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The effect of a proposed adaptive motor program according to some kinematic variables on the development of some capabilities of neuromuscular compatibility for deaf and dumb children 12-15 years

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Abstract:

Our study aimed to reveal the effect of a proposed adaptive motor program according to some kinematic variables in developing some capabilities of neuromuscular compatibility for deaf and dumb children, and for this purpose we used the experimental approach with a single group design, and our sample consisted of 9 children who were chosen intentionally, and we used video photography To extract the kinematic variables, In our study, we found an effective effect of the proposed adapted motor program on all the variables under study for deaf and dumb children.

KEY WORDS: Suggested Conditioning program; Some Neuromuscular Compatibility Capabilities; Deaf And Dumb Children.

الملخص:

هدفت دراستنا إلى الكشف عن تأثير برنامج حركي مكيف مقترح وفقًا لبعض المتغيرات الحركية في تطوير بعض قدرات التوافق العصبي العضلي للأطفال الصم والبكم، وقد استخدمنا النهج التجريبي بتصميم مجموعة واحدة، وتكونت العينة من بين 9 أطفال، واستخدمنا التصوير بالفيديو لاستخراج المتغيرات الحركية. وقد أثير للبرنامج الحركي المقترح على كل المتغيرات قيد الدراسة.

الكلمات المفتاحية: برنامج حركي مكيف مقترح؛ بعض قدرات التوافق العصبي العضلي؛ أطفال الصم والبكم.

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1-Introduction

Practicing physical activity, whether for the purpose of enjoying free time or for the purpose of training to reach higher levels, is considered a safe path towards achieving health in general (Sheikh Safi and others., 2018, p. 137), as it develops the body's ability to adapt to high effort as well as raise rates of coordination between the nerve system and the muscular system. (Belaidoni Mustafa and others, 2019, p. 303) Physical activity in all its forms is the kinetic activity that a person engages in as a positive practice, individually or collectively (Jabouri Ben Omar, 2014, p. 102), and the term physical activity includes all kinds of activities that a person performs. (Samir bin Sayeh, 2019, p. 207)

Compatibility is considered as one of the elements of physical fitness and one of its multiple components, which when acquired by the athlete determines the kinetic experience that is the summation and fusion of the various elements and components of physical fitness (Sari Ahmed Hamdan, Norma Abdel-Razzaq, 2011). Compatibility is defined as the ability to coordinate the movements of different parts of the body (Kamal Darwish and others, 1999, p). Compatibility between multiple parts is defined as the ability to harmonize the movements of a group of body parts when they work together simultaneously (Essam Abdel-Khaleq, 1999, p. 66).

The construction of physical training programs needs in-depth and accurate study and research that takes care of every detail and all the molecules affecting the human locomotor system (Ben Shohra Muhammad and Ziyush Ahmed, 2019, p. 163), and Mufti Ibrahim 1997 says in this regard, that there are many methods of sports training that aim to develop the level of physical and skill performance in order to achieve advanced positions in various activities (Khaled bin Salem, 2018, p. 242), and the kinetic program is the executive steps of the planning process for a plan that was designed in advance, (Osama Kamel Ratib, 1982), and we do not exaggerate if we say In the absence of the program, the effectiveness and purpose of the plan will be absent, and therefore planning for it will be absent as well (Idris Khoja Muhammad Reda, 2010, p. 131). In our program we used kinetic analyzation, which is one of the means that digs into the secrets of performance and aims at studying the movement parts and its components, in order to reach a better technique, for it is one of the means of accurate knowledge of the path

with the aim of improvement and development (Gliese Mohammed and others, 2019, p. 305). Louay Al-Sumaida'i 1987 adds that biokinematic analysis of cinematic films contributes to the knowledge of the large number of kinetic sections of the human body (Boshiba Mustafa, 2019, p. 2 30).

