer to the strength and movement of facial muscles (such as the mouth, tongue, jaw, and lips). This includes many variables such as muscle strength, range of motion, speed, coordination, and dissociation (the ability to move oral structures, such as the tongue and lip and independently of each other).

The acquirement and maturity of oral motor movements are the basis of production skills and proper nutrition and speech.

Despite the pervasion of oral motor therapies, there is a great debate about the application and utilization of neuromuscular interventions, such as strengthening exercises to relieve verbal apraxia or dysphagia, and only limited experimental support is available to clarify the effectiveness of the validity of using neuromuscular interventions only, and there is a need to associate other interventions [5].

Infants, and children with Down syndrome have structural and functional differences in the mouth and throat areas that make it more difficult for them to make accurate movements. This affects feeding (whether it is breast or a bottle), drinking, chewing and solid foods swallowing, and speech. Some anatomical differences include a small and narrow upper jaw and a high palatal arch. Physiological differences that are seen include low muscle tone and weak oral-facial muscles. A combination of anatomical and physiological difficulties results in open mouth posture and tongue protrusion. Many children with Down syndrome have hypersensitive or hyposensitive reactions to touch around the mouth. Language acquisition requires sensory feedback from the oral area, therefore difficulty with sensory feedback affects language acquisition. Postural stabilization and respiratory support also affect oral motor skills [6].

Down syndrome (DS) is a disorder characterized by impairments in global cognitive abilities and adaptive function. Moreover, individuals with DS demonstrate pronounced speech and language deficits. However, little is known about the linguistic interaction with impaired adaptive functioning in DS [7].

Childhood Apraxia of Speech is a communication disorder characterized by deficits in planning and programming speech motor movements [8].

Apraxia of speech (AOS) is a motor speech disorder that can occur in the absence of aphasia or dysarthria [9].

"Oral motor disorder is defined as the inability to use the mouth effectively to speak, blow, chew, eat, or make certain sounds" [in

Participants:

5 children with Down syndrome, aged (three years to seven years). The IQ score ranges from 63 to 75 on the Stanford-Bennett Intelligence Scale.

The parents of each child filled out a case study form and the researcher evaluated the child according to behavioral theory techniques (imitation, modeling, observation). The researcher also evaluated verbal performance, motor performance, sensory oral processing, and physiological evaluation of the organs of speech based on observation to make an appropriate treatment plan.

During the sessions, a form was used containing training activities based on oral massage, and a training form for the speech organs, and an indicative program was developed for parents outside the session to enable them to deal with the child.

Material and Methods

Tools:

- Mirror.
- Implicit and acquaintance cards.
- Oral group.
- Tongue tip.
- Face massager device.
- Gold massager.
- Spirometer.
- 3 massager.
- Oral swap.
- Beanbag.
- Vibrator.
- Straw kit.
- Chewy.
- Recorder.

Exploratory experimentation of the pronunciation performance evaluation form:

The form was applied to an exploratory sample of (5) children with DOWNS SYNDROME, during the period September 2022 — March 2023, in order to determine the following.

Formative honesty:

The formative validity of the verbal performance evaluation form was calculated by calculating the internal consistency value between the score of each item and the total score of the form, by calculating the Pearson correlation coefficient between the item and the total score of the form. The values of the correlation coefficients ranged between (0.458-0.814), all of which are statistically significant at the level of Significance (0.05), and (0.01), which indicates the validity of the internal consistency of the form.

Therefore, the form was kept as it is, with (63) items, and thus the maximum score for it is (63) degrees.

Calculating the stability of the verbal performance evaluation form:

The reliability of the verbal performance evaluation form was calculated by calculating Cronbach's Alpha coefficient; Where Cronbach's Alpha coefficient α is a special case of Cooder and Richard

Sonn's law, it was proposed by Cronbach 1951, Novak and Lewis in 1976, and the alpha coefficient represents the average coefficients resulting from the partitioning of the tool into parts in different ways Saad Abdel Rahman, 2003, and used - here - SPSS program (V. 18) to calculate the value of Cronbach's alpha coefficient for the verbal performance evaluation form, and the value of Cronbach's Alpha coefficient was (0.786), which is a high value, so it is possible to trust and reassure to the results of the verbal performance evaluation form in the current research.

