



A REHABILITATIVE PROGRAM USING DIFFERENT METHODS AND ITS EFFECT ON SOME PHYSICAL CHARACTERISTICS AND MOTOR RANGE FOR PEOPLE WITH KYPHOSIS
IRRIGATION RESEARCHER ADMIN

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Abstract

The study included five chapters, where the researcher indicated in the introduction to his dissertation: the importance of the spine and preserving its natural curves, as the balance of the spine is an indicator of human health and strength, and at the same time the spine is one of the most important parts of the skeleton subject to deviations and postural deformities and Acquired for many reasons. Among these deviations is the dorsal curvature of the spine in the thoracic vertebrae.

As for the research problem: it focused on that the percentage of deformity in the dorsal hump in particular has increased significantly in recent times in some people, resulting from several reasons, the most important of which is the excessive use of modern technology and other wrong habits followed, whether at home or at work, and this is due to the lack of previous studies that were conducted In this field, especially in the rehabilitation of middle ages (25-35) years, and from ordinary people, only the researcher knows, I discussed most of the previous studies that were conducted on middle or high school students, and did not go into the study of the category that the researcher used, because the greater the age and the delay in treatment Or improve this deformity for a long period of time, the more difficult it is to heal and restore the normal position of the spine. . Hence, and through the researcher's survey and his modest experience, he found that there are many exercises, multiple methods, and various machines and equipment available in the body-building hall that can address the problem of abnormal spine kyphosis for people with kyphosis. This is done through the use of a rehabilitative program with different methods and its effect on some physical characteristics and the range of motion for people with kyphosis.

Introduction

Aims of study

1. Identifying the best method (peak systole - continuity of slow contraction - climax of systole and continuity of slow contraction) in developing some physical characteristics and range of motion of the trunk for patients with kyphosis.

As for the search hypotheses, they were:

2. The rehabilitation program using methods (peak contraction - continuation of slow contraction - peak contraction and continuity of slow contraction) had a positive effect on developing muscular balance for those with kyphosis.

3. There is a preference for the effect of the slow contraction continuity method in developing some physical characteristics and the range of motion of the trunk over the rest of the methods for people with kyphosis.

In the second chapter: the researcher dealt with a detailed presentation of the research variables associated with the title of the thesis.

As for the third chapter: research methodology and field procedures, the researcher used the experimental approach and designed equal groups (three experimental groups) with two pre and post tests. Wrong daily practices for a long period of time, and the percentage of curvature was more than 20 degrees according to the Ferxon angle and more than 40 degrees according to the Cobb angle, and their number is (12) players in the province of Najaf from two gyms for bodybuilding (professional hall - Pro Gym), With ages from (25-35) years, noting that the training age of the sample is one month only, as this community was divided into three groups that were distributed in the intentional way by (4) players for each group. After that, physical and motor range tests were conducted on the injured in the two halls (Professional Hall - Pro Gym), and then the rehabilitation curriculum was started in these centers as well. The duration of the training curriculum was (16) weeks, with (5) training units per week. The program was divided into two phases. After that, the post-tests were conducted and the results were obtained, which were treated statistically with the statistical bag (spss).

As for the fourth chapter: it included a comprehensive presentation of all the results of the research by presenting, analyzing and discussing the results scientifically.

In the fifth chapter, the researcher reached a set of conclusions, the most important of which are:

1-The rehabilitation program had a positive effect on improving all variables of the current research (muscle strength, motor range, and dorsal hump angle).

2-The method of apex contraction has a significant effect on the development of the variables related to the maximum strength of the dorsal muscles (muscles of the dorsal substance or close to the convexity area), and it was superior to the other two styles (continuity of slow contraction method - the mixed method) in the rate of development of these variables. Also, the method of apex systole had a significant impact on the development of the rest of the research variables, namely (the range of motion - the angle of kyphosis), and it showed its superiority over all other methods in improving these variables for people with kyphosis.

1-The mixed method (peak systole method + slow contraction continuity method) had a significant effect on the development of variables related to strength endurance of the dorsal muscles.

2-Stretching exercises had a significant effect on the development of the flexibility of the muscles working on the torso and affected or causing deformation (the deep and lateral muscles of the abdomen - the back muscles - the muscles of the rib cage) in order to lengthen the muscles and ligaments that were shortened due to the dorsiflexion.

Recommendations:

The need to use the peak contraction method to target the deformed dorsal muscles for those with kyphosis, because the method of performing it is commensurate with the nature of the

deformation that occurs to achieve a faster result and shorter effort as well, in addition to introducing the rest of the other training methods for muscle building and merging these methods to work with the rest of the muscles other than the dorsal affected by the deformity from the front side of the trunk.

Putting muscle stretching exercises in a special training unit because of their importance in restoring the flexibility of stiff muscles, in addition to not conflicting with muscular strength exercises in the same training unit and focusing on them in a special unit.

Introduction to the research and its importance:

The beginning of the first incubation, man cared about the body And he drew its dimensions in an exemplary manner. Since ancient times, man sought to reach the stage of construction in everything, and among what he sought was to reach construction in his body as well as in his mind. .And with the development taking place in our present time with the progress of time, the issue of human strength took a new turn, as the factor of maintaining health and moderate strength is one of the important factors by which the level of sophistication, culture and progress of developed peoples is measured.

The balance and consistency of a person's stature depends on the health, safety and balance of the spine and the health, balance, strength and flexibility of the muscles connected to and opposite it, as any weakness or imbalance in these muscles disturbs the balance and thus affects the natural curvatures of the spine resulting in the emergence of some postural deviations, including the dorsal curvature of the thoracic vertebrae region Which the researcher dealt with during his current study. Therefore, the researcher was interested in studying this deformity (dorsal hump) because of its negative effects related to the life and appearance of man and his performance in various life activities and the availability of various modern equipment in gyms, as well as the availability of tests and measurements for that. The researcher prepared a rehabilitation program with different methods To develop muscular balance for kyphosis patients.

