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**ФИЗИЧЕСКАЯ КУЛЬТУРА,
СПОРТ И ТУРИЗМ:
ДОСТИЖЕНИЯ
ТЕОРИИ И ПРАКТИКИ**

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В сборнике содержатся статьи по актуальным проблемам и наиболее значимым вопросам физического воспитания, спорта и туризма. Рассматриваются основные направления подготовки специалистов в области физической культуры, спорта и туризма, методологические подходы, принципы, технологические аспекты, стратегии и перспективы решения проблем здоровьесбережения детей, учащейся и студенческой молодежи средствами физической культуры и спорта в учреждениях образования. Показано значение и развитие олимпийского образования для формирования личности. Предложены пути совершенствования двигательной активности, формирования мотивации и интересов обучающихся в сфере физической культуры и спорта. Представлено новое направление – спортивное волонтерство, раскрываются его особенности в рамках здоровьесберегающей среды университета. Отдельные статьи посвящены развитию олимпийского движения и образования.

Предназначен для научных и педагогических работников, аспирантов, магистрантов и студентов высших учебных заведений.

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EFFECT OF A PROPOSED THERAPEUTIC EXERCISE PROGRAM FOR REHABILITATION OF PEOPLE WITH HERNIATED DISC AND IMPROVEMENT OF SOME PHYSICAL TRAITS AND PHYSIOLOGICAL VARIABLES

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Research Introduction:

Back pain is one of the most important problems facing millions of people. The latest statistics show that about 80% It is one of the major risks facing the world in terms of economic, human efforts and production.

Recently, the interest in rehabilitation exercises has increased so that some therapeutic schools rely entirely on them to treat stray deviations, stadium injuries and cartilage ruptures without any other factors such as drug therapy, injections and thermal devices, except in cases requiring surgical intervention.

The spine is also the only longitudinal axis of the body that carries the weight of the entire torso.

The general hypothesis of the study:

There are statistically significant differences between pre- and post-test in therapeutic exercises suitable for rehabilitation of people with herniated disc in the lumbar region and in favor of post-test :

1. The therapeutic exercise program has a positive impact on the rehabilitation of patients in the lumbar region

2 - There are statistically significant differences between the pre and posttests in physiological variables and in favor of the post test .

3 - There are statistically significant differences between the pre and posttests in some elements of physical fitness and in favor of the post test .

The importance of studying :

The importance of this study is to identify the effectiveness of therapeutic exercises on injuries occurring in the lumbar vertebrae and the occupations of these vertebrae from a sensitive site that affects the motor capacity and limited activity and life in general This study may contribute to the development of appropriate solutions to control the pain resulting from injury impeding movement .

This study may help scientists and researchers in determining the best methods and therapeutic methods to control the problems caused by injuries of herniated disc in the lumbar region.

Research aims :

1. Identify the impact of the proposed therapeutic exercise program for the rehabilitation .of athletes with slipped disc

2. Identify the effect of the therapeutic program on some physiological variables under consideration for rehabilitation of people with herniated disc.

Study procedures :

1- Research Methodology:

The researcher used the experimental method using the experimental design of the pre and post measurements of the experimental group in the research sample.

2 - The research sample:

The research sample was deliberately selected from those with lumbar disc herniation from athletes in football, basketball, volleyball and hand. The sample size was (40) players.

Conclusions:

In the light of the research objectives, hypotheses, research sample and measurements used and based on the results of analysis and statistical treatments, the following conclusions were reached:

1- Conclusions about the level of pain in the lumbar area and spine in all directions :

After applying the research it was found that there are statistically significant differences between measurements (tribal - - dimension) to reduce the level of pain in the lumbar region and the spine in favor of measurements from the post - tribal, where the rate of improvement of the telemetry over the pre - measurement by a percentage (72.50%) of the level of pain in the lumbar region (72.73%) for the level of pain in the spine that favored the post-tribal measurements.