Exploratory experimentation of motor performance evaluation form:

The form was applied to an exploratory sample of 5 children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Formative honesty:

The formative validity of the form was calculated by calculating the value of:

- a- The internal consistency between the score of the item in each dimension of the form and the total score of the form.

The formative validity of the motor performance assessment form items was calculated by calculating the value of the internal consistency between the degree of each item and the total degree of the dimension to which the item belongs, by calculating Pearson's correlation coefficient between the degree of the item and the degree of the dimension to which the item belongs, for the three dimensions of the form, and the values of the correlation coefficients ranged between (0.471-0.793), and all of them are statistically significant at the level of significance (0.05), (0.01), which indicates the sincerity of the internal consistency for the motor performance evaluation form.

- b- The internal consistency between the score of each dimension of the form and the total score of the form.

Results

The formative validity of the motor performance evaluation form dimensions was calculated by calculating the value of internal consistency between the score of each dimension and the total score of the form, by calculating the Pearson correlation coefficient between the dimension score and the total score of the form, and the following table shows the coefficients of the validity of the form dimensions.

It is clear from the previous table that the values of the correlation coefficients are all significant at the level of significance (0.01), which achieves the formative validity of the dimensions of the motor performance evaluation form.

Table (1): Coefficients of validity dimensions of the motor performance evaluation form.

Evaluation of the motor of the jaw	Evaluation of the motor of the lips	Evaluation of the motor of the tongue	The performance dimension
0.809**	0.843**	0.786**	Correlation coefficient

** The value of the correlation coefficient is a function at the level of 0.01.

Therefore, the form was kept as it is, with 37 items, and therefore the maximum score is 37 degrees.

Calculating the stability of the verbal performance evaluation form:

The stability of the motor performance evaluation form was calculated by calculating Cronbach's Alpha coefficient, and here the SPSS program (V. 18) was used to calculate the value of Cronbach's alpha coefficient for the motor performance evaluation form by calculating the alpha value for each of the three dimensions of the form, and a coefficient Alpha was calculated for the whole form as shown in the following table:

Table (2): Cronbach's Alpha coefficients for motor performance assessment form.

The form as a whole	Evaluation of the motor of the jaw	Evaluation of the motor of the lips	Evaluation of the motor of the tongue	The performance dimension
0.922	0.727	0.839	0.824	Alpha coefficient

They are all high values, and accordingly, the results of the form in the current research can be trusted and reassured.

Exploratory experimental physiological evaluation of the speech organs:

The form was applied to an exploratory sample of (5) children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Calculating the reliability of the physiological evaluation form for the speech organs:

The stability of the Physiological Evaluation Form for the speech organs was calculated using a multi-observer method on the performance of each child, then the agreement between their estimates was calculated using Cooper's equation; Where the researcher, with two colleagues, evaluated the children of the exploratory sample, and the percentage of the observers' agreement on the children ranged between (85% - 100%), which is a high stability coefficient; This indicates that the Physiological Assessment Form for the speech organs is valid to use.

Exploratory experimental form for training activities for speech organs:

The form was applied to an exploratory sample of 5 children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Formative honesty:

The formative validity of the form was calculated by calculating the value of:

a- The internal consistency between the score of the item in each dimension of the form and the total score of the form:

The formative validity of the vocabulary of a form of training activities for speech organs was calculated by calculating the value of the internal consistency between the score of each word and the total score of the dimension to which the word belongs, by calculating Pearson's correlation coefficient between the degree of the word and the degree of the dimension to which the word belongs, for the eleven dimensions of the form, and it ranged The values of the correlation coefficients ranged between (0.506 - 0.859), and all of them are statistically significant at the level of significance (0.05), (0.01), which indicates the validity of the internal consistency of the vocabulary of the speech training activities form.

b- The internal consistency between the score of each dimension of the form and the total score of the form:

The formative validity of the motor performance evaluation form dimensions was calculated by calculating the value of internal consistency between the score of each dimension and the total score of the form, by calculating the Pearson correlation coefficient between the dimension score and the total score of the form, and the following table shows the coefficients of the validity of the form dimensions.

Table (3): Coefficients of validity dimensions of motor performance evaluation form.

Evaluation of the motor performance of the jaw	Evaluation of the motor performance of the lips	Evaluation of the motor performance of the tongue	The dimension
0.809**	0.843**	0.786**	Alpha coefficient

The value of the correlation coefficient is a function at the level of 0.01.