Research Problem:

Because of bad and wrong habits in taking torso positions when sitting, sleeping, walking, poor eyesight sometimes, or weight gain, and because of negligence or forgetting of the correct position while using one of the modern technologies and for long periods, or practicing a profession that requires excessive curvature of the spine and other reasons that This led to an increase in the prevalence of this deformity in our present time, and the accompanying anatomical and mechanical changes that change and weaken some muscles and reduce pain. Andne it, and who Here, through the researcher's survey and his modest experience, he found that there are many exercises, multiple methods, and various machines and equipment available in the bodybuilding hall that can address the problem of abnormal spine curvature for those with kyphosis. This is through the use of a rehabilitation program with different methods to develop some aspects of muscular strength and range of motion for those with kyphosis. This In order for the body to fully rise. By increasing the muscle strength left by this deformity in addition to restoring the natural softness of the spine and getting rid of the problem of this acquired curvature once and for all..

Research Objectives:

1-Identify the impact of the rehabilitation program by methods (Systole apex - continuity of slow contraction - Apex systole and continuity of slow contraction)in Some physical traits and motor range for those with kyphosis dorsi.

2-Learn the best method (Systole apex - continuity of slow contraction - Apex systole and continuity of slow contraction)in development some Physical characteristics and motor range for those with kyphosis dorsi.

Research hypotheses:

1-Methods qualifying program(Systole apex - continuity of slow contraction - Apex systole and continuity of slow contraction)positive impact on development Some physical traits and motor range for those with kyphosis dorsi.

2-There is an advantage to effect slow contraction continuity method in development Some physical traits and motor range on the rest of the methods for people with kyphosis dorsi.

Areas of research:

Firstly-human domain: Players with kyphosis, ages (25-35) years, beginners category, numbering (12)

Secondly temporal domain: Duration of 6/11/2022 to 6/3/2023.

Third Spatial domain: Professional Hall and Pro Gym for Fitness and Body Building in Al-Najaf Al-Ashraf Governorate.

Terms used in the search:

apex systole style ⁽¹⁾It is one of the training methods or rules for the body building game, and it is done by performing the movement and stopping at the end with tight control by holding the weight and resisting the force of gravity and preventing the iron from falling for a few seconds to get the muscle to contract.

*Slow contraction method: It is also one of the training methods or rules for the body building game, and it is done by performing the movement very slowly during the stages of systolic and diastolic performance together.

*The mixed method (peak contraction - slow contraction): It is a combined method between the two previous methods, where the movement is done by starting the exercise very slowly, and in the middle of the movement, a pause is made for a few specific seconds, and then the performance is completed very slowly as well.

Research methodology and field procedures:

Research Methodology:

Use the researcher experimental method and design (The sum of T equivalent H) Three experimental groups, due to its suitability to the nature of the research problem.

¹ - Mansour Jamil Al-Anbaki: Training in body building, foundations and rules, Dar Shumoa Al Thaqafa ,2012, pp. 114-115

Research Community:

The researcher identified his research community, which is represented by those with non-genetic acquired or mobile spinal deformities (increased hunched back) of the second order, The number of (12) players in the province of Najaf from two halls for bodybuilding (professional hall - Pro Gym), With ages from (25-35) years, bearing in mind that the training age of the sample is one month only. As this community was divided into three groups, they were distributed in the intentional way, by (4) players for each group so it was completed get those injured. By distributing questionnaires to governmental and private physiotherapy centers and sports halls in the province of Najaf.

Devices, tools and means of collecting information

Equipment and tools used:

- Hand watches number (1).
- Type video camera (Sony) with a tripod.
- A patented factory device to measure the angles of the basic movements of the spine.
- Personal computer type (Dell).
- X-ray machine X Ray.
- Information form for each student with kyphosis.
- 4 sponge mats.
- Ruler + protractor.
- Body building training hall with its equipment (Hadid Hall, Al-Hadbaa Youth Center in Al-Muthanna neighborhood).
- convexity tool with three degrees
- (2) medicine balls weighing (1.5) kg, and (1) small medical ball to apply the vocabulary of the rehabilitation program.
- Full room number (2) to apply the vocabulary of the qualifying program.

Means of collecting information:

- Arab and foreign sources.
- the internet
- Personal interviews with experts and specialists
- Personal interviews with clinics, medical rehabilitation centers, sports medicine, physiotherapy, doctors and surgeons of orthopedics, fractures, joints, sports injuries, doctors and specialists of the radiology and resonance department.
- A questionnaire form to determine the most important physical tests for kyphosis.
- A questionnaire form to determine the most important tests of the motor range of the trunk.

Procedures T search

Clinical examination of the research sample


The researcher conducted a clinical examination of the sample in Al-Sadr Teaching Hospital and Al-Hakim Hospital, as the injured were shown. On a group of doctors specializing in joint

diseases, fractures and physiotherapy to diagnose people with acquired spinal kyphosis, which causes changes with tissues Softness (muscles and ligaments) of the first and second degree without causing a change in the shape of the vertebrae and bones, which is considered a third degree injury.



Determine the research variables and their tests



Characterization of physical variables tests

Table (1) measure physical variables


| Test format | Registration method | Performance method | Used equipments | The purpose of the test | test name |
|---|---|---|--|---|--|
|  | <p>The laboratory is given (3) attempts to record the attempt in which the largest weight is lifted in (kg)</p> | <p>The tester takes a lying position on the back on the Swedish bench and the feet on the ground. The bar is placed with the hands in front of the chest with the elbows bent, with the width of the chest (medium grip). When the starting signal is given, the tester straightens the arms at their length, while carrying the weights in two seconds up, while fixing the torso.</p> | <p>Legal bar - iron wheels of different weights, Swedish seat (Bing Press) with a width of 25-30 cm.</p> | <p>Measuring the strength of the arms, shoulders and pectoral muscles. (maximum strength)</p> | <p>1- Press the barbell with both hands above the chest (Bingpres)</p> |



