

# Exercise Therapy in Low Back Pain

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This prospective study comprising of clinical trials of specific exercises for the management of low back pain was conducted at Physiotherapy department of Lahore General Hospital and Sir Ganga Ram Hospital Lahore on 200 patients from April 1998 to March 2000. Specific exercises were performed in a specific sessions per day in a specific frequency according to the clinical picture of the patient. Exercises were combined with appropriate ergonomics according to the individual merit. Beneficial effects of this regimen was recorded in these patients. It is therefore recommended to manage low back pain on similar principles to get long-term effects.

**Key words** Exercises-LBP, Relaxation Exercises-LBP, Back care, Physiotherapy-backache, Back-School.

Exercises are often prescribed for the treatment of low back pain. However, the effectiveness of this treatment is poorly documented in the literature<sup>1</sup>. Conversely, literature clearly shows that inactivity has detrimental effects ( i.e. ,delayed return to normal activity, and negative physiological and psychological effects) for low back pain patients<sup>1</sup>. While evidence suggests that exercise in general is beneficial ,there is a lack of knowledge about the types , frequency and duration of exercises that should be prescribed and at what stage of injury, they are most helpful<sup>1</sup>. Study of Kuukkanen-T of Denmark, showed that after three month progressive physical exercise programme and nine month follow- up in subjects with low back pain, muscular performance improved and their back pain intensity decreased significantly<sup>2</sup>. Based on these assumptions , we tried to find out the types and frequency of exercises that should be used for low back pain patients in this study.

## Methodology

Period of study extends from April 1998 to March 2000 on 200 subjects at Physiotherapy department of Lahore General Hospital and Sir Ganga Ram Hospital Lahore. Lahore General Hospital Lahore was attached with postgraduate medical institute Lahore and King Edward Medical college Lahore when this study was conducted.

In present study, specific types of exercises were employed at different stages of illness according to the following principles:-

- a)- In severe and high intensity pain , relaxation exercises, Isometric exercises and passive stretching was employed in two sessions /day.
- b)- In moderate pain, mobility and strengthening exercises were employed in three sessions /day.
- c)- In the later stage of recovery, more strenuous muscle strengthening , mobility and flexibility exercises were applied in four sessions /day.

In all stages ,pace of procedure was kept slow and smooth and rhythmical. Frequency of relaxation exercises, isometric exercises and passive stretching , vary from 30-40 times/session/day. Remaining exercises were kept at a frequency of 20 times/session/per day.

Each patient was instructed and taught about correction of posture, correct lifting /pushing and pulling techniques , correct method of rising from bed and chair, sitting style, to avoid lifting/carrying heavy objects and to schedule their activities throughout the week instead of doing every thing on the same day and modifications at their work place as required.

## Exercise Programme For Low Back Pain

Based on these principles, following exercises were employed and found to be effective in low back pain patients in this study:-

### 1)- Position.

Lying Supine on floor with legs placed on a chair/cushion or sofa. This relaxes abdominal muscles .

### 2)-Lying supine:-

- ❖ Place both hands on either side of your lower lumbosacral spine. Press your back against the hands in a downward direction and then relax.
- ❖ Tighten your buttocks and then relax.
- ❖ Legs straight, arms resting on either side of the body. Freely vibrate your legs on either side like a pendulum.
- ❖ Legs straight. Slowly dorsiflex both feet up to the maximum extent, then relax.
- ❖ Move both feet at ankles, first in a clock wise direction and then anti-clock wise.
- ❖ Lying supine .Place palm of one hand behind the knee joint and other above the joint. Now press your knee against the hand, then relax.
- ❖ Bend one leg at knee. Grasp it with both your hands. Move it towards the abdomen. Hold for five seconds, then relax. Repeat this procedure with other leg.
- ❖ Bend both of your legs at knees. Grasp with both of your hands. Move it towards your abdomen. Hold for five seconds, then relax.
- ❖ Bend both legs at knees, feet placed flat on bed. Arms resting on either side. Lift your buttocks and waist above the bed. Maintain this position for five to ten seconds, then relax.
- ❖ Bend both legs at knee, keep your feet flat on bed. Arms resting straight on either side of the body. Now

move freely your legs first to right side and then on the left side while maintaining position of the feet.

**2)-SIDE LYING:-**

- ❖ Place one hand under head, second hand grasp iliac crest. Move your upper leg forwards and the backwards in a relaxed fashion.
- ❖ Turn your side, repeat the same procedure with other leg.
- ❖ Position same as above. Lift your upper leg upwards and then downwards.
- ❖ Repeat the same procedure with the other leg.