It is clear from the previous table that the values of the correlation coefficients are all significant at the level of significance (0.01), which achieves the formative validity of the dimensions of the motor performance evaluation form.

Therefore, the form was kept as it is, with 37 items, and therefore the maximum score is 37 degrees.

Calculating the stability of the verbal performance evaluation form:

The stability of the motor performance evaluation form was calculated by calculating Cronbach's Alpha coefficient, and here SPSS program (V. 18) was used to calculate the value of Cronbach's alpha coefficient for the motor performance evaluation form by calculating the alpha value for each of the three dimensions of the form, and a coefficient was calculated Alpha for the form as a whole as shown in the following table.

They are all high values, and accordingly, the results of the form in the current research can be trusted and reassured.

Exploratory experimental physiological evaluation of the speech organs:

The form was applied to an exploratory sample of (5) children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Calculating the reliability of the physiological evaluation form for the speech organs:

The stability of the Physiological Evaluation Form for the speech organs was calculated using a multi-observer method on the performance of each child, then the agreement between their estimates was calculated using Cooper's equation; Where the researcher, with two colleagues, evaluated the children of the exploratory sample, and the percentage of the observers' agreement on the children ranged between (85% - 100%), which is a high stability coefficient; This indicates that the Physiological Assessment Form for the speech organs is valid for use.

Exploratory experimental form for training activities for speech organs:

The form was applied to an exploratory sample of 5 children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Formative honesty:

The formative validity of the form was calculated by calculating the value of:

a- The internal consistency between the score of the item in each dimension of the form and the total score of the form:

The formative validity of the vocabulary of a form of training activities for speech organs was calculated by calculating the value of the internal consistency between the score of each word and the total score of the dimension to which the word belongs, by calculating Pearson's correlation coefficient between the degree of the word and the degree of the dimension to which the word belongs, for the eleven dimensions of the form, and it ranged The values of the correlation coefficients ranged be-

tween (0.506 - 0.859), and all of them are statistically significant at the level of significance (0.05), (0.01), which indicates the validity of the internal consistency of the vocabulary of the speech training activities form.

b- The internal consistency between the score of each dimension of the form and the total score of the form:

The formative validity of the dimensions of the form of training activities for speech organs was calculated by calculating the internal consistency value between the score of each dimension and the total score of the form, by calculating the Pearson correlation coefficient between the degree of the dimension and the total score of the form, and the following table shows the coefficients of the validity of the dimensions of the form:

Table (4): Coefficients of validity dimensions of a form of training activities for speech organs.

Saliva exercises	Jaw exercises	Lip exercises	Tongue training	The dimension
0.827**	0.742**	0.891**	0.902**	Correlation coefficient
Chewing exercises	Breathing exercises	Uvula (blowing) exercises	The mechanism of training the mother to clear toys	The dimension
0.621**	0.791**	0.835**	0.934**	Correlation coefficient
	Suction drills	Neck exercises	Swallowing exercises	The dimension
	0.635**	0.831**	0.641**	Correlation coefficient

** The value of the correlation coefficient is a function at the level of 0.01.

It is clear from the previous table that the values of the correlation coefficients are all significant at the level of significance (0.01), which achieves the formative validity of the dimensions of the form of training activities for speech organs.

Therefore, the form was kept as it is, with 66 items, and therefore the maximum score is 66.

Calculating the stability of the form of training activities for speech organs:

The stability of the training activities form for speech organs was calculated by calculating Cron-

bach's Alpha coefficient, and here the SPSS program (V. 18) was used to calculate the value of Cronbach's alpha coefficient for the form of training activities speech organs by calculating the Alpha value for each of the eleven dimensions that make up the form as The Alpha coefficient was calculated for the form as a whole as shown in the following table:

They are all high values, and accordingly, the results of the form in the current research can be trusted and reassured.

Table (5): Cronbach's alpha coefficients for a form of training activities for speech organs.