2-Conclusions regarding the flexibility of the lumbar region and spine in all directions:

The results of the study found that there were statistically significant differences between the measurements (tribal - dimensional) in increasing the elasticity of the lumbar region and the spine in favor of the measurements of distance from the tribal measurements. Percentage (45.00%) for spine flexibility ahead, Percentage (62.50%) for successive spine flexibility, and Percentage (32.73%) for spine flexibility right (34.36%) for spine elasticity left in favor of post-tribal measurements.

Recommendations :

In the light of the results of the research and based on the conclusions reached in the light of the research objectives, the researcher makes the following recommendations:

1- Guided by the proposed therapeutic exercise program when treating the injury of lumbar disc herniation of the first degree players.

2 - interest in the design of motor training programs to prevent exposure to injury of lumbar disc herniation and that the various segments of the community of athletes and non-athletes according to the nature of their work and their age.

3 - the need to pay attention to continue in the exercises to develop muscle strength of the muscles of the abdomen, back and legs and exercises flexibility of the lumbar region and spine in all directions after the completion of the rehabilitation period.

4. Conduct more therapeutic exercise programs for people with lumbar disc herniation in more advanced stages of both sexes and at different age stages.

5. Conducting further research and studies that include preventive programs that improve the efficiency of the spine.

6 - Increased attention to good warm-up and focus on the development of the element of flexibility and muscle strength, and therefore of the utmost importance in the prevention of lumbar disc herniation and maintain the efficiency of the spine .

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COMPARING TWO TYPES OF THERAPY TECHNIQUES IN THE TREATMENT OF LOW BACK PAIN

228(CONVENTIONAL UPPER TRUNK FLEXION VS MULLIGAN'S FLEXMOBILIZATION) d- saleh basher sad

INTRODUCTION

Low back pain (L. B. P) is commonly considered among the most frequent health problems that lead patients to consult physicians. More than 80% of world population are or will suffer from an acute L. B. P. It comes second only to common cold. Second leading symptomatic cause for surgical procedure and fifth most common cause for hospitalization, which leads to work absence, lost of productivity, health care costs, financial compensation, and various psycho-social problems. Thus, (L. B. P) is the most expensive ailment in the 30-60 year-old age group(1).

PURPOSE OF THE STUDY

To determine the relative efficacy of conventional spinal flexion mobilization compared to Mulligan's flexion mobilization in the treatment of patients with low back pain.

MATERIALS AND METHOD

30 patients, 20 males and 10 females aged 22 to 50 years (36.53 + 9.35) with low back pain and difficulty in forward bending were recruited from the outpatient department of the physiotherapy department of Tripoli Medical Center (T. M. C) Subjects with low (L. B. P) radiating to lower limb, neurological deficits, trauma, elderly patients above 50 years and history of smoking, advanced age and weight loss increasing the likelihood of malignancy were made to sign an informed consent and then randomly recruited to the following groups:

Group I: conventional upper trunk flexion mobilization (22-50) years.

Group II: Mulligan's flexion mobilization (22-50) years

Group III: No mobilization (25-50) years

All patients were given hot fomentation prior to mobilization, lumbar traction in semifowler's, position, with half of the body weight tractive force for 10 minutes following mobilization and auto spinal flexion exercise as home based programme.

DEPENDENT VARIABLES

(1) Intensity of pain by Visual Analog Scale (V. A. S)

(2) Methodology Flexibility of lumbar spine (measured by tape), and

(3) Mobility of lumbar spine and sacral inclination by X-rays LS spine lateral view while bending forward maximally in standing and erecting to standing position respectively.

Pre-treatment measurement were made.

Statistical analysis was done by using (RANOVA), where there is one between factor (treatment group) and one within factor (time) having 3 levels. A 0.5 level of significance was used for all comparisons (3).

RESULTS

It was found that conventional spinal mobilization techniques were more affections that techniques and traditional physiotherapy consisting of spinal traction etc., unproved spinal mobility. However, all techniques led to an increase in the perception of pain as measured by VAS score.

CONCLUSION

Low back pain could occur due to spinal flexion dysfunction, which requires spinal flexion mobilization for the pain to subside. Comparing two therapy techniques (conventional upper trunk flexion Vs Mulligan's flexion mobilization) in the treatment of low back pain with no mobilization as the controlled group, both the conventional therapy and Mulligan therapy showed significant improvement than the control group.

