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THE EFFECT OF USING MANUAL THERAPY ACCOMPANIED BY THE GRASTON TECHNIQUE ON FIRST-DEGREE HERNIATED LUMBAR DISC

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Abstract: the article aims to identify the effect of using a therapeutic and rehabilitative exercise program accompanied by modern manual therapy for lower back pain resulting from lumbar disc herniation and to reach: Reduction and disappearance of sciatica pain associated with back pain resulting from disc herniation. Restoring the flexibility of the lumbar region and improving its range of motion. Speeding up recovery and not resorting to surgical operations. The sample was chosen intentionally from the visitors to the private medical center for the treatment of musculoskeletal diseases in North Sinai Governorate, Arish City, who were suffering from sciatica pain in the age group (20-30) years, men and women, where the injury was recent and they had not suffered from it before and was not chronic, and its number was 16 patients. The results indicated that significance of the differences between the pre- and post-measurements in some variables. There are statistically significant differences in favor of the post-measurement over the pre-measurement in the selected measurements under study.
Conclusion. The proposed program (therapeutic and rehabilitative exercises and modern manual therapy) has a positive effect on treating sciatica pain resulting from lumbar disc herniation.

Keywords: manual therapy, lumbar disc, Graston technique

Introduction

In recent times, back pain has become a general phenomenon, although lower back pain occupies a large space in the complaints of men and women alike in this new millennium, to the point that it has become more frequent than headaches and colds. Recent statistics indicate that lower back pain is one of the most important causes of absenteeism from work and the large number of sick leaves for adults under the age of forty.

Both Mohamed El-Amin and Ahmed Ali (2009) indicate that about 80% of the world's population at various stages of their lives suffer from lower back pain, and that there are more than six million individuals who suffer from lower back pain annually in the United States of America, and that lower back pain is the main cause of the largest financial loss resulting from absenteeism from work, as Britain loses about (13.2 million) working days per year, and in the United States of America about (93 million days), which results in a loss of (14 billion dollars) annually for treatment and rehabilitation.

The motor unit in the spine is responsible for the movements we make in bending and turning, which allows us to stand, sit, walk, carry things and other movements. This unit consists of two adjacent vertebrae in the spine and is articulated by small joints with cartilage between them and is surrounded by many front and back ligaments in addition to the back muscles. This motor unit is repeated along the spine and works in harmony and harmony that allows us to practice our lives. Therefore, any injury or inflammation in any of the components of this unit leads to a feeling of pain in the spine area, whether in the neck, back or lower back. Therefore, we can say that lower back pain may be the result of a muscle strain or a muscle injury in the back, which is the most common, or the pain may be the result of an injury to the cartilage or vertebrae. It has been found that adults under the age of forty-five suffer from lower back pain more because of a herniated lumbar disc.

Sabika Ahmed (2007) quoting Howard Knudsen (2006) indicates that lower back pain is the result of several reasons that ultimately lead to the appearance of a malfunction in the work of each of the muscles, bones, ligaments and cartilage in this area as a whole or in one of its components, as it represents the link between the trunk and the lower limb directly and the upper limb and the lower limb indirectly. John indicates that sciatica pain is an inflammation of the nerve as a result of pressure from the cartilage due to rapid movement or lifting a heavy weight, and this appears more in activities that increase pressure on the cartilage such as sitting or bending, and among the physical tests indicating the presence of sciatica nerve inflammation: "raising the leg straight from lying down" which causes pain as a result of tension in the affected nerve, and physical medicine for it includes controlled physical activity and this pain goes away within several weeks, and 5% of affected patients require surgical intervention. The medical term for sciatica resulting from a herniated lumbar disc refers to the fact that it is a result of a disc extending beyond its natural location, which puts pressure on the nerve, causing pain in the back and extending to one of the lower extremities from behind.

Muhammad Alawi and Abu Al-Ala Abdel Fattah (2000) mention that the use of ancient oriental medicine has recently spread, which is a type of treatment that relies on natural methods and innovative ways to treat all diseases, especially intractable ones. These methods include herbal medicine, chiropractic, manual therapy in its various types, and cupping. These types and methods have been excelled in by the peoples of the Far East since ancient times, such as China, Japan, India, Cuba, and Pharaonic Egypt.