The field of hearing impairment has received great attention lately, and this interest is due to the society's conviction that the hearing impaired, like other members of society, have the right to a dignified human life (Masouda bin Al-Sayeh, 2018, p. 155). Hamdi Ahmed 2013 indicated that the hearing impaired are no different from other normal people in mental and cognitive abilities (Walid Khaled, 2020, pg. 276), and (Lloyd) believes that a hearing disability means a deviation in hearing that limits the ability to communicate verbally (Tariq Abdel Rahman Al-Esawy, 2010, pg. 9), and the hearing impaired is a member of the community, He has a place in society and family in which he lives, since he has a lack of hearing ability compared to ordinary individuals. (Bin Zidan Hussein, 2011, pg. 2)

The importance of our study lies in the fact that deaf and dumb children are a category of people with special needs who are marginalized and their life requirements are not taken into account. This is why the neuromuscular compatibility of deaf and dumb children has been addressed and working to improve the movements important to perform the various skills of this group of children. Many studies have dealt with this topic, which It depends mainly on the development of neuromuscular compatibility, including a study by: Farhat Jabbar Saadallah and Nasir Kurdi Nabah 2015. This study came to reveal the effect of special exercises in developing motor compatibility and learning the skills of handling football for halls. The research sample consisted of 20 female students, The researchers used the experimental method, and at the end of the study, the researchers concluded that special exercises have a positive effect in developing motor coordination and learning the skill of handling, as well as the appropriateness of the special exercises used for the research sample contributed to their application correctly, and we also mention the study of Nahida Abdel Zaid Al-Dulaimi 2011, the study came to reveal On the effect of motor coordination exercises in developing the accuracy of some volleyball skills and their relationship to focusing attention. The research sample consisted of 40 female students of the second stage, and the researcher concluded that kinetic compatibility has a positive effect in developing the accuracy of some volleyball

skills, and kinetic compatibility exercises have a positive effect in developing volleyball skills, and also the study of Shaima Hassoun Mashkour 2012, the study aimed to Detection of harmonic exercises and their impact on the performance of some motor skills on the balance beam device. The researcher used the experimental method, the research sample consisted of 40 female students, and the researcher concluded that there is a clear development for the experimental group in the skill tests.

What is the effect of the proposed adaptive motor program according to some kinematic variables in developing some abilities of neuromuscular coordination among deaf-mute children 12-15 years old?

2- General objective of the study:

In this the objectives of our study were to answer the following questions:

What is the effect of the proposed adaptive motor program according to some kinematic variables in developing some abilities of neuromuscular coordination among deaf-mute children 12-15 years old?

Sub-questions:

Are there statistically significant differences between the pre-test and the post-test in favor of the post-test in developing the abilities of neuromuscular coordination between the eye and the hand according to some kinematic variables among deaf-mute children (12-15) years due to the proposed adapted motor program?

Are there statistically significant differences between the pre-test and the post-test in favor of the post-test in developing the abilities of neuromuscular compatibility between the eye and the man according to some kinematic variables among deaf-mute children (12-15) years due to the proposed adapted motor program?

Are there statistically significant differences between the pre-test and the post-test in favor of the post-test in developing the abilities of general neuromuscular compatibility according to some kinematic variables among deaf-mute children (12-15) years due to the proposed adapted motor program?

The importance of our study lies in the fact that deaf and dumb children are a category of people with special needs who are marginalized and their life requirements are not taken into account.

This is why the neuromuscular compatibility of deaf and dumb children has been addressed and working to improve the movements important to perform the various skills of this group of children. Many studies have dealt with this topic, which It depends mainly on the development of neuromuscular compatibility,

4-1 Fields of study:

The human field: It included deaf and dumb children at the School for the Visually Impaired in Djelfa

Time frame: the period from 1/2/2019 to 1/8/2019

Spatial domain: School for visually impaired children in Djelfa, Ben Jarma district

Research Methodology:

From the foregoing and looking at the problem of the study, it was found that the use of the experimental method using a single-group design is the most appropriate.

The research sample:

The research sample consisted of 09 children aged 12-15 years who are deaf and mute children who are in the School for Visually Impaired Children in Djelfa.

