A LITERATURE REVIEW ON EFFECTIVENESS OF KINESIOTAPING FOR PATIENTS WITH SPATIOTEMPORAL CHANGES IN CHRONIC MECHANICAL LOWER BACK PAIN

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ABSTRACT

BACKGROUND: Walking is one among the common and primary movement performed by human. For maintenance of health, the physical activity should be in moderate intensity. For walking, it includes at least 100 steps/minute, equivalent to approximately 3,000 steps per half an hour. Patients with lower back pain repeatedly complain of difficulties in walking, and usually walks slower than healthy peers. Low back pain is one among the most important causes of morbidity in all countries of the world, and 80-85% of the people experience lower back pain at least once during their lives, lifetime prevalence of lower back pain is between 43-51%. Mechanical lower back pain refers to back pain that arise intrinsically from the spine, inter vertebral discs, or surrounded soft tissues. This include lumbosacral muscle strain, herniated disk, lumbar spondylosis, spondylolisthesis, vertebral compression fracture, and acute or chronic traumatic injury. Kinesiotaping is utilized for a wide range issues, such as musculoskeletal system, neurological and vascular problems. Kinesiotape also decreases pain by stimulating the neurological system, restores muscle function by supporting weakened muscles, removes congested lymphatic fluid or haemorrhage under the skin, and corrects joint misalignment by reducing muscle spasm. Therefore, this study investigated the effects of kinesiotaping in patients with chronic lower back pain due to lumbar disc herniation, spondylolysis, spondylolisthesis, infection, tumor, fracture etc.

OBJECTIVES: To review the effectiveness of kinesiotaping along with physiotherapy management for patients with spatiotemporal changes in chronic mechanical lower back pain patients.
The objective of this study is to find the effectiveness of kinesiotaping along with physiotherapy management for correcting spatiotemporal parameter changes in patients with chronic mechanical lower back pain.

SEARCH METHOD: Pub Med, Google Scholar, Research gate, and Science direct were the databases used to search papers. The title, abstract, and full text literature were used to find and screen all potential pertinent studies. To determine the availability of further papers, the citations and references of pertinent articles were also checked.

SELECTION CRITERIA: Selection criteria included the articles focused on

- spatiotemporal changes in chronic mechanical lower back pain
- Kinesio taping for the treatment of low back pain
- Kinesio taping for the treatment of disability in lower back patients

RESULT: Out of 17 articles 12 articles are stating that kinesio taping is beneficial for giving best results in chronic mechanical lower back pain by reducing pain, disability and an increase in range for people who are having mechanical lower back pain. And xx articles are stating that there is no significant difference between kinesiotaping group and control group.

CONCLUSION: After a detailed review out of 12 articles I conclude that kinesio taping is more beneficial in mechanical low back population to reduce pain, increase range of motion, disability, and provide strength and support to maintain posture correct the muscle alignment for maintaining spatiotemporal changes than other therapies.

KEYWORDS: Spatiotemporal parameters, chronic mechanical lower back pain, Kinesio taping

INTRODUCTION:

Walking is one among the common and primary movement performed by human. For maintaining health, the physical activity should be of moderate intensity. For walking, it includes at least 100 steps/minute, equivalent to approximately 3,000 steps per half an hour. Since walking is a basic requirement for daily activity, any interference with this ability may have a considerable impact on the individual’s life. Walking as a complicated dynamic task requires a person to generate and face several multi directional forces around each joint and with the ground. Gait, the pattern or style of walking, can be altered by insufficient passive mobility, muscle weakness, impaired proprioception and motor control, and pain. Therefore, any deficiency in muscular, skeletal, or nervous systems can be a reason for such changes in an ordinary gait pattern.