Carls. Daniel R (2003) indicates that manual therapy focuses on the relationship between the spine and the nervous system and the effect of the relationship on health. It aims to correct the vertebrae of the spine to restore the normal function of the nervous system, thus allowing the body to heal itself. It focuses entirely on manual treatment of the spine and joints without resorting to the use of drugs or surgery.

Amal Al-Azab (2005) indicates that there is an old manual treatment for the spine that is now used as part of alternative medicine or medicine tools that work to correct the vertebrae of the spine to restore the normal function of the nervous system to treat any pain.

Qadri Bakri and Siham Al-Ghamry indicate that implementing kinetic therapy is accompanied by activating blood circulation, which actively helps to deliver oxygen and various nutritional elements to muscle tissues, especially those that are injured and need to be rebuilt to repair and build injured tissues.

Abu Al-Ala Ahmed Abdel Fattah (2000) states that therapeutic rehabilitation exercises are useful in overcoming chronic back pain.

Amal Al-Azab (2005) states that therapeutic exercises are a major and essential support in our daily lives, as exercises are a means that works to contract muscles, improve blood circulation in them and strengthen them, in addition to removing metabolic waste from them.

Hayat Rafael (1986) indicates that rehabilitation exercises are one of the main axes in treating many injuries because they aim to remove the functional dysfunction of the injured part, and it is a way to care for the manifestations of weak growth in some muscles, ligaments and joints, and that the place of rehabilitation exercises within the treatment program for the injury is after the end of the acute period of pain, and it must be taken into account when performing rehabilitation exercises that they be gradual and according to the type and degree of injuries and the nature of the injured organ. Hayat Ayyad, Safaa Al-Kharboutli (2008) confirm

that therapeutic exercises are considered the main axis in treating injuries because they aim to remove the functional dysfunction of the injured part by strengthening the muscles, ligaments and joints and paying attention to the mechanics of body movements and proper posture through rehabilitation programs and therapeutic exercises, as they work to develop and improve muscle strength and flexibility.

The degree of muscle and nerve coordination and the injured individual regains his natural state of body balance and performs his life duties in the most complete manner, and some medical schools rely on therapeutic exercises completely in treating injuries without the intervention of any other factors, such as drug therapy.

Fox et al (1997) confirm that exercises to develop muscle strength and flexibility are among the most important exercises that should be included in therapeutic exercise programs because of their positive effect on reducing injury and alleviating pain. Therefore, from the above, the researcher found through his theoretical reading that a therapeutic and rehabilitative exercise program can be used in conjunction with manual therapy for patients with lumbar disc herniation without surgical intervention, which causes lower back pain. From what we mentioned about the suffering of sciatica pain, which is widespread in the age group (22-27), which leads to a malfunction in the muscular system and the inability to perform daily tasks and the extent of its negative impact on the psychological state, which prompted the researcher to study and examine this problem for this age group in society and to develop an appropriate program in the hope that it will achieve tangible progress in getting rid of this injury. This study also contributes to how to deal with some health problems related to sciatica pain.

Thus, the article aims to identify the effect of using a therapeutic and rehabilitative exercise program accompanied by modern manual therapy for lower back pain resulting from lumbar disc herniation and to reach: Reduction and disappearance of sciatica pain associated with back pain resulting from disc herniation. Restoring the flexibility of the lumbar region and improving its range of motion. Speeding up recovery and not resorting to surgical operations.

Methods.

Participation.

The sample was chosen intentionally from the visitors to the private medical center for the treatment of musculoskeletal diseases in North Sinai Governorate, Arish City, who were suffering from sciatica pain in the age group (20-30) years, men and women, where the injury was recent and they had not suffered from it before and was not chronic, and its number was 16 patients.

Tools and devices used in the research: -

- Case data collection form
- Measurement form specific to each case
- Lance test measurement form
- Expert opinion survey form.

Statistical treatments

The researcher performed statistical treatments using the SPSS statistical package program to process the data statistically using non-parametric statistics due to the small sample size, by using statistical methods.

Results.