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|  | <p>The laboratory is given (3) attempts to record the attempt in which the largest weight is lifted.</p> | <p>The tester stands in front of the barbell and, bending over, holds the barbell with fists of equal distances. When the signal is given, the tester pulls the barbell and stands erect, taking into account that the barbell is pulled along the body.</p> | <p>Iron bar - tablets (iron weights)</p> | <p>Measuring the strength of the posterior trunk muscles (lower back) (maximum streng)</p> | <p>2- Pulling the iron from the bend (deadlift)</p> |
|  | <p>The tester is given one attempt, which is recorded as (kg)</p> | <p>The tester sits on the seat of the device with the dynamometer installed from the top, then the tester holds the bar hanging from the outer edges, and when the signal is given, the tester pulls the bar down behind the</p> | <p>A multi-purpose device - a dynamometer - an iron bar with a length of (85-90 cm)</p> | <p>Measuring the strength of the posterior trunk muscles (upper dorsal muscles) - triceps brachii (maximum strength)</p> | <p>3Back pull</p> |


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| | | neck with maximum force. | | | |
|  | <p>The laboratory is given (3) attempts to record the attempt in which the largest weight is lifted.</p> | <p>The tester installs the barbell on the shoulders in front of the body after it is handed over by the assistant team, while holding the bar at equal distances between the two bars, and when the signal is given, the tester raises the barbell up along the arms with maximum strength and returns to the first position slowly</p> | <p>Iron bar - discs (iron weights) - leather belt - iron supports - assistants.</p> | <p>Measurement of arm muscle strength (anterior shoulder muscles) (maximum force)</p> | <p>4- Bending the arms and extending them upward from sitting and the bar in front of the neck (frontal pressu).</p> |
|  | <p>The laboratory is given (3) attempts to record the attempt in which the largest weight is lifted.</p> | <p>The tester fixes the barbell behind the neck after it was handed over by the assistant team while holding the bar at equal</p> | <p>Iron bar - discs (iron weights) - leather belt - iron supports - assistants.</p> | <p>Measurement of arm muscle strength (anterior shoulder muscles) (maximum force)</p> | <p>5-Bending the arms and extending them up from the seat and the bar behind the neck (back pressure).</p> |

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| | | <p>distances between the two bars, and when the signal is given, the tester raises the barbell up along the arms with maximum strength and returns to the first position slowly</p> | | | |
|  | <p>Record the number of correct performance times until fatigue.</p> | <p>When the tester gives the starting signal, he bends the arms to go down until the elbows take a right angle. Then the tester then fully extends the arms up, then the seat is placed close to the tester on it with the feet, and then he repeats the previous performance again.</p> | <p>A parallel device in which the two crossbars are raised off the ground at a distance that allows the tester to bend and extend the arms without his feet touching the ground. And a wooden bench and tape measure</p> | <p>Measuring the dynamic muscle strength of the arms and shoulders during the push-up movement. (bear force)</p> | <p>9- Pay up (Brilliant Diving)</p> |


| | | | | | |
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|  | <p>Perform as many repetitions as possible to the point of fatigue.</p> | <p>Performing the test by leaning on the hands and toes of the feet on the ground, and to perform the test, the hands should be with an opening as wide as the chest opening, and the back should be kept straight.</p> | <p>It requires only assistants and the test does not require specific tools.</p> | <p>The test aims to measure and monitor the development of strength endurance in the arms and chest muscles. (strength endurance)</p> | <p>7- front support (shennaw)</p> |
|  | <p>Record the number of correct performance times until fatigue.</p> | <p>When the start signal is given, the tester pulls up with the arms to raise his body up until it reaches his chin above the horizontal bar, then lowers his body until the arms are fully extended, then he repeats the previous</p> | <p>A horizontal bar whose height can be changed so that the tester's feet do not touch the ground while he is in the hanging position, a chair that can be used to hang on the bar when starting to hideR</p> | <p>Measuring the dynamic muscle strength of the arms and shoulders (bear force)</p> | <p>8- Pull up (bar)</p> |

| | | | | | |
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| | | performance again. | | | |
|  | Calculates the number of repetitions that the tester can accomplish . | <p>The tester lies down on a special bench for abdominal exercises with the knees bent at the level of the hip and the arms fixed and stretched back with a support for the seat. When the signal is given, the tester raises the hip with the legs so that the knees move towards the chest with the stability of the torso, then lower the hips and return to the starting position while maintaining the</p> | Fixed flat bench | Measuring the dynamic muscle strength of a group of abdominal muscles (anterior and lower rectus) and flexor muscles of the trunk. (bear force) | 9- Raising the legs outstretched to the top from the supine position |


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| | | continuity of tension in the abdominal muscles. | | | |
|  | Calculates the number of repetitions that an individual can perform. | When the tester is given the start signal, he bends the torso to take a long sitting position, noticing that the knees remain outstretched | A rug of cloth on which the laboratory lies. | Measuring the dynamic muscle strength of a group of abdominal muscles and flexor muscles of the trunk. (Enduring strength). | 10- Sitting from lying down (from an extended leg position) |



Characterization of motor range tests

Table (3-7) Range of motion tests


| Test format | registratio n method | performance method | Used equipment s | The purpose of the test | test name |
|---|---|--|------------------------|--|---------------------------------|
|  | The angle is recorded through the reading that appears on the device in (cm). | The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal is given, the tester bends the torso forward to | factory device | Measuremen t of trunk angle (motor range) towards the front | 1- Bend the torso forward |



