A Rehabilitative Approach To The Treatment Of Palmar Fasciitis Of The Sole Of The Foot And Its Effect On Some Physical Variables

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Abstract

The importance of the foot joint was discussed in the research, as it is the important joint on which the distribution of the body is located, and this characteristic made it vulnerable to many injuries, including the injury of the pentagram fasciitis in the sole of the foot and the lack of a rehabilitation approach to treat that injury. The ranges of kinetic force are characterized by speed and force elongation, preparation of the rehabilitation curriculum, measurement of those tests before and after the curriculum, then data extraction, classification, discussion, knowledge of conclusions and recommendations.

Introduction

Sports is an urgent need for every member of society, and the quality and enjoyment of life depends on the extent of commitment to physical activities and the continuity and maintenance of that. Vulnerable to diseases that can be called diseases of lack of movement and other diseases of the joints and bones that have spread recently, and of which we single out in our study these pains in the sole of the foot. Through the arches in the sole of the foot and their ability to balance and absorb shocks, so when pain occurs in the sole of the foot as a result of exposure of the tendons to a certain pressure that leads to inflammation of the quintuple fasciitis, and this shows the importance of research in choosing one of the modern and important physical therapy devices, including the thorn and omental apparatus, as well as a device Infrared ultrasound and therapeutic exercises to treat the quintuple fascia. Our belief in the ability of these devices and equipment exercises based on correct scientific foundations to bring the patient back to his normal state because of their role, vital and essential in getting rid of this inflammation and thus preventing pain, which is one of the indicators that bother the individual and his feeling of discomfort and prevent the injured from aggravating the injury and turning it into a bone spur, which is the best solution for him. In advanced cases, surgery and a complete lift, which prompted us to choose this site as a result of recent research orientations to the preference of the use of devices and therapeutic exercises over drug therapy in symmetry of healing.

Research problem

Through a researcher familiar with references, research and interviews with an orthopedic and fracture specialist in most Basra hospitals, he found that the treatment was not practiced and mixed with physical therapy devices that treat plantar fasciitis due to the details of the foot and the large number of injuries to this situation in our region. Society we have to choose to research this problem. Our problem in terms of scientific research suggests that 2.5% of the world’s population is exposed to this injury, as the doctor visits one million
people every year, and the importance of the foot to the human body, and leaving it untreated leads to calcium deposition and the formation of bone spurs as a result of inflammation in this fascia and the loss of its elasticity, which leads to disruption of the process of walking, balance and erection, which causes several problems of the body, including the spine, so we had to prepare a complete rehabilitation curriculum that contains physical therapy devices and therapeutic exercises to treat this condition to make an effective contribution in the field of treatment and medical rehabilitation. And the athlete to add a scientific product in the field of sports medicine so that our problem can be formulated. The researcher asked the following question: What is the effect of rehabilitation? Curriculum for palmar fasciitis in the sole of the foot?

Research Objectives

1. Preparation of a rehabilitation curriculum for palmar fasciitis
2. Recognizing the differences in the measurement of physical variables before and after the curriculum

Research assignments

There are differences in the material variables before and after the curriculum and in favor of the post-curriculum

Research Areas

- Human field: players with pent fasciitis on the soles of the feet who are in first-class clubs
- The spatial domain: Basra Governorate hospitals (Basra General Hospital - Teaching Hospital, Shifa Hospital - Port Hospital - Basma Amal Center for Physiotherapy and Medical Rehabilitation)

Research methodology and field procedures

Research Methodology

The researcher used the experimental method because it is related to the nature of the research problem to be solved because the experimental method depends on experience and field testing, and is guided and informed by the means of observation and is based on the use of modern scientific tools, devices and equipment in order to discover and highlight any causal relationship that caused one or more of these variables. (Marwan Abdel-Majid Ibrahim: 2006: p. 137)

