THE EFFECT OF THERAPEUTIC EXERCISES PROGRAM ON LOW BACK PAIN[+]

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Abstract

Many studies in many countries have established that there is a relationship between low back pain and body mechanism during work . Not using body mechanism causes back pain and also studies have demonstrated the importance low back pain patients who have practiced exercises techniques reduce these exercisen .In this research we aim to test the effectiveness of exercise on low back pain . A study was carried out in the Physiotherapy Department / Medical Technology Institute , in the year (2003-2004). The sample consisted of (150) patients (75 male) and (75 Female) for each group . They were suffering from low back pain . The researcher has designed a check –list for data collection . Participants were chosen by random sampling and were divided in to two groups with the (same characteristics) The study group received a list of exercise training program [as in appendix (2)] and the control group did not receive list . After data analysis by percentage and chi-square , the results have shown the highest percentage was in age group (40 -50) years advance. The risk factors that cause low back pain are (39.7 %) over weight and (35.7 %) have bad daily habits .There is a significant value from the statistical difference between the two groups , the study group relief low back pain more than the control group because they have applied therapeutic exercise. Recommendations include practising relaxation exercise techniques and reducing body weight .

المستخلص

اعدت دراسات كثيرة في دول مختلفة حيث أشرت طبيعة ألم الظهر وعلاقته بسوء استعمال ميكانيكية الجسم في أثناء العمل اليومي. كما اشار الى مزاولة التمارين العلاجية لتخفيف ألم الظهر وكان الهدف من البحث معرفة مدى تأثير التمارين العلاجية لشفاء الألم فأنجزت الدراسة في المعهد الطبي التقني / قسم العلاج الطبيعي في سنة (٢٠٠٤ــ٢٠٠٥) علما بأن العينة تتكون من (٣٠٠) قسمت إلى مجموعتين من المرضى لكل مجموعة منها (٧٥) ذكور و إناثاً يعانون من ألم الظهر. وصممت ورقة استبيان لجميع المعلومات ، فكان اختيار العينة بصورة عشوائية فأعطيت المجموعة الأولى قائمة التمارين (ملحق رقم ٢) إما المجموعة الثانية لم تعطى ، كما تمت متابعتهم ولمدة ٤ أسابيع منذ المقابلة الأولى ، وبعد تحليل المعلومات مستخدمين النسب المئوية ومربع كأي لوحظت أن أعلى نسبة مئوية كانت ضمن الفئة العمرية (٤٠ــ٥٠) سنة و(٣٥,٧ %) عدم استعمال ميكانيكية الجسم و (٣٥,٧ %) زيادة الوزن يسببان ألم الظهر ، واظهر الفرق المعنوي الإحصائي بين المجموعتين المجموعة التجريبية التي زودت بقائمة التمارين لشفاء من ألم الظهر أكثر المجموعة الضابطة. لذا يوصي الباحثان بالتقيد باستعمال الحركات الميكانيكية للجسم بصورة صحيحة أثناء تأدية العمل والاستمرار بمزاولة التمارين العلاجية وتقليل الأوزان الزائدة للوقاية من الآم الظهر.

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Introduction

Low back pain often begins suddenly and may follow an obvious strain or injury but may seem to come on (out of the blue) or come on slowly [1] ,[2]

The pain may travel or be felt else where .It often goes into the buttocks but may go further down the leg and even into the foot . [3] , [4] .

The pain may be worse in bending and is often worse in sitting especially in easy chair and sometimes in turning over in bed and sitting , coughing, or sneezing can often make the pain much worse .The muscles of the back may go into painful spasm . [5] . The main causes of low back pain is strain of the muscles or other soft structures (ligaments and tendons) connected to the back bones (intervertebral disc) which is strained and which bulges out (herniated) and presses on the nearby nerves as in sciatic nerve , the muscles spasm, the problem on the bladder , wrong posture or prolong driving , depression , obesity and smoking all that cause low back pain . [6], [7]

When the pain has continued for a few weeks the specialist may arrange a (C T scan or M R I) scan .These are more likely to be helpful as they show up the soft structures in the spine as well as the bone .[8],[9] .

The goal of physical therapy is to decrease back pain , increase function and provide education in maintenance programme to prevent future recurrences .There are many different forms of physiotherapy which include heat , ice packs Tens ,ultrasound , and active physical therapy exercises as in given appendix [10] , [11] .

Active physical therapy exercises are also necessary for the rehabilitation of the spine. Generally a patient exercise programme encompass a combinationes of the following stretching , strengthening pain relief exercise low impact aerobic conditioning , water therapy stretching [12] . Almost every individual who has suffered from low back pain should stretch his hamstring muscles once or twice daily . Simple hamstring stretching does not take much time although it can be remembered especially if there is little or no pain . Therefore hamstring stretching is best done at sometime every day so it becomes person daily habit [13].