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| | | <p>the maximum range of motion that the joint can reach while maintaining the full extension of the legs without bending them while the arms are joined inside.</p> | | | |
|  | <p>The angle is recorded through the reading that appears on the device in (cm).</p> | <p>The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal is given, the tester bends the torso back to the maximum range of motion that the joint can reach, while maintaining the full extension of the legs without bending them and the arms folded inside.</p> | <p>factory device</p> | <p>Measure the angle of the torso (range of motion) toward the back</p> | <p>2- Bending the torso back</p> |

| | | | | | |
|---|--|--|-----------------------|---|--|
|  | <p>The angle is recorded through the reading that appears on the device in (cm).</p> | <p>The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal is given, the tester bends the torso towards the right to the maximum range of motion that the joint can reach while maintaining the full extension of the legs without bending them while the arms are joined inside.</p> | <p>factory device</p> | <p>Measurement of trunk angle (range of motion) towards the right</p> | <p>3- Turning the torso to the right</p> |
|  | <p>The angle is recorded through the reading that appears on the device in (cm).</p> | <p>The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal</p> | <p>factory device</p> | <p>Measurement of trunk angle (range of motion) towards the left</p> | <p>4- Turning the torso to the left</p> |

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|---|--|---|-----------------------|---|---|
| | | <p>is given, the tester bends the torso towards the left to the maximum range of motion that the joint can reach, while maintaining the full extension of the legs without bending them and the arms folded inside.</p> | | | |
|  | <p>The angle is recorded through the reading that appears on the device in (cm).</p> | <p>The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal is given, the tester rotates the torso towards the right to the maximum range of motion that the joint can reach, while maintaining the full extension of</p> | <p>factory device</p> | <p>Measure the angle of the torso (motor range) by rotating it to the right</p> | <p>5- Rotate the torso to the right</p> |

| | | | | | |
|---|--|---|--|---|---|
| | | the legs without bending them and the arms folded inside. | | | |
|  | <p>The angle is recorded through the reading that appears on the device in (cm).</p> | <p>The tester takes a standing position over the device and the feet are approximately shoulder width apart. When the starting signal is given, the tester rotates the torso towards the left to the maximum range of motion that the joint can reach while maintaining the full extension of the legs without bending them and the arms folded inside.</p> | <p>factory device</p> | <p>Measure the trunk angle (motor range) by rotating it to the left</p> | <p>6- Rotate the torso to the left</p> |
|  | <p>Hold the position for three seconds, then measure the height of the chin off</p> | <p>The laboratory lays prone on the ground and intertwines the fingers of the hands</p> | <p>Tape measure or graduated ruler</p> | <p>Measurement of muscle flexibility of the back</p> | <p>7Raising the chest from a prone position</p> |

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|---|--|--|-------------------------------------|---|-----------------------------------|
| | the ground to the nearest (cm). | behind the neck. The supervisor from the work team fixes the hip and the legs and does not allow the body to move from below the belt. Then the laboratory raises the chest to the highest possible range of motion. | | | |
|  | The tester is given two attempts. The attempt is recorded for the closest distance between the hand and the toes | The tester from a sitting position fully extends the legs while keeping the knees bent, then the tester moves the hands forward towards the toes. | Ground mat and foot support barrier | Measure the flexibility of the upper and lower back muscles | 8- Sitting with two legs extended |

Exploratory experience

On 10/28/2022, the researcher conducted his reconnaissance experiment with the assistant work team (appendix) in a hallPro Gym and Professional Fitness Gym And body building, in which tests and measurements will be held for the injured players, in addition to applying the rehabilitative curriculum in it as well, in order to find out the negatives that impede the conduct of the main experiment, as well as its positives.

Main experiment

Pre-tests:

The researcher conducted tribal tests and measurements by dividing them into a range of (3)

days, according to the conditions and difficulty of the test.

Where diagnostic tests were carried out to determine the degree of curvature of the spine by means of the Ferikson angle and the Cobb angle, and then physical tests (motor range - maximum strength - force endurance) were performed. Since all these procedures were done on the date of 1-3/ 11 / 2022.

Application of the proposed rehabilitation curriculum:

After carrying out all the pre-test procedures and dividing the sample into three groups, the researcher wrote the qualifying curriculum (*) which was prepared by the researcher with standardized scientific methods and methods based on the personal experience of the researcher and Arab and foreign sources. The sample consisted of (12) players with kyphosis, as the researcher directly In his main experience, for the period from 6/11/2022 to 19/2/2023. The rehabilitative curriculum included several pillars, as follows:

- 1- The players were divided in the intentional way into three groups, each group using one of the three methods of play The dorsal muscles affected by the deformation (peak contraction - continuity of slow contraction - peak contraction and continuity of slow contraction) i.e. from the back side of the torso, and all three groups use different tools themselves and the traditional method (pyramidal method) in developing the rest of the muscles (abdominal muscles, lower back, chest and shoulders) from the anterior side of the trunk.
- 2- The duration of the training curriculum was (16) weeks, and the number of training units consisted of (5) training units (five days of training, followed by two days of rest, and then retraining with the same exercises).

3-7 Post-tests

The researcher conducted tests and measurements Dimension after applying the prepared curriculum by dividing it by (3) days, according to the conditions and difficulty of the test. As all these procedures were done in the date of the day22-24/2/2023AndIt was also divided into pre-tests previously.

The statistical methods used in the current research

Etsuffered researcher statistical bag (SPSS) for data processing The researcher touched on some statistical methods others are under study.

Presentation of the results of the posttest comparison of the three groups in the search variables

Presentation of the results of the post-test comparison of the three groups in the variables of strength

Table (3) Variance analysis ANOVA To compare the posttests between the three groups in the variables of strength

| ef fe ct si | indi cati on stati | signific ance level | value(F) Calculat ed | circles suar e | degrees of freedom | sum of square s | source of contrast | Variant s |
|----------------------|-----------------------------|---------------------------|----------------------------|----------------------|--------------------------|-----------------------|--------------------------|--------------|
|----------------------|-----------------------------|---------------------------|----------------------------|----------------------|--------------------------|-----------------------|--------------------------|--------------|