Research community and sample

In order to reach accurate research results, the researcher conducted a field survey of doctors and surgeons of orthopedic diseases, joints, fractures, physiotherapy and rehabilitation centers in Basra Governorate, as well as Basra Governorate clubs for team games and participation in the Iraqi league. The first class for the sports season (2020-2021), which is (Port - South Oil - Offshore) and for the period from 1/7/2020 to 1/2/2021. Including the presence of other injuries besides the five fascia injury in the sole of the foot, which are fractures of the ankle joint and a complete rupture of the ligaments of the joint, as well as a partial rupture of the internal ligament of the ankle joint. Of the total injured athletes in the time period of their achievement, who were confirmed to be referred to the Specialized Center for Medical Rehabilitation and Physiotherapy in Basra, as well as the clinics of specialized doctors and surgeons, and therefore the research sample consisted of (7)...
athletes with quintuple fasciitis in the sole of the foot, and the number (4) football players and (3) handball players, whose condition requires a rehabilitative approach to return them to sports activity again as they were before. The injury occurred. In front of the specialist doctor, as well as radiology, where a clinical examination was conducted for them, as well as to ascertain the type of injury. The ages of the research sample ranged between (25-30) years, and they are among the ranks of the Premier League clubs for team matches, which are matches (football and handball) in Basra Governorate. In order to control the research variables accompanying the course of the research experiment and to identify the validity of the sample and the distribution of the values of its average variables, the researcher found homogeneity of the research sample in terms of height, weight, age and age of training using the coefficient of variation and Table No. (1) Illustrates this.

<table>
<thead>
<tr>
<th>Variables</th>
<th>measuring unit</th>
<th>Arithmeti mean</th>
<th>standard deviation</th>
<th>coefficient of difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>poison</td>
<td>172.142</td>
<td>6.440</td>
<td>3.741</td>
</tr>
<tr>
<td>the weight</td>
<td>kg</td>
<td>72.428</td>
<td>10.564</td>
<td>14.585</td>
</tr>
<tr>
<td>Age</td>
<td>year</td>
<td>27.571</td>
<td>1.511</td>
<td>5.480</td>
</tr>
<tr>
<td>training age</td>
<td>year</td>
<td>5.857</td>
<td>1.345</td>
<td>22.963</td>
</tr>
</tbody>
</table>

This means a good distribution of the sample and its homogeneity because the values of the coefficient of variation were limited between (3.741 - 22.963) % for the research sample, which is an acceptable value as the value of the coefficient of variation. The closer to (1%) the homogeneity is high, and if it exceeds (30%), it means that the sample is not Homogeneous (Wadih Yassin Al-Tikriti: 1999: pg. 160)

Equipment and tools used in research

- Arab and foreign references and sources.
- Standard tests for some physical variables.
- Information network (Internet)

Genomic device (Gonimetry) to measure the normal range of movement of the joints of the body no. (1)

- Harpy Shockwave Therapy Device
- Far infrared device
- Ultrasound device
- Examination and diagnosis bed
- Reclining laboratory bench (injured)
- Type of laptop (Exin) number (1)
− Type of photographic camera (Sony) number (1)
− Laser discs
− Laces and elastic wires
− Balance balls

Measurements and tests used in the research

Morphological (anthropometric) measurements

Length

For this purpose, the researcher used a resetter, which is a stand mounted vertically on a wooden edge, and its length is (250) cm, so that the zero level is at the level of the wooden base, and there is a stand mounted horizontally. On the shaft so that it moves down and up, the stand is lowered until it touches the top edge of the laboratory head so that the number facing the stand expresses the length of the tester to the nearest centimeter.

Weight

For this purpose, the researcher used the medical scale where the laboratory stands erect on the scale without wearing sports shoes so that its weight is distributed evenly on the feet, then the reading given by the indicator is taken to the nearest kilogram.