KEY WORDS

Low back pain (L. B. P), conventional spinal mobilization, Mulligan.

An important finding in patients with recurrent L. B. P is a decrease in segmental flexion motion. Troup et., al (12) states that three group of people could develop stiffness due to immobilization:

(1) Those who can not bend forward due to pain.

(2) Those who are advised not to bend forward for the injury (disease) disorder to resolve or as a prophylaxis measure and,

(3) Those who do not bend forward as a protective measure or their activities/ occupation do not demand such movement. Immobility due to any reason gives rise to fibroblastic proliferation, resulting into loss of biological properties of the connective tissues horac and loss of flexibility & toughness.

Therefore, the spinal mobility is lost. There occurs tightness of thoraco-lumbar fascia, loss of flexibility of Para spinal muscles, fibrous shortening of the particular connective tissue of the apophyge joint and other ligamentous structure. It progresses gradually resulting into a stiff spine interfering with the activities. Therefore one complaint of painful restriction of movements and activities(9).

AIM OF THE STUDY

The purpose of this study was to determine the relative efficacy of conventional spinal flexion mobilization compared to Mulligan's flexion mobilization in the treatment of patients with L. B. P

METHODOLOGY

30 patients 20 males & 10 females aged 22-50 years with the following criteria were recruited from the physiotherapy department at T. M. C (Tripoli Medical Center)

INCLUSION CRITERIA

Patients with (L. B. P) and difficulty in forward bending.

EXCLUSION CRITERIA

1. Back pain with radiation to lower limb
2. Neurological deficits
3. Trauma
4. Elderly patients over 50 years
5. History of smoking, advanced age, weight loss, and history of cancer increase the likelihood of malignancy.
6. Loss of lordosis and/ or listing suggestive of inter-vertebral disc-prolapse.
7. Vertebra infection occur most often in patients with diabetes, history of other infection, drug abuse, etc
8. Osteoporosis

The subjects were made to sign consent, and then they were randomly recruited to the following groups;

GROUP I; Conventional upper trunk flexion mobilization

GROUP II; Mulligan's flexion mobilization

GROUP III; No mobilization

All patients were given hot fermentation prior to mobilization, lumbar traction with half the body weight attractive force for 10 min.

MOBILIZATION TECHNIQUES

1. Passive upper trunk flexion mobilization;

Position of the patient; crook lying i.,e., in supine



Passive upper trunk mobilization technique

Hips and knees flexed with the hands clasped behind the neck.

Position of the therapist; stride standing position with one hand over the patient's bend elbow.

(2) MOBILIZATION

The therapist moves rhythmically into sideways falling position pressing the bended elbow and lifting the shoulders for 3 minutes.

Mulligan's flexion mobilization

Position of the patient; high sitting at the edge of the bed, position of the therapist; standing behind the patient.



Mulligan's flexion mobilization way of L. B. P treatment

MOBILIZATION

Milligan's belt placed around the patients lower abdomen, below the anterior superior iliac spines for comfort and around the therapist, below the glottal folds. Therapist applies distractive force by the belt and gliding force by the ulnar border of right hand.

This rhythmical mobilization with movements is given at different levels (3).

TRACTION IN SEMI FOWLER'S POSITION

All the patients were given lumbar traction in semi-fowler's position by using split traction bed with half the body weight attractive force for 10 minutes following mobilization.



Traction exercise in semi fowler's position

(4) Auto spinal flexion mobilization exercise as home program

Patient in high sitting at the edge with the fingers clasped behind the neck bends forward and downward rhythmically for 3 minutes on the evening on treatment days and twice daily on no treatment days.



Auto spinal flexion mobilization exercise

INSTRUMENTATION

1. Visual Analogue scale
2. X-rays spine lateral view
3. Lumbar spinal flexion was clinically measured by Shubert's method

VARIABLES

The independent variables were the manual therapy intervention (1) passive upper trunk flexion mobilization (2) Mulligan's flexion mobilization, and (3) No manual therapy.