Table No. (01): shows the equivalence and homogeneity of the research sample in the variables of height, weight and age

SPs Variables	Measuring Unit	SMA	Standard Deviation	Mediator	Skew Modulus
Height	CM	1.613	0.065	1.620	-0.214
Weight	KG	60.56	2.963	60.00	0.151
Age	Year	13.44	1.014	14.00	0.270

The means used in the research:

Arabic and foreign sources and references, the playground in the School for the Blind, handballs, soccer balls, cones and chalk.

- **The scientific foundations of the tool**:

Throwing and receiving balls test (Mohammed Sobhi Hassanein, 2004), the purpose of the test is to measure the coordination between the eyes and the arms.

The Numbered Circles Test: (Mohammed Sobhi Hassanein, 2004) Draw eight circles on the ground, each with a diameter of sixty (60)

centimeters, and number the circles. The test aims to measure the neuromuscular compatibility between the eye and the man.

Running test around cones: (Mufti Ibrahim Hammad, 1997, p. 130), the test aims to measure the general (total) neuromuscular compatibility.

The kinematic variables used in the research: We used the following variables:

Shoulder joint angle, elbow joint angle, wrist joint angle, maximum flexion of the knee joint angle, torso inclination angle, ball flight speed immediately after throwing, maximum height of the center of gravity of the body, total speed of movement, acceleration phase

Table No. (02) Shows the neuromuscular alignment capabilities selected from the references and according to the opinions of experts and specialists.

Abilities	**Percentage**
Neuromuscular coordination capabilities between the eye and the hand	100%
The capabilities of neuromuscular coordination between the eye and the leg	100%
General neuromuscular coordination capabilities	100%

Psychometric properties of the tests used:

1.7. Validity and reliability of the test: Validity is intended to measure the test or the performance of what it was set to measure, (Fatima Awad Saber and Mervat Ali Khafajah, 2002), and the fixed test means "that which gives close results or the same results if applied more than once in similar circumstances." (Nader Fahmy Al-Zayoud and Hisham Amer Alyan, 2005)

Table No. (03): shows the reliability coefficient and the validity coefficient of the research tests

Test	Stability Coefficient	Honesty Coefficient
Ball throwing and receiving test	0.624	0.789
Numbered circuit test	0.993	0.996
Running test around cones	0.944	0.971

Table No. (04): shows the equivalence of the research sample in the neuromuscular compatibility tests under study

Variables	Test	Measuring Unit	SMA	Standard Deviation	Mediator	Skew Modulus
Neuromuscular coordination between the eye and the hand	Ball throwing and receiving test	Degree	10.00	1.58	10.00	0.00
Neuromuscular compatibility between the eye and the leg	Numbered circuit test	Second	6.13	0.14	6.17	0.99-
General neuromuscular compatibility	Running test around cones	Second	11.46	1.02	11.50	0.91

From the results of the previous table, we find that the value of the torsion coefficient are all values between +1 and -1, and from it these values prove the equivalence of the research sample in the neuromuscular compatibility tests.

Table No. (05): shows the equivalence of the research sample in the values of some kinematic variables selected in the research

Variables	Measuring Unit	SMA	Standard Deviation	Mediator	Skew Modulus
Shoulder angle at the time of the ball exit	Degree	134.80	5.63	136	0.25-
Elbow angle at the moment the ball comes out	Degree	122.20	4.49	120	0.60
The wrist angle at the moment the ball comes out	Degree	167.40	5.27	168	0.32-
Max bending	Degree	125.80	4.49	128	0.91

knee angle					
Maximum height of the center of gravity	Degree	111.60	4.39	110	0.77
Speed	M/h	0.71	0.08	0.70	0.47

From the results of the previous table, we find that the value of the skew coefficient are all values confined between +1 and -1, and from it these values prove the equivalence of the research sample in the variables under study.

4-2 Presentation and Analysis of Results:

In this

Table No. (06): shows the arithmetic averages and standard deviations of the tribal and dimensional measurements, the difference between the means and the t-test for non-independent samples of the kinematic variables of the test of throwing and receiving balls.