Strengthening the back muscles (15 – 20) minutes of lumber stabilization or other prescribed exercise should be impact aerobic such as(walking , bicycling , and swimming) which should be done for (30 – 40) minutes three times weekly [14] . On alternate days from the strengthening exercise , water therapy exercise in the water provides for effective condition while minimizing stress on the back . Water therapy is especially useful for patients in too much pain to tolerate exercise or for elderly patients and for patient who have arthritis [15]

Objectives :-

1-To know the causes of low back pain
2 -To examine the effect of exercise training technique on low back pain
3-To prevent future recurrences of back pain

Definition of the terms :-

For the purpose of the present study the following definitions will be used

Effect : -

The result of the efficiency of a prepared programmer for patients with low back pain

Low back pain : -

is a back ache affecting the lower part of the back .

Progressive muscle relaxation (relaxation training) : -

is a prepared programme for the tensing and relaxing of successive muscle groups to achieve as overall relaxation

Patient and Methods : -

This study was carried out during the period between the first of July / 2003 and the end of July \ 2004 . The sample for this study was (300) patients with low back pain .They were randomly chosen from the patients who were attending the Physiotherapy Department / in the Medical Technical Institutien. The study of detection of the effect of relaxation training exercise programme for patients with low back pain took the following processes: -

1-Preparation of the programme as in appendix (2) .
2-Selection of the sample, a convenient sample of (300) subject between the age (18 – 61) years were recruited on a voluntary basis . The (300) subjects who were contacted for participation in the study were divided equally into two groups via purposive random sampling : -

Study group : - who received exercise training programmed only
Control group : -who had the same creteria of selection of study group but will not be exposed to the exercise training programmer .

A form was designed to record the information .The distribution of the sample was according to the causes of low back pain and the effect of exercise on the low back pain as in appendix (1) . Statistical methods The data for the questionnaire were collected from the patients about their condition . Chi – square , and percentage were used for statistical analysis of the data $P > 0.05$ the tabulation value is (3.84) .

Tables and Results

Table (1) Characteristics of the sample

Variables	Study group		Control group	
Age / year	No	%	No	%
18-28	8	5. 3 %	5	3.33%
29-39	48	32%	50	33.3
40-50	52	34.6%	50	33.3
51-61	22	14.6%	20	13.3
61	20	13.3%	25	16.5
X= Mean		44.20		45.57
Sex				
Male	75	50%	75	50%
Female	75	50%	75	50%
Education level				
Read and write	50	33.33%	42	28%
Primary	50	33.33	48	32
Secondary	30	20	37	31
University	20	15 %	23	15.3
Occupation				
Employee	70	46.66	70	46.66
Un Employed	10	6.6	10	6.66
Retired	48	32	40	26.66
Housewife	0	0	2	1.33
Student	22	14.6	28	18.66
Weight/ Kg				
Overweight	60	40	59	39.3
Underweight	40	26.6	40	26.6
Normal weight	50	33.3	51	34

Distribution of the sample was according to age ,sex , education level occupation status , and body weight in table (1) . The highest percentage (34 .6) of patients in both groups was within the age group of (40 – 50) years and the lowest percentages (5.3 %) , (3.33 %) for the both groups were within the age range from (18 – 28) years . The mean age for both groups was (44.20) study group and (45.57) control group The relation to sex (50%) 0f the sample were male and (50 %) were female for both groups . Regarding education the majority (33.33) % of the study group and control group were of the (read and write) education level while (33.33 %) were of primary school gradates in study group and (32 %) in control group . With regard to occupation (46 .6 %) for buth group were employed the

lowest percentage (1.33 % housewife) .The table also shows that (40 %) of the studied subjects were overweight for both groups (26.6 %) for both groups were underweight .

Table (2) Causes and risk factors of low back pain for both group

Variable	Frequency	%
Mechanical , bad daily habit	107	35.7 %
Psychological	41	13.7 %
Overweight	119	39.7 %
Smoking	33	11 %
Total		

Table (2) shows the highest percentage (39.7 %) overweight were suffering from low back pain . and (35.7 %) mechanical causes (bad daily habit) were suffering from low back pain for both groups and the lowest percentage (11 %) smoking risk factor cuases low back pain

Table (3) Effect of heat therapy on patients who are suffering from low back pain for both groups .