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| ze | stic | | | | | | | |
|-------|------------|-------|--------|---------|----|-----------|----------------|-------------------------------------|
| 0.010 | non-mor al | 0.955 | 0.046 | 1,051 | 2 | 2,102 | between groups | Bing Press Maximum strength |
| | | | | 22,812 | 9 | 205,308 | within groups | |
| | | | | | 11 | 207,409 | the total | |
| 0.032 | non-mor al | 0.865 | 0.147 | 0.542 | 2 | 1,085 | between groups | Pearl diving bear strength |
| | | | | 3,684 | 9 | 33,158 | within groups | |
| | | | | | 11 | 34,243 | the total | |
| 0.034 | non-mor al | 0.854 | 0.160 | 1,083 | 2 | 2,167 | between groups | Front support bearing force |
| | | | | 6,750 | 9 | 60,750 | within groups | |
| | | | | | 11 | 62,917 | the total | |
| 0.017 | non-mor al | 0.958 | 0.043 | 1,333 | 2 | 2,667 | between groups | Seated front press Maximum strength |
| | | | | 30,694 | 9 | 276,250 | within groups | |
| | | | | | 11 | 278,917 | the total | |
| 0.011 | non-mor al | 0.954 | 0.048 | 1,931 | 2 | 3,862 | between groups | Seated back press Maximum strength |
| | | | | 40,358 | 9 | 363,225 | within groups | |
| | | | | | 11 | 367,087 | the total | |
| 0.868 | mor al | 0.000 | 29,533 | 625,521 | 2 | 1,251,042 | between groups | Back pull Maximum strength |
| | | | | 21,811 | 9 | 190,625 | within groups | |
| | | | | | 11 | 1,441,667 | the total | |

| effect size | Statistical significance | significance level | value(F) Calculated | circles square | degrees of freedom | sum of squares | source of contrast | Variants |
|-------------|--------------------------|--------------------|---------------------|----------------|--------------------|----------------|--------------------|------------------------------------|
| 0.877 | moral | 0.000 | 32,030 | 490,021 | 2 | 980,042 | between groups | Dead Lift extreme powers |
| | | | | 15,299 | 9 | 137,688 | within groups | |
| | | | | | 11 | 1,117,729 | the total | |
| 0.938 | moral | 0.000 | 67,857 | 39,583 | 2 | 79,167 | between groups | Pull up a bar bearing strengt h |
| | | | | 0.583 | 9 | 5,250 | within groups | |
| | | | | | 11 | 84,417 | the total | |
| 0.037 | non-moral | 0.844 | 0.173 | 1,701 | 2 | 3,402 | between groups | Raise the legs asleep bear force |
| | | | | 9,845 | 9 | 88,608 | within groups | |
| | | | | | 11 | 92,009 | the total | |
| 0.021 | non-moral | 0.911 | 0.095 | 1,801 | 2 | 3,602 | between groups | Ground grindin g bearing strengt h |
| | | | | 19,045 | 9 | 171,408 | within groups | |
| | | | | | 11 | 175,009 | the total | |

In view of the data extracted and using a testF)) note thatVariables (ping press maximum force, barrel diving with force, front support with force, seated frontal press maximum force, seated frontal press maximum force, sleeping leg raise bearing force, ground grinding bearing force) the value of the significance level came her greater thanmistake percentage (0.05) thanThis means that there are no significant differences between the three groups in the post tests.

As for the variables (back pull-up maximum force, deadlift maximum force, pull-up bar with force), the value of the level of significance came her less thanmistake percentage (0.05) thanThis means that there are significant differences between the three groups in the post-tests, which confirms that the value of the effect size for these variables was greater (0.14(Which means that the differences between the three groups are large. To find out the direction of the

difference in favor of any group, the researcher deliberately used a test (Tukey HSD Table (4-22) shows that

Table (4) a test (HSD) Tukey For comparisons in Variables of strength in posttests between the three groups

| Statistica l significa nce | significa nce level | standa rd error | media differen ce | computational circles | | Intermediate tests for groups | | variants |
|-------------------------------------|------------------------|-----------------------|-------------------------|--------------------------|-------------|-------------------------------------|------------------|---|
| | | | | | | | | |
| Moral | 0.007 | 3.254 27 | 13,125 | 123,7 50 | 136,8 75 | M. seco nd | M. first | Back pull Maxim um strength |
| moral | 0.000 | 3.254 27 | 25 | 111,8 75 | 136,8 75 | M. third | M. first | |
| Moral | 0.013 | 3.254 27 | 11,875 | 111,8 75 | 123,7 50 | M. third | M. seco nd | |
| Moral | 0.043 | 2.765 74 | 8 | 85,75 0 | 93,75 0 | M. seco nd | M. first | Dead Lift Maxim um strength |
| Moral | 0.000 | 2.765 74 | 21,875 | 71,87 5 | 93,75 0 | M. third | M. first | |
| Moral | 0.002 | 2.765 74 | 13,875 | 71,87 5 | 85,75 0 | M. third | M. seco nd | |
| Moral | 0.000 | 0.540 06 | 3.7500- | 7 | 3,250 | M. seco nd | M. first | Pulling force bar |
| Moral | 0.000 | 0.540 06 | 6.2500- | 9,500 | 3,250 | M. third | M. first | |
| Moral | 0.003 | 0.540 06 | 2,500- | 9,500 | 7 | M. third | M. seco nd | |

The table above shows the superiority of the first experimental group over both groups in the posterior pull variable, maximum force, as well as the deadlift variable, maximum force. As for the comparison in the variable of pulling the leech bearing force, the third experimental group outperformed both the second and first groups.

Discuss the results of comparing the posttests of the three groups in the variables of strength

The results are shown in Table (4-21). For the variables (ping press maximum force, barrel diving with force, front support with force, seated frontal press maximum force, seated frontal press maximum force, sleeping leg raise bearing force, ground grinding bearing force) indicated that there were no statistically significant differences between the posttests of the three groups of the aforementioned muscular strength variables.

The researcher attributes the reason for this to the fact that the three groups used the same training method (the upward hierarchical method) and also the exercises used were the same for the groups and with the same components of the training load for all players with the use of the same machines, tools and means for all members of the sample and for the three groups.