Saliva exercises	Jaw exercises	Lip exercises	Tongue training	The dimension
0.763	0.799	0.804	0.821	Cronbach's alpha coefficient
Chewing exercises	Breathing exercises	Uvula (blowing) exercises	The mechanism of training the mother to clear toys	The dimension
0.746	0.805	0.714	0.709	Cronbach's alpha coefficient
The form as a whole	Suction drills	Neck exercises	Swallowing exercises	The dimension
0.924	1.762	0.738	0.721	Cronbach's alpha coefficient

Exploratory testing of sensory oral processing evaluation form:

The form was applied to an exploratory sample of 5 children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Formative honesty:

The formative validity of the sensory oral processing evaluation form was calculated by calculating the internal consistency value between the score of each item and the total score of the form, by calculating Pearson's correlation coefficient between

the item and the total score of the form, and the values of the correlation coefficients ranged between (0.386-0.732), all of which are statistically significant at the significance level (0.05), (0.01), which indicates the validity of the internal consistency of the form.

Therefore, the form was kept as it is with 9 items, and therefore the maximum score is 9 degrees.

Calculating the reliability of the sensory oral processing evaluation form:

The reliability of the Sensory Oral Processing Assessment form was calculated by calculating Cronbach's Alpha coefficient; Here, the SPSS program (V. 18) was used to calculate the value of Cronbach's Alpha coefficient for the sensory oral processing evaluation form.

Exploratory experimentation of a training form based on an oral massage:

The form was applied to an exploratory sample of (5) children with Downs Syndrome, during the period September 2022 — March 2023, in order to determine the following.

Calculation of stability of a training form based on oral massage:

The stability of a training form based on oral massage was calculated using a multi-observer

method on the performance of each child, and then the agreement between their estimates was calculated using Cooper's equation; Where the researcher, with two colleagues, evaluated the children of the exploratory sample, and the percentage of the observers' agreement on the children ranged between (85% - 100%), which is a high stability coefficient; This indicates that the oral massage-based training form is usable.

Presentation, analysis, discussion, and interpretation of the results:

Presentation and discussion of the results of the first hypothesis:

To test the validity of the first hypothesis of the research, which states that "there are statistically significant differences between the mean scores of the research group members in the pre and post measurements on the verbal performance assessment form, in favor of the post application," the Wilcoxon test was calculated for the signs of the score ranks associated between the pre and post applications of the scores. The members of the research group in the pre and post measurements on the speech performance assessment form, and to measure the size of the effect of the occupational therapy program on speech performance; The effect size or strength of the relationship was calculated, and the following table shows that.

Table (6).

Ranks (Pre — Post)	N	Mean Rank	Sum of Ranks	Z-Value	Sig.	rprb	Level
Negative (*)	0	0.00	0.00	2.023	0.05	1	Very High
Positive (**)	5	3.00	15.00				
Ties (***)	0						

(*) Negative: Pre > Post. (**)Positive Pre < Post. (***) Ties: Pre = Post.

The results of the Wilcoxon Signed Ranks Test when studying the difference between the mean scores of the research group members in the pre and post measurements on the speech performance assessment form.

It is clear from the previous table that:

There is a statistically significant difference at the level of significance (a .. 0.05) between the mean scores of the research group members in the pre and post measurements on the speech performance evaluation form, in favor of the post application, that is, the average scores of the research group members on the speech performance evaluation form in The post-application is statistically significantly higher than its counterparts in the pre-measurement.

The values of the binary correlation coefficient for the ranks of the related pairs (rprb) indicate: There

is a very strong effect of the occupational therapy program in improving the speech performance of the research group individuals.

The following table shows the means and standard deviations of the scores of the research group in the pre and post measurements on the speech performance assessment form:

Table (7).

Test	Mean	Std. Deviation
Pre	16.20	1.92
Post	34.60	8.38

The means and standard deviations of the scores of the research group members in the pre and post measurements on the speech performance evaluation form (n=5).

The following chart shows the differences between the mean scores of the research group in the pre and post measurements on the speech performance assessment form:

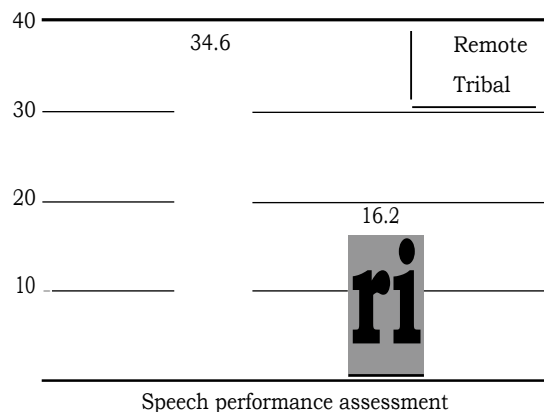


Fig. (1)