Lower back pain (LBP) is a prevalent medical issue that has many repercussions including disability and taking time of from work. Mechanical lower back pain (MLBP) excludes pain resulting from neoplasia, fracture, or inflammatory arthropathy that is referred from anatomical sites outside the spine, and in most cases, there is no precisely obvious underlying pathology. Mechanical back pain accounts for 97% of cases, arising from spinal structures such as bones, ligaments, discs, joints, nerves, and meninges. Patients with lower back pain repeatedly complaint of difficulties with walking, and usually walk slower than the healthy peers. Nevertheless, a few authors examined the effects of MLBP on gait’s spatiotemporal parameters. Healthcare professionals have been long concerned with the assessment of humans gait; however, only recently could they utilized instrumental gait analysis in routine clinical practice for diagnosis and the selection of the treatment methods for complex musculoskeletal and neurological disorders. Multiple treatment modalities are used to treat MLBP; however, strong evidence of being profitable is often lacking. The question is that
to what extent using such modern technologies as gait analysis systems would assist healthcare professionals with managing musculoskeletal disorders, in particular, MLBP. Lower back pain is one among the most important causes of morbidity in all countries of the world, and 80–85% of people experience lower back pain at least once during their lives. The lifetime prevalence of lower back pain is between 43–51%. Mechanical lower back pain refers to back pain that arise intrinsically from the spine, inter vertebral disks, or surrounded soft tissues. This includes lumbosacral muscle strain, disk herniation, lumbar spondylosis, spondylolersistence, vertebral compression fractures, and acute or chronic traumatic injury. Kinesiotaping is utilized for wide range of issues, such as musculoskeletal system, neurological and vascular problems. Kinesiotape also decreases pain by stimulating the neurological system, restores muscle function by supporting weakened muscles removes congested lymphatic fluid or haemorrhage under the skin, and corrects joint misalignment by reducing muscle spasm. Therefore, this study investigated the effects of kinesiotaping on patients with chronic lower back pain due to lumbar disc herniation, spondylolysis, spondylolistence, infection, tumor, fracture etc.

**OBJECTIVES:** To review the effectiveness of kinesiotaping along with physiotherapy management for patients with spatiotemporal changes in chronic mechanical lower back pain patients.

The objective of this study is to find the effectiveness of kinesiotaping along with physiotherapy management for correcting spatiotemporal parameters on patients with Chronic mechanical lower back pain.

**METHODOLOGY:**

**STUDY DESIGN:**

PRISMA

**SOURCE OF DATA:**

Google scholar, pubmed, science direct and research gate were searched for papers. Spatiotemporal parameters, chronic mechanical low back pain, kinesiotaping were the keywords. The title, abstract and full text literature were used to find the screen all potential pertinent studies. To determine the availability of further papers, the citations and references of pertinent articles were checked.

**EXCLUSION CRITERIA:**

- Articles past 2011
- Articles explaining only surgical interventions.
- Articles which are explaining other interventions.
- Articles published in other languages.

**INCLUSION CRITERIA:**

- The articles from 2012 to 2022
- Full text articles.
- Articles published in english only.

STUDY DESIGN: PRISMA (preferred reporting items for systemic review and meta analysis criteria) served as the foundation for the literature evaluation.
SOURCE OF DATA & ELIGIBILITY CRITERIA: Google scholar, pubmed, science direct and research gate were searched for papers. Spatiotemporal parameters, chronic mechanical lower back pain, kinesiotaping were the keywords. The title, abstract and full text literature were used to find and screen all potential pertinent studies. To determine the availability of further papers, the citations and references of pertinent articles were also checked.

INCLUSION CRITERIA:

- The studies were carried kinesio taping for chronic mechanical low back pain.
- The articles from 2012 to 2022.
- Full text articles.
- Articles published in english.

EXCLUSION CRITERIA:

- Articles past 2011.
- Articles explaining only surgical interventions.
- Articles which is published in another languages.
- Articles which are using other interventions.

