



Case Study

Volume 5 Issue 4 - May 2019  
DOI: 10.19080/APBJ.2019.05.555674

Anatomy Physiol Biochem Int J

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# Effect of Exercise and K-Taping in Management of Nonspecific Chronic Back Pain (Case Study)



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Submission: April 30, 2019; Published: May 15, 2019

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## Abstract

**Background and purpose:** The purpose of this case report is to describe the outcome of a exercise protocol -based intervention plan combined with K-Taping for a patient with non-specific chronic low back pain.

**Case description:** 35-year-old male patient whose primary complaints of severe LBP with radiculopathy into the left lower extremity. MRI-scan revealed a disc bulging at the L5-S1 vertebral junction. He reported a score of 6/10 on Visual Analog Scale (VAS). The patient was treated for LBP with exercises protocol and K-Taping, for 6 sessions for 2 times a week once a day for 3 weeks.

**Outcomes:** There was no pain (0/10) reported on VAS Scale after intervention and no impairment or functional limitations, including normal range of motion of lumbar spine in all direction.

**Discussion:** The patient was able to get back to work without any problem and he was able to resume his previous responsibilities without pain. Exercises protocol with K-Tape intervention proved beneficial for the treatment of non-specific chronic low back pain. Further future research is recommended to know if exercises protocol intervention, with K-Tape is effective in other body parts pain and long-term treatment follow up in larger patient group.

**Keywords:** K-Taping; Chronic low back pain; Exercise

**Abbreviations:** VAS: Visual Analog Scale; LBP: Low Back Pain; HEP: Home Exercise Program

## Introduction

At present, low back pain (LBP) is a great social and economic problem because the ongoing prevalence of this condition is between 60-85%, and its incidence has been increasing in developed countries since the second half of the last century [1]. The highest incidence of LBP is observed in patients between 30-35 years of age [2]. Currently, there is no precise definition of chronic low back pain. In some cases, chronic problems are defined as pain that lasts longer than 7-12 weeks. Others define it as pain that persists longer than expected with conventional treatment. Generally, it can be classified as frequently recurring back pain, which intermittently affects individuals over an extended period of time [3].

According to Ricci et al. [4] approximately 39% of patients suffer from herniated disc and do not describe any subjective complaints, and during radiculography protrusion of the intervertebral disc was found in 50% of cases and herniation of the disc in 24% of cases, data in a study on workers in the USA [4].

Radiculopathy is a disorder involving compression, impingement, irritation or inflammation of a spinal nerve root,

which may be due to a disc protrusion or any local degenerative disorder compromising the intervertebral foramen [5]. It is characterized by the presence of true neurological signs and symptoms and associated with radicular pain. In the lumbar spine, radicular leg pain is often a result of lumbar intervertebral disc pathology [6,7]. Treatment of chronic low back pain is difficult and many of the established interventions have limited efficacy [8]. There is some evidence from a Cochrane review that shows exercise is effective at slightly reducing pain and improving physical function in patients with non-specific chronic low back pain [9]. This evidence is reflected in a recent literature review of current national and international guidelines for chronic low back pain which consistently recommend exercise therapy as a treatment for chronic low back pain [10].

Exercise has been proposed to improve back strength, flexibility, range of motion and fitness [11,12] and to provide an acute improvement in mood and protection from depression [13]. Role of exercise and whether specific exercises are beneficial are both uncertain. One review sought to better inform clinical

practice by identifying exercise characteristics, such as stretching or supervision that decrease pain and improve function in adults with non-specific chronic low back pain [14].

### Case Report

A 35-year-old male attended Raj nursing home, Gorakhpur-UP, India, where he attends and physical examination was done by orthopedic surgeon, patient complains of severe LBP with radiculopathy into the left lower extremity. The patient reported numbness and pain in his left leg of approximately a 2-year duration but reported the pain had worsened over the past 2 months. His medical history was unremarkable. The patient spent up to 9hr per day sitting which increased the level of the lumbar pain which subsequently spread to the left hip, buttock and lateral side of the left thigh, with numbness and paresthesia into the lateral side of the left leg. The patient noted the pain increased by sitting and improved by standing. During triage in physiotherapy department his overall health was excellent. He cleared all red flags and appointed as urgent case in orthopedic outpatient department of physiotherapy. On the day of assessment indicated painful but complete active lumbar flexion. Also, the straight leg rise test was positive (35°-70°) only on the left side and TPs were detected in the gluteus medius muscle on the painful side. In addition, the patient had difficulty walking on his heel. He reported a score of 6/10 on Visual Analog Scale (VAS) (where 0 indicates no pain and 10 maximum possible pains) for pain.