**3)-PRONE LYING:-**

Place both hands on your waist. Lift your shoulders and head as well as both leg simultaneously. Then relax.

**4)-STANDING:-**

- ❖ Standing upright with feet apart, hands resting on iliac crests. Now rotate trunk first to the right side so that you can see shoe of your left foot, then to the left side.
- ❖ -Standing upright with one hand resting on iliac crest and other hand resting on a chair or any other support. Now move your leg forward and backward while standing on one leg.
- ❖ Then change your side, repeat the same procedure with other leg.
- ❖ Standing upright with feet apart, arms hanging on either side of the waist. Bend towards left side with right arm moving side way to overhead whereas left hand glide towards the left knee.
- ❖ -Repeat this procedure with other side similarly.

Exercises were carried out in two sessions/day initially extending to four sessions /day. Frequency of exercises fixed to 20 times /session. In the initial phase of illness, relaxation exercises were carried out that were replaced by mobility exercises in the second phase of ailment as well as with back strengthening exercises. However individual adjustments were made like five to ten minutes interval between the start of a second exercise in the same session.

**Discussion**

Low back pain is a very common complaint in both sexes regardless of race and region, causing tremendous loss of income, absence from work, lowers the quality of life and create functional disability in the patient<sup>3</sup>. At the same time, there is yet no treatment method available that can be claimed for the accurate cure of this illness. Recurrences are common. The intervertebral disk, small vertebral joints, the musculature and ligamentous apparatus may become the origin of back pain<sup>4</sup>. It may be triggered by assuming bad posture, incorrect technique of lifting, pushing, pulling, rising from bed/chair, sitting postures<sup>5</sup> etc.

In low back pain, lumbar muscles gets weak, early fatigue-ability and spinal stiffness develops<sup>6</sup>. Sour and Koch of Germany measured Isokinetic strength of Lumbar

muscles in chronic low backache and found that Isokinetic strength of extension was reduced than strength of flexion muscles in comparison with persons without pain<sup>6</sup>. So extensive muscle training is required to overcome this weakness, to reduce /eliminate muscle fatigue and to restore and enhance mobility and flexibility of the spine so that a person can pass as normal a life as possible. These effects can only be obtained via exercises. Physiotherapeutic action is oriented according to the main symptom. A complete rehabilitation programme should include exercises to enhance strength, flexibility, endurance and co-ordination<sup>7</sup>.

There are numerous exercises designed for low backache but precision and accuracy is lacking. Back extension exercises are widely used with emphasis on increasing muscular strength and endurance but other desired effects cannot be obtained merely by these exercises. However, present study made use of very few specific exercises that serves to achieve target of restoring/increasing muscular strength as well as mobility and flexibility of back muscles i.e. a combination of relaxation exercises, Isometric exercises, passive stretching, dynamic exercises in various postures designed to relax, restore muscular strength, mobility and flexibility.

Flexion exercises are routinely contraindicated in low backache but beneficial effects of these are recorded in low back pain due to disc prolapse<sup>8</sup>. Therefore more research is required to re-evaluate the role of flexion exercises in low back pain.

Instead of adopting irregular sessions of exercises as is the usual practice, exercises were carried out in regular sessions from two to four times per day. Frequency of exercises was also kept fixed.

In many low -dosage or short-time studies, the positive effects of training have not had adequate opportunity to take hold in chronic low back pain patient<sup>9</sup>. This support our assumption of using few specific exercises in a sufficient frequency to get desired result instead of making use of numerous exercises in a haphazard fashion.

According to the author, back school is a rehabilitation treatment that requires patients to understand an educational message and motivate them to modify their behavior to prevent relapses<sup>10</sup>. Study of Lavender about the effects of lifting belts, foot movement lift asymmetry on trunk motions, support the use of lifting belts in asymmetrical lifting conditions<sup>11</sup>. Back school is an effective tool for influencing lifting posture and conveying information regarding spinal mechanics and lifting techniques<sup>12</sup>. Therefore, it is necessary to know and practice correct back ergonomics to prevent relapses. However, more study is required to establish a correlation between diagnosis and exercise therapy as well as among diagnosis, exercise therapy and use of a specific physiotherapeutic modality.

**Results**

Management of low back pain should consist of a specific set of exercises in a specific frequency and sessions per day in order to achieve long-term effects. Exercise programme should consist of isometric exercises, relaxation exercises, mobility exercises, passive stretching, muscle strengthening exercises with appropriate ergonomics. It must be augmented with the application of desired modality, selected according to the individual merit and demerit.

**Dedication**

This article is dedicated to Late Dr Khuram Shafique (may God rest him in peace) whose constant encouragement enabled me to conduct this study but who is no more alive to see the outcome.

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