REVIEW OF LITERATURE:

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<tr>
<th>S.N</th>
<th>AUTHOR</th>
<th>YEAR &amp; JOURNAL</th>
<th>TITLE</th>
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<th>RESULTS</th>
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<tbody>
<tr>
<td>1.</td>
<td>Adelaida maria castro-sanche, et al. (5)</td>
<td>2012 Journal of physiotherapy</td>
<td>Kinesiotaping reduces disability and pain slightly in chronic non specific low back pain</td>
<td>A randomized control train</td>
<td>At one week, the experimental group had significantly greater improvement in disability by 4 points on the Oswestry score and by 1.2 points on the Roland-Morris score. However, these effects were not significant four weeks later. The experimental group also had a greater decrease in pain than the control group immediately after treatment which was maintained four weeks later similarly.</td>
<td>Kinesiotaping reduced disability and pain in people with chronic non-specific low back pain, but these effects may be too small to be clinically worthwhile.</td>
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<td></td>
<td>Author(s)</td>
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<td>Methodology</td>
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<td>Fahad albahel, et al. (6)</td>
<td>2013</td>
<td>World applied sciences journal</td>
<td>Randomized control trial</td>
<td>A total of 20 patients (16 men and four women) received physical therapy exercises using KT. There were significant differences in measures of pain, ADL, and trunk flexion and extension ROMs before and after treatment. There was significant improvement in pain severity on VAS and RMDQ scores. A physical therapy program involving strengthening exercises for abdominal muscles and stretching exercises for back, hamstring, and iliopsoas muscles using kinesio taping was beneficial in the treatment of chronic low back pain.</td>
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<td>3</td>
<td>Shaji John kachanath u, et al. (7)</td>
<td>2014</td>
<td>The society of physical therapy science</td>
<td>Randomized control trial</td>
<td>Significant differences in measures of pain, ADL, and trunk flexion and extension ROMs were observed post intervention within each group. In comparison, there were no significant differences in measures of pain, ADL, and trunk flexion and extension ROMs post intervention between groups. A physical therapy program involving strengthening exercises for abdominal muscles and stretching exercises for back, hamstring, and iliopsoas muscles with or without kinesio taping was beneficial in the treatment of chronic low back pain.</td>
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<td>Study Title</td>
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<td>4.</td>
<td>Amal t, al-shareef, et al. (8)</td>
<td>2015</td>
<td>Spine International Journal for the Study of the Spine</td>
<td>Effect of kinesio taping on pain and functional disability in chronic non-specific low back pain</td>
<td>A randomized clinical trial</td>
<td>Both groups were comparable at baseline. The experimental group had a greater decrease in pain than the placebo group after w2 of intervention. This effect was maintained to w4 follow-up. Similarly, trunk flexion ROM was significantly better at w2 and w4 follow-up. Kinesio taping reduces pain and disability and improves trunk flexion range of motion after two weeks of application. However, these effects were very small to be considered clinically relevant and meaningful when compared with placebo taping.</td>
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<td>5.</td>
<td>Nicole L. Nelson, et al. (9)</td>
<td>2016</td>
<td>Journal of Bodywork and Movement Therapies</td>
<td>Kinesio taping for chronic low back pain</td>
<td>A systematic review</td>
<td>In total, five studies involving 306 subjects met the inclusion criteria and corresponded to the aim of this review. The methodological quality of the included RCTs was good, with a mean score of 6.6 on the 10-point PEDro scale. Moderate evidence suggests KT, as a sole treatment or in conjunction with another treatment, is no more effective than conventional physical therapy and exercise with respect to improving pain and disability outcomes. There is insufficient evidence suggesting that KT is superior to sham. Kinesio taping is not a substitute for traditional physical therapy or exercise. Rather, KT may be most effective when used as an adjunctive therapy, perhaps by improving ROM, muscular endurance and motor control. More high-quality studies that consider the multiple factors that mediate CLBP, in the short, intermediate and long term, are needed to strengthen the evidence of the effectiveness of KT on CLBP.</td>
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<td>6.</td>
<td>Betul Yavuz Keles et al. (4)</td>
<td>2016</td>
<td>Journal of Back and Musculoskeletal Rehabilitation</td>
<td>A randomized controlled trial in patients with lumbar disc herniation</td>
<td>Demographic and clinical features of the groups were similar. There were significant improvements in all parameters during intervention period in both groups. Improvements in NRS-Activity, HAQ and ODI continued to twelfth weeks only in KT group. In KT group, analgesic need was significantly less at follow-up.</td>
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<td>7.</td>
<td>Marco Aurelio Nemitalla et al. (10)</td>
<td>2016</td>
<td>Journal of Orthopaedic &amp; Sports Physical Therapy</td>
<td>Kinesiotaping reduced analgesic need of patients with LDH when compared with placebo taping.</td>
<td>No between-group differences in the primary outcomes pain intensity and disability were observed. In addition, no between-group differences in postural control of the transversus abdominus muscles and improved cerebral cortex potential.</td>
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who received exercise and manual therapy

differences were observed for any of the other outcomes evaluated, except disability 6 months after randomization in favor of the control group.