Ankle motion tests range

Extension (extension) test of the ankle joint’s range of motion

− Purpose of the test: This test aims to measure the range of motion of the affected ankle joint in case of strain.
− Instruments used: genomics scale, laboratory benches.
− Description of the test method: The tester stands next to the tester (infected) while he is lying on the platform. The genomic device is placed on the lateral side of the affected ankle area, then the patient is asked to extend the affected foot forward and the moving arm of the device moves with the mediastinal axial line of the affected foot, the other remains fixed in its first position and reads the angle between the two arms of the genomic device, which represents the angle of extension (extension) to the affected ankle joint.
− Recording: The genomic index refers to the measurement of the range of motion of the affected ankle joint by degrees (0-15), as in the following figure (Ronald McCray: 1999: p. 236)
Ankle range of motion test in case of flexion (flexion)

- **Purpose of the test:** This test aims to measure the range of motion of the affected ankle joint in case of flexion.
- **Instruments used:** genomics scale, laboratory bench.
- **Description of the test method:** The measurer stands next to the patient (the informant), who is lying on the seat, then asks the patient to bend the ankle (the affected joint) inward and the movable arm moves with the joint movement inward and parallel to the longitudinal mediastinal line of the affected joint with the arm remaining, The other is fixed to its first position and reads the angle between the two arms of the device, which represents the angle of flexion (flexion) of the affected ankle joint.
- **Recording:** The genomic index refers to the measurement of the range of motion of the affected ankle joint with scores (0-55) for the laboratory as shown in the following figure Ronald McRae: 1999: p. 236

![Diagram of ankle flexion](image)

Shape (2)

Demonstrates flexion of the ankle joint

Testing the range of motion of the ankle joint in case of internal movement of the foot

**Purpose of the test:** This test aims to measure the range of motion of the affected ankle joint in the case of internal movement of the foot.

**Instruments used:** genomics scale, laboratory benches.

- **Description of the test method:** the measurer stands next to the patient (the informant), who is lying on the bench, then asks the patient to bend the ankle (the affected joint) inward (the movement of the foot inward) and the movable arm moves with the movement of the joint inward and parallel to the longitudinal mediastinal line of the joint the injured while the other arm remains fixed in its first position, the angle between the two arms of the device is read, which represents the angle of movement from the foot to the inside of the injured ankle joint.
- **Recording:** Genomic index refers to the measurement of the range of motion of the affected ankle joint (movement of the foot inward) to the laboratory in degrees (0-40) degrees,
Test the range of motion of the ankle joint if the foot moves outward

- **Purpose of the test:** This test aims to measure the extent of movement of the affected ankle joint if the foot is moving outward.
- **Instruments used:** genomics scale, laboratory benches.
- **Description of the test method:** the bag stands next to the victim (the informant), while he is lying on the bench, then asks the patient to bend the affected ankle outward (movement of the foot outward) (lateral side of the joint affected ankle) and the movable arm moves with the joint movement outward and parallel to the line The longitudinal mediastinum of the affected joint, while the other arm remains fixed in its first position. The angle between the arms of the device is read, which represents the angle of movement of the foot outward towards the affected ankle joint.
- **Recording:** Genomic index refers to the measurement of the range of motion of the affected ankle joint (outward movement of the foot) to the laboratory in degrees (0-20) degrees.

**Physical variable tests (physical strength)**

Test the characteristic speed of the muscles of the legs from a standing position (15) seconds

- **Purpose of the test:** This test aims to measure the characteristic speed of the muscles of the legs.
- **Instruments used:** hall, iron bar, electronic stopwatch, carpet.
- **How to perform:** From a standing position, bend and extend the legs and bend them (half step) and count the number in (15) seconds.
- **Recording:** Counts the number of times the foot is bent and extended (half-dubni) within (15) seconds (Muhammad Matar Arak 1984: 351)

Extension test of the muscles of the legs (from a standing position) (60) seconds