As for table (4-22), the results are indicated For the variables (back pull-up maximum force, deadlift maximum force, pull-up bar carrying force) indicated that there were statistically significant differences between the posttests of the three groups of the aforementioned muscular strength variables in a large and clear manner.

It has been shown in Table (4-22) the superiority of the first experimental group, which used the method of peak systole, over both groups, which used the method of slow contraction continuity and the mixed method in the posterior pull-up variable with a maximum force roller, as well as the variable of dead-lift maximum forces, and then in the second degree came the group The second group used the slow contraction continuity method, and the third experimental group came in third place, which used the mixed method.

And the researcher attributes the superiority of this method (the peak of the contraction) over the other methods to the technique of this method and the method of its performance, as the performance of the movement and stopping at the end requires greater pressure on the muscle in order to control the weight and resist the force of gravity and for several seconds the player is forced to focus on the technique instead of thinking about pushing Weights, and this will generate very high tension and severe contraction that exceeds most other training methods, which helps to increase the muscle fibers that participate in the work and obtain real muscle mass more than the accumulation of water and fat in the muscle, which stimulates cells to grow and obtain high quality muscle mass and size. This will increase the maximum strength of these muscles.

The muscle "during the phase of eccentric lengthening of the muscle contraction, the largest possible amount of energy is stored within it, and this stored energy is reused in the phase of the next central contraction, which leads to an increase in its strength (Zaki Darwish, 1998, 19)

The researcher also attributes the reason for the development in these variables to the fact that the weights used in this method are heavier than the weights used in the rest of the other methods, and for this reason, the maximum strength of these muscles increased and developed compared to the rest of the other methods used in the research.

This is confirmed by what he refers to (Jamal Sabry–2012) about the methods of muscular strength training in that (strength exercises are generally understood as anaerobic exercises because one of its most common goals is to increase muscle strength by lifting heavy weights

and has other goals such as rehabilitation or changing the shape of the body)⁽¹⁾

Table (4-22) also showed the superiority of the third experimental group, which used the mixed method, over both groups, which used the method of peak systole and the method of continuity of slow contraction in the variable of pulling the handle (endurance of force), and then in the second degree came the second group that used the method of continuity Slow contraction, and in third place came the first experimental group, which used the method of peak contraction.

The researcher attributes the reason for this development to the impact of the training method used, which is the mixed method, so that this method and its performance method are as close as possible and the development of the type of strength to be developed, which is endurance.

From the researcher's point of view, he sees that the technique of the training method and its own training load is a comprehensive method and integrates the two methods of developing the strength endurance characteristic. As confirmed by (Ahmed Youssef) that strength endurance "is the ability of the athlete to show a level of muscle strength suitable for specialized performance resulting from fixed or mobile muscle contractions and for the longest possible period" ⁽¹⁾

Ali Salloum points out, according to Clark, that strength endurance "is the ability to continue to perform muscle contractions to a degree less than the maximum" ⁽²⁾

The researcher also attributes the development of this characteristic to the fact that this method is the best in terms of isolating, cutting and defining muscles. This is consistent with what Raysan Khraibet and Ali Turki confirmed in "The development of strength stretching by means of general or special exercises through the number of repetitions of the movement being large and the intensity of the effort, i.e. the weight of the weights used from (50-75%) of the athlete's maximum ability, this method and on this basis guarantee Increase in size and cutting intramuscular with an increase network of capillaries in muscles⁽³⁾. And Amer Fakher and Haider Blash confirm when training the qualities of strength and endurance "Athletes of activities that rely on special strength or ability should not be excessive in performing (endurance) exercises in large volumes" ⁽⁴⁾.

Presenting the results of the post-test comparison of the three groups in the motor range variables

1- Jamal Sabry Faraj: Strength, Ability, and Modern Sports Training, Amman, Dar Degla, 2012, p. 392.

2- Ahmed Youssef Miteb and Samer Youssef: The Effect of Anaerobic Exercises on the Development of Strength Endurance and Speed among Young Handball Players, Babylon University Journal of Sports Sciences, Volume 2, Issue 4, 2007, p. 17.

2- Ali Salloum, Jawad Al-Hakim: Tests, measurement and statistics in the mathematical field, pg. 98, 2004.

3- Raysan Khraibet and Ali Turki Musleh: Theories of Strength Training, p. 85, 2002.

4- Amer Fakher Shaghatai and Haider Balash Jabr, Physiology of Endurance Training, Practical Applications, Dar Al Diaa for Printing and Design, Iraq, Najaf, 2017, p. 363.

Table (5) Variance analysis ANOVA To compare the posttests between the three groups in the variables of strength

| ef fe ct si ze | Statis tical signif icanc e | significa nce level | value(F) Calculate d | circles square | degrees of freedom | sum of squares | source of contrast | Varia nts |
|----------------------------|---|---------------------------|----------------------------|-------------------|--------------------------|-------------------|--------------------------|------------------------------------|
| 0. 82 9 | moral | 0.000 | 21,758 | 117,2 50 | 2 | 234,50 0 | between groups | Drape torso forward |
| | | | | 5,389 | 9 | 48,500 | within groups | |
| | | | | | 11 | 283,00 0 | the total | |
| 0. 87 0 | moral | 0.000 | 30,152 | 115,5 83 | 2 | 231,16 7 | between groups | drape torso back |
| | | | | 3,833 | 9 | 34,500 | within groups | |
| | | | | | 11 | 265,66 7 | the total | |
| 0. 89 4 | Mora l | 0.000 | 37,800 | 36,75 0 | 2 | 73,500 | between groups | Milan Torso to the right |
| | | | | 0,972 | 9 | 8,750 | within groups | |
| | | | | | 11 | 82,250 | the total | |
| 0. 87 7 | Mora l | 0.000 | 31,960 | 35,02 3 | 2 | 70,047 | between groups | Milan Torso to the left |
| | | | | 1,096 | 9 | 9,863 | within groups | |
| | | | | | 11 | 79,909 | the total | |
| 0. 86 2 | Mora l | 0.000 | 28,106 | 31,92 3 | 2 | 63,847 | between groups | rotate Torso to the right |
| | | | | 1,136 | 9 | 10,223 | within groups | |
| | | | | | 11 | 74,069 | the total | |
| 0. 89 | Mora l | 0.000 | 37,337 | 35,64 0 | 2 | 71,280 | between groups | Rotate |

