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Designing a System for Diagnosing and Rehabilitating Postural Deformity to Rotate the Shoulders for Students Aged (11-12) Years

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ABSTRACT

By observing the researcher and reviewing the reality of the educational process, he found that there are some deviations and morphological distortions, which lead to severe deformities if left undiagnosed, their severity and degree, and the development of special programs to rehabilitate them and return them to their normal, anatomically recognized position, including the rotation of the shoulders forward, so the researcher decided to use the Salah system to diagnose Rehabilitation of deviations and morphological distortions equipped with rehabilitation exercises for targeted deformation and appropriate for the ages of the research sample. The research aimed at designing a system for diagnosing and rehabilitating postural deformity to rotate the shoulders at the age of (11-12) years. The researcher assumed that there are statistically significant differences between the tribal, inter- and dimensional tests of morphological deformation and in favor of the post test. The researcher also used the experimental method in a one-group style with a pre-, inter- and post-test on the research sample in a deliberate way represented by (11) students in the first grade of primary school who had a deformity in the rotation of the shoulders of a medium degree. After applying the qualifying approach, the researcher reached several conclusions, including the effectiveness of the system In the detection of postural deformities, the roundness of the shoulders in the upper region of the body and their classification into simple, medium and severe, the effectiveness of corrective exercises on correcting the deformity of the rotation of the shoulders of medium degree.

Keywords: *Postural deformity, rounded shoulders, expert system.*

INTRODUCTION

The rehabilitation process is an urgent necessity that man needs on an ongoing basis in order to maintain work productivity, physical growth, psychological and behavioral aspects, and the practice of general movements and motor activities, and that the occurrence of any deformation of any of its parts has a negative impact on all elements.

As the rehabilitation process when repairing postural deformity should be an integrated and harmonious process, and work should not be limited to developing a specific part, but rather it requires dealing with all changes in a consistent and integrated manner in order to achieve the desired goal with the least effort and the shortest time. Therefore, the necessity of paying attention to providing the means and tools of the rehabilitation process, including those related to determining the deformity and programs for developing the work of the shoulder belt, is one of the means of raising the level of the injured for the better.

The continuous tracking of observing and measuring the physiological aspects that accompany the growth of the pupil in the school in the various stages of his growth is a fundamental step of the utmost importance to complete the stages of his growth in a manner free from defects and morphological distortions, and since the school pupil spends a good time of the day in school and the sitting periods are long, and given The rapid growth of the pupil at this stage can acquire, as a result of his rapid and sudden movements, to adopt incorrect postures that would almost prove these situations if he did not receive quick attention to correct them. Therefore, the researcher decided to use the system designed to diagnose the rotation of the shoulders and provide it with corrective exercises for the purpose of correcting the morphological error that stands as an obstacle to progress in front of this major group of society.

Research Problem

Body deviations of various forms usually arise in the early childhood years during the period of body growth, as it occurs as a result of soft tissue weakness and over time it turns into the skeletal system and becomes deformed according to its stages. The changes that occur in body parts are reflected in the shape and function of other organs.

From the researcher's observation of the educational process for primary school students, the second category of them, the researcher found that most schools lack sufficient seats and poor design, which are available from them in terms of their suitability to the students' physical

measurements, in addition to the lack of suitable seating places for some students who suffer from audio-visual problems, which may Contribute to the occurrence of these deviations, which may reach the extent of deformation and in turn negatively affect the physical, motor, psychological and social level of the student.

Research Aims

- Designing a system for diagnosing and rehabilitating postural deformity to rotate the shoulders for students aged (11-12) years.

- Identifying the effect of the physiological deformity diagnosis system for rotating the shoulders and rehabilitating it among the members of the research sample.

Force search:

- There are statistically significant differences between the tribal, inter- and dimensional tests of morphological deformation and in favor of the post test.

MATERIALS AND METHODS

Research Methodology

The researcher used the experimental method in a one-group style with a pre-, inter- and post-test due to its relevance to the nature of the problem of the study to be researched and to achieve the objectives and hypothesis of the research. The researcher conducted a comprehensive survey of three schools, which are primary schools for boys, aged (11-12) years, as this was revealed using the Salah system to diagnose and rehabilitate some stature deviations, and Table (1) shows the statistical description of the research sample.

Table (1): Shows the statistical description of the mean deviation of the rotation of the shoulders

skewness	deviation	Mediator	Arithmetic mean	Variables
0.00	0.816	10	10	Shoulder rotation

The work of the system designed by the researcher after matching (matching) between the image taken by the student by the two cameras (front and side) and the model profile of the body through a special program. Form a printed sheet for each student containing the student's name, the type of deviation, and his rehabilitation exercises. A set of exercises is given in order to rehabilitate this morphological deviation by the expert system.

The Expert System program (the expert system) was fed through reliable sources, references and the Internet with exercises appropriate for the ages of the research sample in terms of the type and severity of the deviation and in an integrated manner. The expert in it with the possibility of printing it on papers for the purpose of benefiting from it and applying it by the sports teacher in schools.

Before starting to conduct the main experiment and tests, the pilot experiment was conducted on 12/14/2020 in Al-Balabil School located in the Al-Moalemeen neighborhood area within the sector of the Second Rusafa Education Directorate.