Variables	Pretest		Post Test		Difference Between Averages	T-Test	Sig	Df	Indication
	SMA	standard deviation	SMA	standard deviation					
Shoulder Angle	120.22	15.928	135.11	10.068	14.889	4.967	0.001	8	Indicative
Elbow Angle	116.33	10.247	127.89	5.689	11.556	4.889	0.001		Indicative
Wrist Angle	157.22	13.498	165.67	10.124	8.444	4.004	0.004		Indicative
Instantaneous Velocity	8.86	0.962	10.59	1.490	1.727	6.881	0.0		Indicative
Acceleration	23.02	2.057	28.63	2.991	5.607	7.634	0.0		Indicative
Achievement	10.56	1.33	13.56	1.130	3.00	6.803	0.0		Indicative

From the results of Table No. (06): The obtained results showed that all sig values are less than the significance level $\alpha = 0.05$, and this indicates that there is a statistical significance indicating that the proposed conditioned kinetic program affected all the kinematic variables under study, and from here it can be said that The hypothesis

has been achieved and this is through inference from the results obtained, and this is also what previous and similar studies agree on, especially the study of Idir Hassan 2012

Table No. (07): shows the arithmetic averages and standard deviations of the tribal and dimensional measurements, the difference between the means and the t-test for non-independent samples of the kinematic variables to test the numbered circuits.

Variables	Pretest		Post Test		Difference Between Averages	T-Test	Sig	Df	Indication
	SMA	Standard Deviation	SMA	Standard Deviation					
Total Speed	0.45	0.02	0.50	0.012	0.051	4.54	0.002	8	Indicative
Acceleration	0.08	0.010	0.10	0.006	0.019	4.33	0.002		Indicative
Max Bending Knee Angle	127.56	5.02	117.11	6.60	10.44	6.79	0.00		Indicative
Maximum Height of the Center of Gravity	111.22	4.353	121.44	4.27	10.22	8.69	0.00		Indicative
Achievement	5.42	0.32	4.89	0.12	0.52	4.46	0.002		Indicative

From the obtained results, we find that all sig values are less than the significance level α = 0.05, and this indicates that there is a statistical significance attributed to the proposed adapted motor program, and this is also what previous and similar studies agree on, especially the study of Khalid bin Salem 2015-2017, in which the researcher concluded that There are statistically significant differences between the two pre- and post-tests in favor of the post-test in the combinatorial abilities tests under study.

Table No. (08): shows the arithmetic averages and standard deviations of the tribal and dimensional measurements, the difference between the means and the t-test for non-independent samples of the kinematic variables of the running test around the cones

Variables	Pretest		Post Test		Difference Between Averages	T-Test	Sig	Df	Indication
	SMA	Standard Deviation	SMA	Standard Deviation					
Total Speed	0.72	0.037	0.76	0.016	0.044	4.63	0.002	8	
Acceleration	0.074	0.007	0.084	0.004	0.009	4.98	0.001		
Waist Tilt Angle	22.56	2.06	19.33	1.22	3.23	8.04	0.00		Indicative
Achievement	9.66	0.47	9.09	0.20	0.57	4.71	0.02		

From the results of Table No. (08): The obtained results showed that all sig values are less than the significance level $\alpha = 0.05$, and this indicates that there is a statistical significance attributed to the proposed adapted motor program, and this is also what previous and similar studies agree on, and we mention the study of Muhannad Mahmoud Ibrahim 2015, and the study of Khalid bin Salem 2012-2013, and there is also the study of Issam Ahmed Helmy Muhammad Abu Jamil.

4-3 Discussion and interpretation of the results:

There is a positive and effective effect due to the proposed adapted motor program according to some kinematic variables in developing some neuromuscular coordination abilities for deaf and dumb children 12-15 years.

There are statistically significant differences between the pre and posttests in favor of the posttest in the development of neuromuscular compatibility between the eye and the hand, and between the eye and the leg, and general compatibility, according to some kinematic variables for deaf and dumb children 12-15 years due to the adapted motor program.

Recommendations:

Integrating the proposed adapted motor program within the curriculum for deaf and dumb children and adopting it within their sports curriculum, after proving the merit of the proposed adapted motor program in developing neuromuscular compatibility and some of the sports aspects and levels of physical fitness and skill.

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