The depended variables were (1) the intensity of pain, (2) flexibility of lumbar spine by Shubert's method (3) mobility of lumbar spine, and (4) sacral inclination.



DATA COLLECTION

Pre-treatment 1 of; (1) Intensity of pain by VAS, (2) flexibility of lumbar spine, (3)

Mobility of lumbar spine by X-rays LS spine lateral view while bending forwarded maximally in standing, (4) Sacral indication by X-rays LS spine lateral view in erect standing position were made on Thursday. Treatment started from the next week for five days a week (Sunday to Thursday) for three weeks.

Post treatment measurement 1 was made on Thursday at the completion of treatment.

Post treatment measurements 2 were made on Thursday, one week after completion of the treatment.

Treatment weeks; The study lasted 28 days, as stated below

First week	Second week	Third week	Fourth week
Treatment	Treatment	Treatment	Treatment
Pre-treatment measurement 1	Post treatment measurement 1		Post treatment measurement 2

DATA ANALYSIS

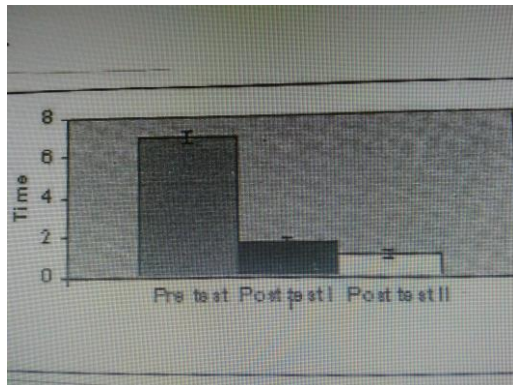
It was done by using 3X3 ANOVA, where there is one between factor (treatment group) and one within factor (time) having three levels. A 0.5 degree of freedom used for all comparisons.

RESULTS

Visual analogue scale

Subjects in all groups reported a decrement in pain scores with treatment when compared to the initial assessment. There was a main effect of group, $f(2.54;0.05)=3.712$, $p < 0.001$.

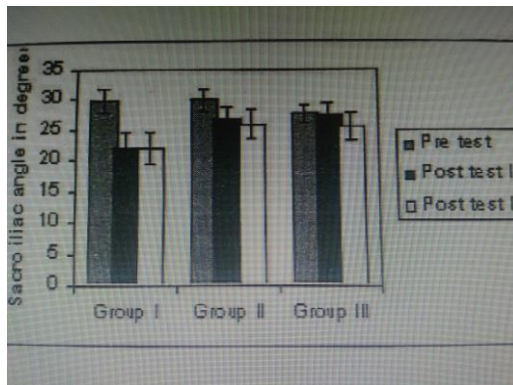
However, the interaction, group x time failed to achieve significance $f(4.54; 0.05)=0.772$, $p < 0.58$. Post-hoc analysis revealed improvements in a follow up period during which no treatment was given.



Visual analogue scale

SACRO- I LIAC ANGLE

The decreased SI angle improved to a greater extent with conventional mobilization techniques than in Mulligan's mobilization techniques and control group. This effect was sustained in both groups for one week after stopping the therapy.



There was a main effect for time $f(2.54; 0.05)= 100-448$, $p < 0.001$, but not for between the groups, $p(2.54; 0.05) = 0.5$, $p < 0.612$, $p < .$ however, the main effects were qualified by a group X time interaction, $F(4.54; 0.05) = 14.591$, $p < 0.001$.

Post hoc analysis shows that both the conventional group and the Mulligan group improved from the post 1 and post 2 when compared to the control group. However, the group that received conventional mobilization therapy improved to a greater extent than both the Mulligan's as well as control group.

DISCUSSION

The results of this study demonstrate that patients with pain localized to the low back and with current hypo –mobility of the lumbar spine can benefit from physiotherapy treatment. More importantly, it was found that conventional spinal mobilization techniques

led to a decrease in pain than Mulligan's techniques and the traditional phyotherapy consisting of spinal traction etc., in improving spinal mobility. However, all the techniques led to a decrease in the perception of pain as measured by the VAS score.