additional benefit from the use of kinesio taping

| 8. | Fahri, Koroglu, et al. (2017) | The effect of kinesio taping on pain, functionality, mobility and endurance in the treatment of chronic low back pain | A randomized control trial | The study included 60 patients (32 females). When the initial demographic and clinical characteristics of the groups were evaluated, all assessment results, except the Oswestry scores, were similar. When the average changes in the clinical evaluations were evaluated after the treatment, a statistically significant improvement demonstrating the superiority of the taping group was observed in pain, functionality, flexibility and endurance values | Kinesio taping in chronic low back pain is an easy and effective method which increases the effectiveness of the treatment significantly in a short period when applied in addition to exercise and electrotherapy methods |

<p>| 9. | Olga Velasco Roldan, et al. (2017) | Immediate and short-term effects of kinesio taping tightness in mechanical low back pain | A randomized control trial | In the between-groups analysis of the mean score changes after baseline assessment, no significant differences were found for any of the outcome measures except for the left back-saver sit-and-reach test, which reached statistical significance, demonstrating that kinesio taping tightness does not seem to influence results on pain sensitivity and lumbar mobility in chronic LBP in an immediate and short term | Kinesio taping tightness does not seem to influence results on pain sensitivity and lumbar mobility in chronic LBP in an immediate and short term |</p>
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<td>Kim trobec, et al. (12)</td>
<td>2017 Journal of health sciences</td>
<td>Efficacy of kinesio taping in reducing low back pain</td>
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<td>11.</td>
<td>Yuejie li, et al. (13)</td>
<td>2018 Clinical rehabilitation</td>
<td>Effects of kinesiotape on pain and disability in individuals with chronic low back pain</td>
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<td>12.</td>
<td>Liane de Brito Macedo, et al. (14)</td>
<td>2018</td>
<td>Chartered Society of Physiotherapy</td>
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<tr>
<td>13.</td>
<td>Nilanjan Sarkar, et al. (15)</td>
<td>2018</td>
<td>International Journal of Health Sciences and Research</td>
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<td>14.</td>
<td>Yilan Sheng, et al. (16)</td>
<td>2019</td>
<td>Journal of Rehabilitation Medicine</td>
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<td>15</td>
<td>María Lourdes Penalver-Barrios et al (17)</td>
<td>2021</td>
<td>A novel (targeted) kinesio taping application on chronic low back pain</td>
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**RESULT:**

Out of 17 articles, 12 articles are stating that kinesio taping is beneficial for giving best results in chronic mechanical lower back pain by reducing pain, disability and increase in range for people who are having mechanical lower back pain. And 5 articles are stating that there is no significant difference between kinesiotaping group and control group.

**CONCLUSION:**
After a detailed review out of 12 articles I conclude that kinesio taping is more beneficial in mechanical low back population to reduce pain, increase range of motion, disability, and provide strength and support to maintain posture correct the muscle alignment for maintaining spatiotemporal changes than other therapies.

**DISCUSSION:**

The findings from the selected studies suggest that kinesiotaping may be an effective adjunctive intervention for patients with chronic mechanical lower back pain and spatiotemporal changes. The proposed mechanisms of action include pain modulation through sensory stimulation, improved muscle activation and support, and enhanced proprioceptive feedback. However, the optimal application techniques, duration, and long-term effects of kinesiotaping remain unclear due to the heterogeneity of the studies reviewed. Additionally, limitations such as small sample sizes, lack of standardized protocols, and variations in outcome measures were observed across the studies.

**LIST OF REFERENCES:**