Presentation and discussion of the results of the second hypothesis:

To test the validity of the second hypothesis of the research, which states that "there are statistical-

ly significant differences between the mean scores of the research group members in the pre and post measurements on the oral motor disorder assessment battery (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training speech organs) In favor of the post-application, the Wilcoxon test was calculated for the signs of the score rank associated between the pre and post applications of scores The members of the research group in the pre and post measurements on the oral motor disorders assessment battery (a form for evaluating motor performance, an evaluation form for sensory oral processing, a training form for speech organs), and to measure the size of the effect of the occupational therapy program on oral motor disorders; The effect size or strength of the relationship was calculated, and the following table shows that:

The results of the Wilcoxon Signed Ranks Test when studying the difference between the mean scores of the members of the research group in the pre and post measurements on the oral motor disorder assessment battery (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training speech organs).

Table (8).

Test	Ranks (Pre — Post)	N	Mean Rank	Sum of Ranks	Z-Value	Sig.	rprb	Level
Motor performance evaluation	Negative (*)	0	0.00	0.00	2.023	0.05	1	Very High
	Positive(**)	5	3.00	15.00				
	Ties (***)	0						
Sensory oral processing assessment	Negative	0	0.00	0.00	2.070	0.05	1	Very High
	Positive	5	3.00	15.00				
	Ties	0						
Pronunciation and speech training	Negative	0	0.00	0.00	2.023	0.05	1	Very High
	Positive	5	3.00	15.00				
	Ties	0						
Oral motor disorders assessment battery as a whole	Negative	0	0.00	0.00	2.023	0.05	1	Very High
	Positive	5	3.00	15.00				
	Ties	0						

It is clear from the previous table that:

- There is a statistically significant difference at the level of significance ($\alpha = 0.01$) between the mean scores of the research group in the pre and post measurements on the oral motor disorder assessment battery (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training speech organs) as a whole and in each form separately, in favor of the post application, that is, the mean scores of the members of the research group on the Oral Motor Disorders Assessment Battery (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training speech organs) as a whole and in each

form separately in The post-application is statistically significantly higher than its counterparts in the pre-measurement.

- The values of the binary correlation coefficient for the ranks of the related pairs (rprb) indicate: There is a very strong effect of the occupational therapy program in improving oral motor disorders (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training the speech organs) as a whole and in each form separately individuals in the research group.

The following table shows the means and standard deviations of the scores of the members of the

research group in the pre and post measurements on the oral motor disorder assessment battery (a form for evaluating motor performance, an evaluation form for sensory oral processing, a form for training speech organs).

The means and standard deviations of the scores of the research group members in the pre and post measurements on the oral motor strikes assessment battery (a form for evaluating motor performance, a

form for evaluating sensory oral processing, a form for training speech organs) (n=5).

The following chart shows the differences between the mean scores of the research group in the pre and post measurements on the oral motor disorder assessment battery (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training speech organs).

Table (9).

Test	Motor performance evaluation	Sensory oral processing assessment	Pronunciation and speech training	Oral motor disorders assessment battery as a whole
<i>Pre:</i>				
Mean	9.80	3.40	11.40	24.60
Std. Deviation	2.59	0.55	2.61	3.58
<i>Post:</i>				
Mean	25.80	8.00	41.40	75.20
Std. Deviation	3.27	0.71	6.80	8.38

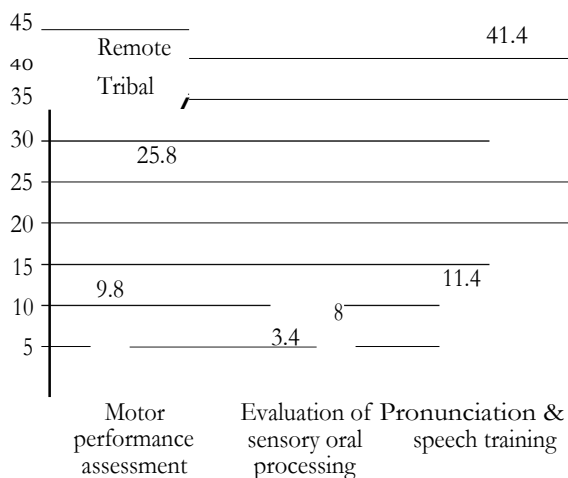


Fig. (2)