- **Purpose of the test:** This test aims to measure the length of the leg muscles.
- **Instruments used:** hall, iron bar, electronic stopwatch, carpet.
- **How to perform:** From a standing position, bend and extend the legs (half dip) and count the number in 60 seconds.
- **Recording:** Calculates the number of times bending and extending the legs (half-dubni) within (60) seconds (Qais Naji and Bastawisi Ahmed: 1984: p. 351)

**Preliminary exams**

After identifying the members of the research sample of athletes with quintuple fasciitis in the sole of the foot, which used the proposed rehabilitation method for the purpose of qualifying them to practice sports activity again, the researcher conducted tribal tests on the sample, where the tests were conducted. Made for the period from 1/3 to 2/3/2021

**Qualifying Curriculum**

The researcher prepared a proposed rehabilitation approach to develop some of the characteristics, physical abilities, and motor limitations of the foot joint affected by pentagonal fasciitis in the sole of the foot, based on sources, references, research and studies, as well as opinions from experts and specialists as a result of personal
interviews conducted by the researcher with them, and after obtaining the research sample, the researcher implemented the approach. The proposed qualification and its application to the experimental research sample (one group) after the initial test, where the implementation of the qualifying curriculum takes a period of (6) weeks, and the qualifying curriculum included (18) qualified units, with three qualified units per week, and the duration of each qualified unit ranges between (45) - (60) minutes. It also included the rehabilitation curriculum (physical therapy devices), which are thistle garlic, infrared device, and ultrasound. The device where the forks device is used every five days, in addition to a different and varied set of exercises that suit each stage of rehabilitation, where the researcher personally supervised their follow-up and ensure their application of the exercises as in Appendix (1) a model for the rehabilitation unit was developed. The curriculum using isometric (moving) exercises, passive and active flexibility exercises with the help of a physical therapist, and balance exercises.

**Subsequent tests**

After completing the application of the proposed qualification approach to the affected sample, the researcher conducted the subsequent tests that were conducted for the period from Saturday 3/4/2021 until Monday 5/4/2021.

Statistical tools and a statistical package using SPSS

Presentation, analysis and discussion of the results

Presentation, analysis and discussion of the results of the range of motion tests for the ankle joint (flexion, extension, movement of the foot inward, movement of the foot outward)

Table (2) Displays arithmetic means, standard deviations, predetermined values, dimensions, and value. (R) Imitates egg yolk

The probability value and development rates for the extent of movement of the (infected) research sample

<table>
<thead>
<tr>
<th>Evolution %</th>
<th>probability value</th>
<th>(t) Values calculated</th>
<th>post test</th>
<th>pretest</th>
<th>measuring unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>standard deviation</td>
<td>Arithmetic mean</td>
<td>standard deviation</td>
<td>Arithmetic mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19.031</td>
<td>0.000</td>
<td>19.667</td>
<td>0.755</td>
<td>44.285</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29.926</td>
<td>0.000</td>
<td>14.496</td>
<td>0.534</td>
<td>19.571</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23.019</td>
<td>0.000</td>
<td>19.909</td>
<td>0.487</td>
<td>39.714</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28.984</td>
<td>0.000</td>
<td>12.060</td>
<td>0.487</td>
<td>19.714</td>
</tr>
</tbody>
</table>