A REHABILITATIVE PROGRAM USING DIFFERENT METHODS AND ITS EFFECT ON SOME PHYSICAL CHARACTERISTICS AND MOTOR RANGE FOR PEOPLE WITH KYPHOSIS/IRRIGATION RESEARCHER ADMIN

| | | | | | | | | |
|---|--|--|--|-------|----|--------|---------------|-------------------|
| 2 | | | | 0.955 | 9 | 8,591 | within groups | Torso to the left |
| | | | | | 11 | 79,871 | the total | |

| effect size | Statistical significance | significance level | value(F) Calculated | circle squares | degrees of freedom | sum of squares | source of contrast | Variants |
|-------------|--------------------------|--------------------|---------------------|----------------|--------------------|----------------|--------------------|---|
| 0.870 | Moral | 0.000 | 30,088 | 33,991 | 2 | 67,982 | between groups | Lifting the chest from a prone position |
| | | | | 1,130 | 9 | 10,168 | within groups | |
| | | | | | 11 | 78,149 | the total | |
| 0.802 | Moral | 0.001 | 18,280 | 33,443 | 2 | 66,885 | between groups | Hands extended towards Toes |
| | | | | 1,829 | 9 | 16,465 | within groups | |
| | | | | | 11 | 83,350 | the total | |

In view of the data extracted and using a test F)) note that All variables had a significance level value of less than mistake percentage (0.05) than This means that there are significant differences between the three groups in the post-tests, which confirms that the value of the effect size for these variables was greater (0.14 (Which means the differences between the three groups are large. To find out the direction of the difference in favor of any group, the researcher resorted to a test (Tukey HSD Table (4-24) shows that

Table (6) a test (HSD) Tukey For comparisons in Motor range variables in the posttests among the three groups

| Statistical significance | significance level | standard error | media difference | computational circles | | Intermediate tests for groups | | Variants |
|--------------------------|--------------------|----------------|------------------|-----------------------|--------|-------------------------------|----------|----------------|
| Moral | 0.000 | 1.64148 | 4.2500 | 78,250 | 82,500 | M. second | M. first | Bend the torso |

| | | | | | | | | |
|-------|-------|-------------|--------|------------|------------|------------------|------------------|---|
| Moral | 0.000 | 1.6414 8 | 10,750 | 71,75 0 | 82,50 0 | M. third | M. first | forwar d |
| Moral | 0.008 | 1.6414 8 | 6,500 | 71,75 0 | 78,25 0 | M. third | M. secon d | |
| Moral | 0.008 | 1.3844 4 | 5,500 | 51,75 0 | 57,25 0 | M. secon d | M. first | Bend the torso back |
| Moral | 0.000 | 1.3844 4 | 10,750 | 46,50 0 | 57,25 0 | M. third | M.fir st | |
| Moral | 0.009 | 1.3844 4 | 5,250 | 46,50 0 | 51,75 0 | M. third | M. secon d | |
| Moral | 0.025 | 0.6972 2 | 2.2500 | 36,25 0 | 38,50 0 | M. secon d | M. first | Torso tilt to the right |
| Moral | 0.000 | 0.6972 2 | 6,000 | 32,50 0 | 38,50 0 | M. third | M.fir st | |
| Moral | 0.001 | 0.6972 2 | 3.7500 | 32,50 0 | 36,25 0 | M. third | M. secon d | |
| Moral | 0.042 | 0.7402 1 | 2.1500 | 36,37 5 | 38,52 5 | M. secon d | M. first | Torso tilt to the left |
| Moral | 0.000 | 0.7402 1 | 5.8500 | 32,67 5 | 38,52 5 | M. third | M.fir st | |
| Moral | 0.002 | 0.7402 1 | 3,700 | 32,67 5 | 36,37 5 | M. third | M. secon d | |
| Moral | 0.045 | 0.7536 0 | 2.1500 | 36,62 5 | 38,77 5 | M. secon d | M. first | Rotate the torso to the right |
| Moral | 0.000 | 0.7536 0 | 5.6000 | 33,17 5 | 38,77 5 | M. third | M.fir st | |
| Moral | 0.003 | 0.7536 0 | 3.4500 | 33,17 5 | 36,62 5 | M. third | M. secon d | |

A REHABILITATIVE PROGRAM USING DIFFERENT METHODS AND ITS EFFECT ON SOME PHYSICAL CHARACTERISTICS AND MOTOR RANGE FOR PEOPLE WITH KYPHOSIS/IRRIGATION RESEARCHER ADMIN

| | | | | | | | | |
|-------|-------|-------------|--------|------------|------------|------------------|------------------|--|
| Moral | 0.023 | 0.6908 5 | 2.2750 | 36,70 0 | 38,97 5 | M. secon d | M. first | Rotate the torso to the left |
| Moral | 0.000 | 0.6908 5 | 5.9175 | 33,05 8 | 38,97 5 | M. third | M.fir st | |
| Moral | 0.001 | 0.6908 5 | 3.6425 | 33,05 8 | 36,70 0 | M. third | M. secon d | |
| Moral | 0.006 | 0.7515 7 | 3.1250 | 35,75 0 | 38,87 5 | M. secon d | M. first | Lifting the chest from a prone positio n |
| Moral | 0.000 | 0.7515 7 | 5.8250 | 33,05 0 | 38,87 5 | M. third | M.fir st | |
| Moral | 0.014 | 0.7515 7 | 2.7000 | 33,05 0 | 35,75 0 | M. third | M. secon d | |
| Moral | 0.023 | 0.9564 1 | 3.1500 | 31,57 5 | 34,72 5 | M. secon d | M. first | Extend the hands toward the toes |
| Moral | 0.000 | 0.9564 1 | 5.7750 | 28,95 0 | 34,72 5 | M. third | M. first | |
| Moral | 0.049 | 0.9564 1 | 2.6250 | 28,95 0 | 31,57 5 | M. third | M. secon d | |

The table shows the comparison in all variables, as the first experimental group outperformed both groups. As for the comparison between the second and third groups, the second experimental group outperformed the third experimental group.