Then, tribal tests were conducted, the purpose of which was to identify the realistic level of the students, which was confirmed by the exploratory experience, and to know this trait in a digital form, in order to develop a qualification curriculum for them for the purpose of providing the system with it, which was developed with tools for them, as well as the validity of that curriculum as it is the honest indicator to identify the The level of the research sample. The tribal tests included measuring the deformity of the rotation of the shoulders forward, which can develop into severe deformity that is difficult to rehabilitate with rehabilitative exercises. The pre-exam was conducted on 20/12/2020

Where the assistant work team and physical education teachers in schools and under the supervision of the researcher applied the vocabulary of the qualifying curriculum completely, which numbered thirty-eight rehabilitation units to distort the rotation of the average shoulders, where twenty rehabilitation units were given and then the researcher conducted an inter-test for the members of the research sample and then eighteen were given A qualifying unit and then the post-test was conducted.

After completing the application of the qualifying curriculum, the post tests were conducted in the same manner in which the tribal tests were applied and under the same conditions, on Thursday 25/3/2021.

Note: The researchers did not perform homogeneity for the sample as they were

of one birth, one age and one malformation.

RESULT AND DISCUSSION

Table (2): The arithmetic mean, standard deviation and (F) value of the repeated measurements of the average shoulder rotation in the pre-, inter- and dimensional measurements are shown

difference type	Sig	Calculated q value	average squares inside	mean squares between	standard deviation	Arithmetic mean	Variables
moral	.000	129.000	.778	100.333	.81650	10.0000	measurement before
					.89974	6.1429	measurement between
					.78680	2.4286	Measurement after

Significant < (0.05) at the degree of freedom (12:2) and below the level of significance (0.05)

In order to find out the differences between the measurements, the (Bonferroni) measurement was used.

Table (3): Shows the median and moral difference for the measurement of Penferroni's average shoulder rotation

Measurement after		interfacial measurement		Measurements
Sig	media teams	Sig	media teams	
.000	7.571*	.001	3.857*	measurement before
.000	3.714*			measurement between

significant < (0.05)

Discuss the results:

By noting the previous tables, we find that there is a clear development in the inter- and dimensional measurements of the tribal measurement, and the researcher attributes this to the rehabilitation exercises that are supported by strength on the one hand and flexibility on the other hand, which led to an optimal exploitation of the full range of motion of the shoulder and then put the performance of these exercises appropriately In its optimum form, and that this is reflected on the pupil's motor ability in the case of optimal investment in his movements, lack of spasticity, and exerting great effort in using the muscles, and thus a greater ability for the muscles, and this is reflected in the ability of these muscles to better support the skeleton and obtain a

harmonious body free of defects and deviations (1981 Thulin), who pointed out that "the exercises for developing kinetic ability in general and strength and flexibility exercises in particular work to modify physiological deviations. "

As neglecting the use of the full range of movement for any joint by stretching and flexing, no matter how different the reasons are, affects the nature of the connective tissue of this joint, which is short and strong ligaments, some of their characteristics change by getting used to.

And following the principle of gradualness in pregnancy has the benefit of increasing flexibility and stretching in all joints and muscles of the spine and thighs, as exercises that include maximum strength are not used in the curriculum and this is normal because the morphological deviation is relatively constant, and the continuation of this deviation makes it stable, but on the other hand, exercises The low-intensity force used in the curriculum has a positive effect on increasing flexibility and allowing the connective tissues to respond to the movement "because the relationship between flexibility and strength trait states that whenever a muscle gains maximum strength, the length of the muscle shortens and its flexibility decreases. "

The corrective approach with all the exercises it contains, especially those related to the muscles of the shoulder girdle, led to the strengthening of this belt, which is strong from the front and weak from the back. The natural position, the short front muscles led to a large pull of the shoulders forward, and in order to return them, the back muscles must be strengthened and the frontal flexibility increased, and this is what the corrective approach achieved by alternating between strength and flexibility for these muscles. This condition exists when the anterior muscles of the shoulder girdle become short and tight, and thus the ligaments of the flexion and extension of the shoulder girdle lose their effectiveness and become weak and loose.

Stretching exercises are no less important in returning the shoulders to their normal position, and they are an essential part of any rehabilitation approach. It is not possible to rely on strength to return weak muscles, but the elasticity of the stiff and shortened muscles must also be increased as a result of continuous tension on them, and this leads to a consistent return to the shoulder belt to its normal position, as (Sami'a Khalil, 2008) refers to "where stretching and strength exercises are played to rotate the shoulders to create a balance between the muscle groups surrounding the shoulder joints. "

CONCLUSIONS:

After presenting the results, the following conclusions were reached:

- The effectiveness of the system in discovering morphological deformities in the upper region of the body and categorizing them into simple, medium and severe.

- The effectiveness of corrective exercises on correcting the deformity of rotation of the shoulders of medium degree.

Rapid transformation of moderate distortions to simple and then to normal -

- The corrective exercises had a great impact on the acceptance of the sample in an enjoyable way.

ENDORSEMENT:

The use of the system by the sports teacher in each primary school -

Conducting studies on samples larger or smaller than the research sample. -

Conducting similar research in the field of correcting various deformities. -

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