Table No. (2) Shows the arithmetic mean values, standard deviations, calculated and significant .t value, and evolution ratios for the range of motion tests (flexion, flexion, foot inward movement, and foot inward motion).
foot out), where the value of the results of the kinetic range tests (for flexion movement) reached the arithmetic mean (35,857) with a standard deviation of (0.899) in the pre-test, while it reached in the post-test. Arithmetic mean ((44,285), standard deviation of (0.755), value (t) ((19.667) morale (0.000) and development rate (19.031)), arithmetic mean tide was (13.714).) and deviation The standard deviation was (0.899) in the pre-test, while in the post-test it reached the arithmetic mean (19.571) with a standard deviation of (0.534) and the value was (t) 14,496), the morale rate was 0.000, the development rate (29.926%) and the (foot inward movement) was the arithmetic mean (.30, 571 and standard deviation (0.786)) in the pretest. The arithmetic mean after the test was (39.714) with a standard deviation of ((0.487, the (t) value was 19.909), morale was (0.000), and the development rate was (23.019) %. Foot movement outward.) 14 and with a standard deviation (1.154) In the initial test, while in the post test, it reached an arithmetic mean (19.714) with a standard deviation of ((0.487) and the (t) value was (12060), and morale was 0.000). The rate of development (28.984. The researcher believes that the method of rehabilitation has positively affected the development of the range of motion of the ankle joint, as it helped in developing the strength of the ankle joint. Perhaps the most basic reasons for the differences between the previous and subsequent tests and the extent of the importance of the subsequent tests is taken into account through the ranges of movement And the strength of the joints similar to the natural and gradual movement, through the preparation and construction of the rehabilitation curriculum in terms of the exercises based on the foundations and concepts of ranges, strength and the nature of the muscles that work on the joint and its mechanical effect.The researcher, which is consistent with what Bastawisi Ahmed referred to, stressed that the exercise is organized and purposeful movements. Through which the development of motor qualities and skills in the field of life and sports (Bastawisi Ahmed Mandi Samurai 1984: p. 285) is attributed to the researcher The emergence of differences between the tribal and dimensional tests in favor of the dimension group, the effectiveness of the rehabilitation approach that he prepared, which means that the rehabilitation program has shown an effect Positively on the property (flexibility of the ankle joint) represented in the range of motion tests, this means that flexibility is improved through stretching exercises specially designed for this purpose, and the curriculum includes A variety of exercises, and these exercises have given effective positive results in the development of research variables in general and range of motion. In particular, as an injury to the ankle joint, the associated pain directly affects movement resulting in a weakening of the muscles surrounding the joint and its range of motion. (Mervat El-Sayed Youssef) confirmed that the muscles gain flexibility as a result of training (Mervat El-Sayed Amin 1997: p.).

Presentation, analysis and discussion of the results of tests of physical variables (force characterized by velocity and force elongation)

Table No. (3) (Showing the arithmetic averages, standard deviations, pre- and dimensional values, and the calculated (t) value. The probability value and evolution ratios of the physical variables of the research sample (infected).)

<table>
<thead>
<tr>
<th>evolution ratios</th>
<th>probability value</th>
<th>calculate (t) Values</th>
<th>post test standard deviation</th>
<th>Arithmetic mean</th>
<th>pretest standard deviation</th>
<th>Arithmetic mean</th>
<th>measuring unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>63.640</td>
<td>0.000</td>
<td>8.695</td>
<td>1.718</td>
<td>9.428</td>
<td>0.975</td>
<td>3.428</td>
<td>number</td>
<td>speed</td>
</tr>
</tbody>
</table>
Table No. (6) shows the values of the arithmetic means, standard deviations, the value of the calculated and moral ratios, and the development ratios for the tests of physical variables (force determined by speed and length of force) as the value of a variable (a force characterized by speed) reached its arithmetic mean (3.428) and standard deviation (0.975) in the pre-test, Whereas, in the subsequent test, it reached its arithmetic mean (9.428) with a standard deviation of (1.718). The value of (t) morale was (8.695) morale (0.000), while the rate of development was (63.640%) and the arithmetic mean of the variable (for strength scale) was (9.714 in the pretest with a standard criterion). The deviation was (3.638) while the mean was The arithmetic in the dimensions test (33.714.) with a standard deviation of (3.988) and the value (t) was (26675) and the morale was (0.005) and the rate of development was (71.187%). The researcher believes that talking about physical variables, especially the force variable, which is characterized by speed It is broad and very important because of the entry of this trait into many sports activities, and it has been defined as (the individual’s ability to extract a certain level of muscular strength within a high kinetic speed, that is, it is a compound of strength and speed) (Talha Hossam El-Din): 1997: p. 217) The researcher also sees this development in strength. Speed is determined in the subsequent test as one of the basic skills. Characteristics of the components of physical preparation because of their important role in sports activities as a result of using the proposed experimental method. Research The researcher believes that the repetition of exercises leads to the adaptation of the functional organs of the player's body, and based on this principle, the prolonged strength property requires complex and complex exercises given with calculated, regular and measured training doses away from stress and tension. Close to the state of effective fatigue. Training on this feature naturally accompanies some kind of physiological changes and the formation of the players’ body organs, and this was confirmed by (Jamal Sabry) “Muscular strength helps in developing health by increasing the stability of muscles and joints and gives the ability to face many sudden injuries (Jamal Sabry: 2012: p. 415).