Discussion

When a child with Down syndrome is born, the specialists seek to know the factors that led to this, and then they use various programs to help them, Hence the current research examined whether occupational therapy in oral motor disorders and apraxia of speech has an effective role in helping children with Down syndrome. To our knowledge, this is the first research conducted to evaluate these things among DS subjects. In this research, eight forms were identified among the subjects studied. And the value of Cronbach's Alpha coefficient was (0.786), in the results of the verbal performance evaluation form in the current research, and the value of Cronbach's Alpha coefficient was (0.824), in the results of the motor performance evaluation form in the current research and it agreed with Clin, [1] study as it dealt with the obstacle of the Lips in children

with Down syndrome. This current research dealt with the organs of speech for children with Down syndrome and the percentage of the observers' agreement on the children ranged between (85% - 100%), and it agreed with C. Hamilton, [3] study as it dealt with the pronunciation problems in children with Down syndrome.

Hypothesis one revealed that there was a significantly strong correlation where the values of the binary correlation coefficient for the ranks of related pairs (rprb) indicate: There is a very strong effect of the occupational therapy program in improving the speech performance of children with Down syndrome. and this research agreed with Kari-Anne et al., [11] study as it reveals that the findings show that children with Down syndrome have broad language deficits. Also, it agreed with the Kroeger, [12] study as it dealt with a program designed to increase language production and verbal behavior, on the other hand, it differs from this research that the sample dealt with one child but this research dealt with 5 children. It agreed also with the Rice, [13] and Rice and Warren, [14] study as it dealt with Language disorders in children with Down syndrome and they argue that there is a current need for careful consideration of the ways in which language disorders are manifest across clinical conditions. Also, it agreed with the Kumin, [6] study as it dealt with childhood verbal apraxia and the study results indicated that children with Down syndrome who have clinical symptoms of childhood verbal apraxia have more difficulty with speech intelligibility, A diagnosis of difficulty with oral motor skills is more frequently given than a diagnosis of apraxia and According to study results, it is rare (2%) for a diagnosis of childhood verbal apraxia to be made without a diagnosis of difficulty with oral motor skills.

Hypothesis two revealed that the values of the binary correlation coefficient for the ranks of the related pairs (rprb) indicate: There is a very strong effect of the occupational therapy program in improving oral motor disorders (a form for evaluating motor performance, a form for evaluating sensory oral processing, a form for training the speech organs) as a whole and in each form separately. Individuals in the research group. This research agreed with Ongun et al., [15] study as it reveals that children with Down syndrome have difficulty in clarifying speech due to structural defects in the mouth and problems with the mouth-tongue muscles. This research agreed with Ongun et al., [15] study as they used oral motor assessment and the result was similar as it has been shown that articulation (pronunciation) problems are less children who receive early treatment, therapy and education services, but they differ in the sample.

Conclusion:

There is a still debate about the methods used to help and treat children with Down syndrome, so children with a diagnosis of Down syndrome often may require a team of specialists and a variety of therapy methods where the information presented in this article aims to use occupational therapy in oral motor disorders and dysphoria in children with Down syndrome. Through what the study showed and its findings, it recommends Providing various means that help carry out the activities in children with Down syndrome. Also, it is possible Paying attention to providing training courses for parents to help them monitor the level of their children with Down syndrome. By this way, it is hoped that people with Down's syndrome will be able to communicate more intelligibly and consequently enjoy more opportunities for an independent life.