Heat therapy	Study group				Cotrol group			
	Respons	Chi-square	No response	Chi-squar	Respos	Chi-squar	No respons	Chi-squar
1st week	10	0.30	4	0.3	10	0.30	8	0.25
2nd	30	2.95	3	0.2	22	2.08	12	1.85
3rd week	49	3.66	2	0.1	23	2.20	19	1.92
4th week	51	3.91	1	0.1	35	2.60	21	2.98
Total	140	8.8	10	0.7	90	4.9	60	3.98

Table (3) shows the effect of heat therapy in reducing pain during four weeks . The patient received heat therapy after checking them by a specialist physician .(8.8) Chi-square value response to cure this value is higher than tabulation value (8.8 > 3.84) p > 0.05 in the study group and also higher than (4 .9) for control group (8.8 > 4.9) but both groups were higher than tabulation value (8.8) and (4.9) > (3.84) . This means that the effect of heat therapy was on both groups .

Table (4) Effect exercises therapy on patients suffering from low back pain for both groups

Exercise therapy	Study group				Cotrol group			
	Respons	Chi-squar	No respons	Chi-squar	Respons	Chi-squar	No respons	Chi-squar
1st week	10	0.30	2	0.7	7	0.20	7	0.20
2nd week	30	2.95.	2	0.7	25	2.20	11	1.82
3rdweek	40	3.20	2	0.7	27	2.90	20	2.09
4thweek	62	3.99	2	0.7	33	3.18	20	2.09
Total	142	8.9	8	2.29	92	4.8	58	3.90

Table (4) shows the effect of exercise programme on patients with low back pain . The highest value of chi-square was (8.9) for response to cure in study group . This value was higher than (4.8) for patients response to cure in control group . Both values (8.9) and (4.8) were higher than tabulation value (3.84) . This means the exercise is very important for patients with low back pain

Discussion:

After data analysis the researcher discusses the following:

Table 1: shows the characteristis of the sample concerning the age. The highest percentage was in age group (40-50) years , (34.66%) for study group and(33.33%) for control group and the lowest percentage was in age (18-20) years , (5.33%) for study group and (3.33%)for control group This result is different from the study done by (AL- Rewaly 1992) . He said " Back pain problems are common in the United States , about (80%) of the population have low back pain during (adulthood) ". According to education level the highest percentage in primary school was (33.33%) for study group and (32%) for control group . In relation to occupation the highest percentage was (46%) employed from study group and(33.33%) retired for control group of this result is similar to that of the study done by (William .F 2001 and John .F 2000) who mention the official patients were more than (3-8) hours and body posture causes low back pain .

Table 2 : shows the risk factor that causes low back pain , the highest percentage was (35.7 %) mechanical bad daily habits and (39.7 %) overweight . The present result is similar to the study done by (Alison Skinner 1995 and Christopher Haslett 1999 and Fredric . J 1990) ; They said " There is strong relationship between low back pain and bad daily habits . They did not use body mechanism during their work this causes low back pain . Bad body posture and prolonged sitting or standing ,lifting things ,this causes strain pressure on (muscles ligaments and tendons) .

Table 3: shows a comparison between the two groups of patients who received heat therapy for the treatment of low back pain . There is a significant difference between study group and control group when analyzed by Chi-square at level (P>0005) Chi-square value was (8.8) response and(0.66%) no response mean (149) patient response and (1) one person no response to heat therapy

Table 4: Shows the effect of exercises therapy on patients suffering from low back pain for both groups . There is a significant difference between study group and control group , when analyzed by Chi-square at level (p>0005) , Chi-square value was (8.9) , (8.9 >3.84) This means that the exercises program is very important to reduce low back pain . The lowest value was (1.33) no response to exercises therapy because the patients did not apply and continue the exercises program in the right way.The present result is similar to study done by (Robert .S .1995 , and Abu- AL-Walla Ahammed 2000) They mention the importance of reducing low back pain in patient who practiced exercises techniques .

Conclusions :-

The data have been analysed according to the objective of the present study , It concludes that :-

* Their is a strong relationship between low back pain and bad daily habits
* Relaxation exercise training is significantly effective in reducing low back pain during (4) weeks of follow-up .
* The high percentage was in age group (40-50) years This is due to age advance
* The risk factors that cause low back pain of (39.7 %) was overweight

Recommendation : -

Based on the results of the findings of this study the following recommendations are made : -

*Implementation of the relaxation training by nurses or physiotherapists .

*Involvement of nurses and physiotherapists in service education programme on relaxation techniques.

*Educating people to use body mechanisim during daily activities to minimize the pressure strain on muscles , tendons and ligaments in order to prevent future recurences back ache .

*Carrying-out further studies by using the findings of the present study to compare the effect of relaxation techniques on larger samples and for longer follow-up period .

* To reduce body weight

* To issue pamphlets on body exacises and distribute them on physiotherapy clinics