Conclusions and recommendations

Conclusions

1. The rehabilitation method contributed to an increase in the range of motion and the strength of the muscles that act on the ankle joint, which led to a good result in returning to normal. Get rid of fasciitis on the sole of the foot
2. There are statistically significant differences in the range of motion of the foot joint in favor of the agitated dimension
3. There are statistically significant differences in the characteristic strength of elongation speed and elongation force in favor of the method dimension.

Recommendations

1. The necessity of paying attention to physiotherapy and rehabilitation and the formation of physiotherapy centers within sports clubs due to the necessity of avoiding and preventing sports injuries.
2. Emphasis on the use of physical therapy equipment before starting therapeutic exercises

References

6. Mervat El-Sayed Youssef, The effect of a proposed program using water exercises to rehabilitate working muscles on the knee joint, injured anterior ligament surgery, (Scientific Journal, Faculty of Physical Education for Boys, Cairo, Helwan University, 1997)

Complement (1)

The model alone demonstrates the rehabilitation of patients with palmar fasciitis of the sole of the foot

<table>
<thead>
<tr>
<th>total time</th>
<th>Rest between groups</th>
<th>totals</th>
<th>rest between repetitions %</th>
<th>Repetition</th>
<th>time</th>
<th>physiotherapy equipment used</th>
<th>Qualifying unit</th>
<th>first week</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 d</td>
<td>2 d</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10 d</td>
<td>Enfrired Infrared</td>
<td></td>
<td>first</td>
</tr>
<tr>
<td>2 d</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>I shock wave therapy colliding waves</td>
<td></td>
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<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2000 hits</td>
<td>Ultrasound Ultrasound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10 d</td>
<td></td>
<td>Ultrasound Ultrasound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 d</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15 d</td>
<td></td>
<td>Enfrired Infrared</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A sample of some of the rehabilitation exercises performed after each physical therapy session

1. Sitting on the floor or on a bench, tie the rubber with a fixed end, then tighten the rubber with the foot and move the foot in the directions (up, down, right, left)
2. In a sitting position, move the forefoot and toes forward and backward
3. In a sitting position, open and join the toes of the affected foot and repeat with the other foot
4. In a sitting position, we try to tighten the muscles of the foot and gather
5. Rotate the foot on the tennis ball in all directions
6. Rotate the foot on a tennis ball in all directions
7. Rotate the foot counterclockwise from a sitting position on the chair
8. From a sitting position on the chair, the assistant rotates the metatarsal once inward and once outward
9. From a sitting position on the chair, roll the toes and make them smaller, at the same time pushing the toes with the toes.
10. From a sitting position on the chair, the combs are fixed, and the heels are raised and lowered

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 27 d | 10 d | Ultrasound Ultrasound | the second |
| 31 d | 2 d | Enfrired Infrared | the third |
| 2 d | - | - | - | 2 d | Ultrasound Ultrasound |
| 2 d | - | - | - | 15 d | Ultrasound Ultrasound |
| - | - | - | - | 2000 stroke d | Shock wave therapy waves |