There was reduction in VAS scores of all groups. Subjects had decreased range of flexion of the lumbar spine, where the shortened posterior structure could have contributed to the pain. The reduction in VAS scores could be attributed to the traction, which was given to all subjects. Lumbar traction in semi fowler's position, elongates the posterior soft tissues structures, restricting the spinal flexion (7), relieving the pain.

Back pain may occur secondary to cumulative trauma that may be was caused by the accumulative effects of months or even years of micro injuries due to repeated forward bending, lifting, or sitting in a slumped forward-bent position(1).

Accordingly, Clinicians should emphasize more on the extension exercises and should be cautious against the flexion of lumbar spine. Lumbar motion and sacro-iliac angle as measured by X- ray lateral view and Lumbar flexion as measured by Shober's method showed similar results, where subjects who under went conventional therapy and Mulligan's Lumbar mobilization improved to a lesser extent than the conventional therapy. Medline (investigation) INAHAL (1984-2004) searchers failed to reveal any study evaluating the outcome of Mulligan's therapy for the spine, and also comparing it to conventional techniques of patient (7).

Historically William's flexion based exercises have been used for facet disease. Spondylolysis, flexion dysfunction serious and certain types of derangement, which may worsen with extension exercises (8). Whereas, McKenzie's auto spinal flexion mobilization has been used for spinal flexion dysfunction (10).

Auto traction-flexion in trunk prone lying position has been used for spondylolysis (2).

Conventional mobilization technique involved cantilever bending one end of a beam fixed, and the free end loaded (10). The therapist places his hands over the patient's bent elbow in the front of the chest stabilizing the trunk while the other hand is placed across the back of the shoulders bending the spine. In such situation, tension is treated in the upper convex portion of the beam, whereas compression occurs in the lower concave part. Mulligan's mobilization technique however is based on three-point bending principle.

In this technique the pelvis is fixed by the body weight and therapist places his hands over the patient's spine applying upward and forwardly directed force to bend the spine.

A compression stress develops parallel to the length of the beam on the concave portion. A neutral axis is located along the center of the beam where no compression or tension occurs (9).

So in the Mulligan's technique, the compressive pressure created over the spine is dissipated over the length of the entire, spine, whereas in the conventional technique, the compressive pressure is only over the lumbar spine.

This may be one of the factors, which could have contributed to the better results of the conventional mobilization technique. That is the magnitude of the distraction over the Lumbar spine given by the therapist in the Mulligan mobilization technique is less that applied in the conventional technique.

CONCLUSION

Avoidance of forward bending and spinal extension exercises are most often recommended for the treatment of the L. B. P. In contrast the results of this study have clearly shown the flexion mobilization techniques have beneficial effects in patients with L. B. P, both with regards with pain decrement, and an improvement in range of motion. Thus, clinicians should differentially recommend and implement treatment techniques that are specific to the patient's condition. L. B. P could occur due to spinal flexion dysfunction, which requires spinal flexion mobile mobilization for the pain to subside. Spinal flexion can be used as a treatment mobility in cases of low back pain, not necessarily spinal extension exercises, and comparing two manual therapy techniques (conventional upper trunk flexion Vs

Mulligan's flexion mobilization) in the treatment of low back pain with no mobilization as the controlled group was the aim of the study.

Both the conventional therapy and Mulligan therapy showed significant improvement than the control group. So Milligan therapy can be adjunct to conventional therapy, but this could be undertaken as a future research. Patients with L. B. P can do spinal flexion exercises and should be strictly advised to avoid forward bending activities that require such actions must be modified.

One of the limitations of this study could be the small sample size and the non inclusion of functional outcome measurement. The long term sustainability effect of the techniques such as reduction of pain and increased ROM of the spine might need further evaluation.

Excessive lumbar extension put more load over the apophyseal joints leading to degenerative arthritis and spinal stenosis, whereas avoidance of forward bending results into stiff painful spine with the loss of energy attenuation capacity. Therefore, spine with normal curvatures and full mobility is ideal.

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