Table (1)

Significance of differences between pre- and post-measurements in some variables

| Variables | Pre | | Post | | Impr. |
|--|-------|--------|--------|-------|-------|
| | M | Sd | M | Sd | |
| Flexibility of the spine forward | 40.50 | 1.922 | 21.50 | 2.121 | 8.4% |
| Flexibility of the spine with right flexion | 49.0 | 2.103 | 43.875 | 1.356 | 5.2% |
| Flexibility of the spine with left flexion | 48.50 | 1.667 | 41.50 | 1.356 | 4.9% |
| Flexibility of the spine with right trunk rotation | 79.5 | 1.6903 | 51.50 | 1.407 | 3.5% |
| Flexibility of the spine with left trunk rotation | 79.5 | 1.726 | 52 | 2.77 | 6.3% |
| Flexibility of the lumbar region | 14.25 | 1.093 | 18 | 1.309 | 11.2% |
| Measuring the degree of pain | 16.50 | 1.642 | 3.0 | 3.0 | 98.3% |
| Strength of the lumbar muscles | 12.50 | 2.477 | 21.25 | 3.779 | 21.7% |
| Lying with the legs extended high | 44 | 4.642 | 85 | 3.845 | 9.2% |

Table (1) shows the significance of the differences between the pre- and post-measurements in some variables. There are statistically significant differences in favor of the post-measurement over the pre-measurement in the selected measurements under study.

Discussion.

The results showed statistically significant differences in favor of the post-measurement over the pre-measurement in the research measurements related to the range of motion, and thus led to an improvement in the tests of the range of motion of the spine (forward, right, left, right rotation, left rotation). This was also confirmed in the percentage of improvement in the post-research measurements over the pre-research measurements. In the test of the flexibility of the spine forward, the percentage of improvement reached (8.4%), and the flexibility of the trunk by bending right (5.2%), and left (4.9%), and the flexibility of the spine forward by rotating the trunk right (3.5%), and by rotating left (6.3%). The percentage of improvement in the muscle strength of the lumbar region of the back reached (21.7%) and the flexibility of the lumbar region (11.2%), and the improvement in pain in the Lance test by (98%) and the injured improved by (9.2%) in the supine test raising the legs up high. This improvement is due to the program containing therapeutic and rehabilitative exercise sessions accompanied by modern manual therapy followed in the research, which helped stimulate blood circulation, remove muscle spasms, strengthen them, and reduce pain. The improvement is also due to the program containing therapeutic exercises in the first and second stages, which helped in the flexibility of the lumbar region, stimulate blood circulation, remove muscle spasms affected by the injury, lengthen and strengthen them, and widen the distance between the vertebrae. These results are consistent with the results reached by the study of Fatima Muhammad Abd al-Baqi 1996 AD in developing muscle strength for some muscles of the lower extremity. This led to the recommendation of therapeutic exercises as a means of assisting muscle strength for the muscles of the lower extremity. Which made the researcher able to contribute in a more effective way that may improve the condition of the injured person in a faster way by designing a manual therapy program with a proposed rehabilitation exercise program, which led to a positive effect on this group and an improvement in the movement of the injured person and the flexibility of the area and strengthening the muscles affected by the injury, which led to a state of satisfaction for the injured person.

These results also agree with the results reached by the study of Abdel Halim Mustafa Abdel Moneim (1999) in developing muscle strength through motor exercises, which led to improving the flexibility of the lumbar region and the spine in all directions, reducing body weight and strengthening the abdominal and back muscles. Yasser Ali Nour El-Din (1993) confirmed regarding the necessity of using therapeutic exercises to develop some physical and muscular qualities.

Given the importance of manual therapy with its various techniques in treating many injuries, it shows a physiological effect represented in activating blood circulation and improving physical and muscular qualities. These techniques contribute to improving joint movement and strengthening the muscles associated with them. Therefore, manual therapy is considered an effective factor when combined with the proposed program in alleviating lumbar pain, especially sciatica pain.

The improvement is evident through the percentages shown in the table during the different stages of the program, which helps in maintaining the remaining range of motion of the joints and muscle strength. The proposed program should be implemented using manual therapy techniques immediately to avoid worsening muscle weakness and reduced range of motion. The program should also be compatible with the capabilities of the injured, taking into account avoiding pain in the different stages of the program, so that they can perform the movement exercises easily and smoothly.

This is consistent with the results of the study of Hamdi Muhammad (2004) that early performance of the treatment programs and what they include in terms of directed and organized exercises that include flexibility and strength for the joint and muscles and avoiding pain in the first stage of the programs leads to the speed of the injured person's return as close as possible to the normal state.