The patient was treated for back pain with K-Taping along with strengthening exercise protocol for 6 sessions, 2 times per week, once a day for 3 weeks. Anti-inflammatory drug previously taken with slight improvement in symptoms. The main aim for physiotherapy included decreasing pain, improving muscle strength.

### Treatment



Figure 1: K-Taping Procedure.

Patient was treated with prone press-ups, quadruped hip extension, and bridging exercise to emphasize lumbar extension for the patient. Treadmill walking also included for this patient because it was a way for him to perform an endurance activity while maintaining lumbar extension. Abdominal strengthening exercise also included for the stabilization component. Hamstring muscle stretching exercise also given because of the flexibility deficit noted during the examination [15]. Two I shaped K-Tapes

were applied from erector spine muscle from its origin to insertion in lumbar region. Treatment area was properly cleaned, hair free and measurement of K-tape was done with lumbar spine into full flexion. First four cm to five cm of K-tape was twisted and removed from its paper. The patient was asked to perform maximum flexion of spine, except for the final four cm to five cm and K-tape was also used on one aspect paravertebral within bone direction with mild traction. The ultimate four cm to five cm of K-tape was applied without traction. Same method was used to on opposite side. Firm pressure was applied on K-tape by hand using repeated back and forth motion to warm the adhesive for proper adhesion [16] (Figure 1).

The patient was advised to perform core strengthening exercises twice daily as home exercise program (HEP). HEP on core stability mainly focused on flexion in supine and prone position [17,18]. The procedure was carried out twice a week for 3 consecutive weeks. There was no pain (0/10) reported on VAS after intervention and no impairment or functional limitations, including normal range of motion of lumbar spine.

### Discussion

The patient reported no pain in lumbar region during activities of daily living in all directions. He was able to resume his previous job responsibilities without pain. There was significant reduction in pain after 6 session of exercise with K-tape.

According to study of Angela Searle et al. [19], the combined results of these moderate to high quality randomized controlled trials, exercise has a small but significant benefit for the treatment of non-specific chronic low back pain and is more effective than conservative therapies. This current finding is consistent with the advice provided in current low back pain guidelines [19].

Kankaanpaa M et al. [20] found on his study that the largest effect size of all the exercise groupings was noted in the strength/resistance trials that concentrated on whole body and trunk. Chronic low back pain is associated with disturbance of muscle activation patterns and weakness and increased fatigability of both trunk and extremity muscles [20].

The results of our sub-group analysis show preliminary support for exercises that target multiple muscle groups. The larger effect size associated with the strength/resistance programs may have been due to the wide range of muscles trained and the improvements in muscle strength, power and functional abilities seen after resistance training [21].

Shariat et al. [22] demonstrated the long-term effect of exercise were more effective than ergonomic modification on neck, shoulder, and LBP among office workers. Although studies have shown that exercise therapy results in the reduction of LBP no consensus exists regarding the most efficacious approach [22].

There is a scarcity of proof of efficaciousness of Kinesio tape in reducing low-back pain. Paoloni et al. [23] found the impact of

K-Tape along with exercise on pain and daily activities in subjects with Chronic Low Back Pain. They found statistically significant pain reduction on pain scale, at end of fourth week of intervention with K-Tape along with exercises [23].

Hwang Bo [24] on his case study, found use of K-Tape on lumbar region for three days, decreased acute Low Back Pain and improved lumbar Range of Motion. K-Tape can improve stability of joints, strength of weak muscles, decrease pain, and correct posture [24].

The physical property of Kinesio Tape will increase tension by stimulation throughout active trunk movement, which can facilitate pain gate mechanism through afferent fiber stimulation, hence decreasing pain sensation [25]. K-Tape enhance muscle action by improving strength of weak muscles [26]. All the above study strongly supports our result.

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DOI: 10.19080/APBIJ.2019.05.555674

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