Discuss the results of comparing the posttests of the three groups in the motor range variables

The results are shown in Table (4-23) above for variables(Bend the torso forward Bend the torso back, tilt the torso to the right,Torso tilt to the left,Rotate the torso to the right,Rotate the torso to the left,Raising the chest from a prone position, extending the hands towards the toes) indicates that there are statistically significant differences between the post-tests of the three groups of the above-mentioned motor range variables clearly.

In Table (4-24), it was shown that the first experimental group, which used the method of peak systole, excelled over both groups, which used the method of slow contraction continuity and the mixed method in all variables of the motor range, and then in the second degree came the second group that used the method of slow contraction continuity and ranked The third came

the third experimental group, which used the mixed method.

The researcher attributes the cause of this development to the first group, which used the method (the peak of contraction) to many factors that led to the superiority of this group over the rest of the other groups. On a high-intensity contraction of the targeted dorsal muscles affected by the deformation, and through this tension, the muscle regains its tone, vitality, and increases its flexibility, strength, and growth after it elongated more than naturally and changed its mechanical and anatomical shape and structure due to the curvature.

As mentioned (Shehata and Baraiqa, 2000), the slow movement of the exercise until the feeling of mild pain as a result of the stretching of the muscles and stability in the final position in the exercise for a period limited to between 5-10 seconds achieves muscle relaxation, as well as continuing to perform the exercise after the stability period to increase the lengthening of the muscles and muscle tissues leads to an improvement and increase in flexibility ⁽¹⁾

The researcher also attributes the superiority of this method over other methods to the variables above, in that this method has a great effect in adding full tension to the muscles and ligaments working for it by increasing the range of motion in the full range during performance, and in this way it will directly affect the increase in joint movement and the secretion of a larger amount of synovial fluids that nourishes the cartilages, as working in this way will involve the largest number of muscle fibers, and not even a small part of them remains, but it has a role in participating in the muscular work and thus pulling the spine and increasing its flexibility, "as the therapeutic exercises lead to stretching the muscles, and this stretching in turn leads to the removal of calcifications in the vertebral column" ⁽¹⁾.

"During the pause in the middle of the movement, there is a rapid recovery of muscle fibers after muscle fatigue, as it was found that muscle fatigue is an important factor in sports performance to return to the pre-exhaustion state, because it affects proprioception and that this is responsible for many musculoskeletal and control disorders." Therefore, understanding the process of muscle fatigue is very important for professionals in the field of rehabilitation and physical training⁽²⁾.

Some sources indicate, according to Kendall's theory, "The corrective exercises, which are the posterior erector exercises that are able to reduce the kyphosis angle, are dependent on strong back muscles that counteract the pull of gravity directed forward on the thoracic spine. It consists of stretching exercises to the front side of the torso along with strengthening exercises to posterior side of the torso" ⁽³⁾

He adds further Akuthota, Ferrero, Moore, & Fredericson, **2008**) The basic stabilization exercises consist of a "muscular box" with the abdomen in front, the spinal and gluteal muscles

1- Shehata, Muhammad Ibrahim, and Bariqi, Muhammad Jaber: Physical Measurements and Motor Performance Tests, Knowledge Manshaat, Alexandria, Egypt, (2000), p.110

2- Al-Takriti, Wadih Yassin and Al-Obeidi, Muhammad Ali: Statistical Applications in Physical Education Research, Dar Al-Kutub for Printing and Publishing, University of Mosul, (1986), p. 66.

2- Fitts RH: Muscle fatigue: the cellular aspects. Am J Sports Med 1996, 24: S9-S13.
10.1177/036354659602400103

3-Kendall, FP (2005). Muscles: Testing and function with posture and pain (5th ed.). Baltimore, MD: Lippincott Williams & Wilkins.

in the back, the diaphragm as the roof and the pelvic floor, and the muscles of the hip girdle at the bottom. All of these support the upright position of the torso, help in muscular balance, reduce the risk of complications resulting from kyphosis, and improve the quality of life for people with kyphosis.”⁽¹⁾

Conclusions and recommendations

Conclusions

1-The rehabilitation program had a positive impact on improving all the variables of the current research (muscle strength, motor range, and dorsal hump angle).

2-The method of apex contraction has a significant effect on the development of the variables related to the maximum strength of the dorsal muscles (muscles of the dorsal substance or close to the convexity area), and it was superior to the other two styles (continuity of slow contraction method - the mixed method) in the rate of development of these variables. Also, the method of apex systole had a significant impact on the development of the rest of the research variables, which are (the range of motion - the angle of kyphosis), and it showed its superiority over all other methods in improving these variables for people with kyphosis.

3-The mixed method (peak systole method + slow contraction continuity method) had a significant effect on the development of variables related to strength endurance of the dorsal muscles.

4-The stretching exercises had a significant effect on the development of the flexibility of the muscles operating on the torso and affected or causing deformation (deep and lateral muscles of the abdomen - back muscles - rib cage muscles) in order to lengthen the muscles and ligaments that were shortened due to dorsiflexion. I have contributed effectively reduce Ferrickson and Cobb angle for kyphosis.

Recommendations:

The need to use the peak contraction method to target the deformed dorsal muscles for those with kyphosis, because the method of performing it is commensurate with the nature of the deformation that occurs to achieve a faster result and shorter effort as well, in addition to introducing the rest of the other training methods for muscle building and merging these methods to work with the rest of the muscles other than the dorsal affected by the deformity from the front side of the trunk.

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