References

- 1- CLINT J., GAZALS G., HASHEM M., GHADAH A., TARAKJI B. and AL-MAWARI S.: Lip and oral lesions in children with Down syndrome. A controlled study. *Journal of Clinical and Experimental Dentistry*, 7 (2): 284-288, 2015.
- 2- MERKEL R.: *Orofacial Myofunctional Disorders In Individuals With A Down Syndrome*. talk tools, 2015.
- 3- HAMILTON C.: "Investigation of the articulatory patterns of young adults with Down's syndrome using electropalatography," *Down Syndrome Research and Practice*, Vol. 1, No. 1, pp. 15-28, 1993.
- 4- KUMIN L.: *Resource Guide to Oral Motor Skill Difficulties in Children with Down Syndrome*, Loyola University Maryland, Baltimore, Md, USA, 2015, <http://ndscenter.org/worpsite/wp-content/uploads/2012/03/OralMotor.pdf>.
- 5- CLARK H.M.: Neuromuscular treatments for speech and swallowing: A tutorial. *American Journal of Speech-Language Pathology*. (Nov 2003) 12 (4): 400-415. Published by the American Speech-Language-Hearing Association (ISSN: 1058-0360), 2003.
- 6- *Resource guide to oral motor skill difficulties in children with down syndrome* Libby Kumin Loyal College Of Meriland, 2015.
- 7- *Speech impairments explain unique variance in adaptive behavior skills in young people with Down syndrome* Catherine Stephan, Liv Clasen, Elizabeth Adeyemi, Nancy Raitano Lee *American Journal of Speech-Language Pathology*, 30 (1): 253-259, 2021.
- 8- HOLLY DUCHOW, ALANNA LINDSAY, KAYLA ROTH, SYLVIA SCHELL, DELANIE ALLEN and CAROL A. BOLIEK: The co-occurrence of possible developmental coordination disorder and suspected childhood apraxia of speech. *Canadian Journal of Speech-Language Pathology and Audiology*, 93 (2): 81-93, 2019.
- 9- *Apraxia of speech: An overview* Jennifer Ogar, Hilary Slama, Nina Dronkers, Serena Amici, Maria Luisa Gorno-Tempini *Maria Luisa Neurocase*, 11 (6): 427-432, 2005.
- 10- SARA ROHDE: *What is an Oral Motor Disorder?* Alma health, courage kenny rehabilitation institute. USA. <https://accountallinahealth.org/service/lines/815>. 2015.
- 11- KARL A., SOLVEIG A., CHARLES H. and MONICA M.: Language and verbal short-term memory skills in children with Down syndrome: a meta-analytic review, 32 (6): 2225-34, 2011. doi: 10.1016/j.ridd.2011.05.014.
- 12- KROEGER K. and NELSON W.: A language programme to increase the verbal production of a child dually diagnosed with Down syndrome and autism, 50 (2): 101-8, 2006. doi: 10.1111/j.1365-2788.2005.00734.x
- 13- RICE L. and WARREN F.: Language symptoms of developmental language disorders: An overview of autism, Down syndrome, fragile X, specific language impairment, and Williams syndrome, 26 (1), 2005. DOI:10.1017/S0142716405050034 .
- 14- RICE L. and WARREN F.: *Developmental Language Disorders: From Phenotypes to Etiologies*, 488. ISBN: 1410610888,9781410610881,2004.
- 15- ONGUN M., GUMUS N., UNSAL S. and YILDIRIM A.: Research on articulation problems of Turkish children who have Down syndrome at age 3 to 12, 16 (2), 2017. DOI:10.1515/ijdh-2016-0017.

استخدام العلاج الوظيفي فى اضطرابات الفم الحركية وتعذر الاداء النطقى لدى أطفال ذوى متلازمة داون

هدفت الدراسة الحالية إلى استخدام العلاج الوظيفي في اضطرابات الفم الحركية وتعذر الأداء النطقى مع (Down syndrome) وفى ضوء ذلك قامت الباحثة باختيار عينة قوامها (٥) اطفال عمرهم يتراوح بين (٣ إلى ٧ سنوات) والذين يحصلون على التأهيل داخل مستشفى بدر المركزية و المدرسة الفكرية بالبحيرة وتم استخدام دراسة حالة (اعداد الباحثة)، استمارة لتقييم الأداء النطقى (اعداد الباحثة)، استمارة لتقييم الاداء الحركى الدقيقة لأعضاء النطق (اعداد الباحثة)، استمارة تقييم للمعالجة الفموية الحسية (اعداد الباحثة)، استمارة أنشطة تدريب لأعضاء النطق والكلام (اعداد الباحثة)، استمارة أنشطة تدريبية قائم على oral massage (اعداد الباحثة)، استمارة لتقييم Physiological لأعضاء النطق (اعداد الباحثة)، برنامج ارشادى (اعداد الباحثة) وتم استخدام المنهج التجريبي ذو المجموعة الواحدة.

واسفرت النتائج عن نجاح البرنامج العلاجى القائم على استخدام العلاج الوظيفي فى تقليل تعذر الأداء النطقى واضطرابات الفم الحركية وقد كانت نسب النجاح متفاوتة وذلك حسب الحالة المرضية لكل طفل.