The increase in the improvement rates during the different stages of the program for the experimental group in improving the range of motion of the spine and the spine as close as possible to its natural state is due to the therapeutic and rehabilitation exercises and modern manual therapy used in the programs and the link between flexibility and strength exercises in the different stages of the program and achieving the therapeutic goal, which is to restore the normal functional performance of the injured person, where the full range of motion of the joints and natural muscle strength with no pain that hinders his daily life. The exercises used represent a major factor in increasing the improvement rates during the different stages of the program and this appears in all the research measurements used and this is consistent with what the results of the table confirmed about the presence of statistical differences between the pre-measurement and the post-measurement in favor of the post-measurement in the percentage of improvement in flexibility and strength of the muscles. As for the average improvement rates in the measurements of the range of motion between the pre-measurement and the post-measurement, it showed a noticeable increase in the percentage of improvement compared to the pre-measurement. This is because the proposed rehabilitation and therapeutic program included means accompanying manual therapy during the stages of motor rehabilitation, which helped rehabilitate the muscles affected by the injury and the vertebrae to perform various exercises without feeling pain. The program also included therapeutic exercises divided into two stages with the aim of improving the range of motion of the spine and strengthening the muscles supporting the back, in addition to a variety of exercises for the rest of the body parts, especially the legs and the anterior and posterior thigh muscles. This variety in fixed and mobile stabilization exercises led to an increase in the percentage of improvement in the range of motion of the spine in all directions, as well as an increase in the percentage of improvement as in the "Lance" and "Scooper" pain tests. Consequently, the post-measurement achieved a high increase over the pre-measurement in these tests, which led to a reduction in lumbar pain and sciatica pain.

Qadri Bakri and Siham Al-Ghamri indicate that the process of treatment and sports motor rehabilitation depends on physical exercises of various types in addition to the use and employment of natural factors to complete the treatment and rehabilitation processes.

Conclusion.

The proposed program (therapeutic and rehabilitative exercises and modern manual therapy) has a positive effect on treating sciatica pain resulting from lumbar disc herniation.

References

1. Abdel Halim Mustafa: The effect of therapeutic exercises on some variables associated with first-degree lumbar disc herniation, Master's, 1999.
2. Abu Al-Ala Ahmed Abdel Fattah: Biology of Sports and Athlete's Health, 3rd ed., Dar Al-Fikr Al-Arabi, Cairo, 2000.
3. Amal Al-Azab: The effect of an exercise program and ultrasound waves on alleviating chronic muscular inflammation pain in the lower back of women aged 30 to 40 years, unpublished master's thesis, Faculty of Physical Education for Girls, 2005.
4. Atef Mohamed Morsi: The spine and its pain, Dar Al-Hilal, Cairo, 2006.
5. Fox B., Sahuguilloo J., Poca- Ma, Huguguest, Reactive arthritis with losion of the cervical spine , Jan 2000.
6. Hamdi Mohamed Gouda: The effect of a proposed exercise program with the use of different stretching methods on alleviating sciatica pain associated with lumbar disc herniation, PhD, 2004.
7. Hayat Ayyad Rafael, Safaa El-Din Al-Kharboutly: Postural fitness and massage, Dar Al-Jami'een for Printing, Alexandria 2008.
8. Hayat Ayyad Rafael: Sports injuries (prevention - first aid - treatment), Maaref Establishment, Alexandria, 1986.
9. Jhon H. Klippil. MD, Primer on The Rheumatic Diseases Arthritis Foundation, Atlanta, Georgia, 1997.
10. Mohamed Alawi, Abu El Ela Abdel Fattah: Physiology of Sports Training, Press, Cairo, 2000.
11. Mohamed Bakri, Siham El Ghamry. Sports Injuries and Physical Rehabilitation, Dar El Manar, Cairo, 2005.
12. Mohamed El Sayed El Amin, Ahmed Ali Hassan: Aspects of Sports Health - El Meligy Press, 2009.
13. Sabika Ahmed Ali Sadek: The effect of a therapeutic movement program and electrical stimulation on lower back pain for non-working women in the State of Kuwait, Master's thesis, Faculty of Physical Education for Boys, Haram, Cairo, 2007.
14. Sayed Abdel Maqsoud: Sports training theories (strength physiology training), Kitab Publishing Center, Cairo, 1997.
15. Yasser Nour El Din: The Effect of Electrical Stimulation on Some Variables of Muscle Strength and the Digital Level of the High Jump Competition, Master's, 1996.