



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

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 walk slower than healthy peers¹. 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 arises intrinsically from the spine, intervertebral discs, or surrounding soft tissues. This includes lumbosacral muscle strain, herniated disk, lumbar spondylosis, spondylolisthesis, vertebral compression fracture, and acute or chronic traumatic injury. Kinesiotaping is utilized for a wide range of issues, such as musculoskeletal system, neurological and vascular problems^{2,3}. 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 etc⁴.

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 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, MLBP¹. 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 arises intrinsically from the spine, intervertebral disks, or surrounding soft tissues. This includes lumbosacral muscle strain, disk herniation, lumbar spondylosis, spondylolisthesis, vertebral compression fractures, and acute or chronic traumatic injury. Kinesiotaping is utilized for a wide range of issues, such as musculoskeletal system, neurological and vascular problems^{2,3}. 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, spondylolisthesis, infection, tumor, fracture etc⁴.

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.

INCLUSION CRITERIA:
The articles from 2012 to 2022
Full text articles.
Articles published in English only.

EXCLUSION CRITERIA:

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

STUDY DESIGN: PRISMA (preferred reporting items for systematic review and meta-analysis criteria) served as the foundation for the literature evaluation.

SOURCE OF DATA & ELIGIBILITY CTITERIA: 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:

S.N O	AUTHOR	YEAR & JOURNAL	TITLE	TYPE OF STUDY	RESULTS	CONCLUSION
1.	Adelaida maria castro-sanche, et al.(5)	2012 Journal of physiothera py	Kinesio taping reduces disability and pain slightly in chronic non specific low back pain	A randomize d control train	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 alsohad a greater decrease in pain than the control group immediately after treatment which was maintained four weeks later similarly	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.

					trunk muscle endurance was significantly better at one week and four weeks later. other outcomes were not significantly affected.	
2.	Fahad albahel,et al.(6)	2013 World applied sciences journal	Kinesio taping for the treatment of mechanical low back pain	Randomize d control trail	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 rom 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.
3.	Shaji john kachanath u,et al.(7)	2014 The society of physical therapy science	Comparison between kinesio taping and a traditional physical therapy program in treatment of nonspecific low back pain	A randomize d control trail	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.

4.	Amal t, al-shareef,et al.(8)	2015 Spine an international journal for the study of the spine	Effect of kinesio taping on pain and functional disability in chronic non specific low back pain	A randomized clinical trial	Both group were comparable at baseline. the experimental group had a greater decrease in pain than the placebo group after w2 of intervention this was maintained to w4 follow-up. at w2, the experimental group had significantly greater improvement in disability, by 3.90 points. this effect was significant at 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, thesis effects were very small to be consider clinically relevant and meaningful when compared with placebo taping
5.	Nicole l. nelson,et al.(9)	2016 Journal of bodywork and movement therapies journal	Kinesio taping for chronic low back pain	A systematic review	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

					taping in improving pain and disability. limited evidence suggests that kt is more effective than sham taping in improving range of motion (rom) and global perceived effect (gpe) in the short term. very limited evidence indicates that kt is more effective than conventional physical therapy in improving anticipatory postural control of the transversus abdominus muscles and improved cerebral cortex potential.	
6.	Betul yavuz keles,et al.(4)	2016 Journal of back and musculoskeletal rehabilitation	Kinesio taping in patients with lumbar disc herniation	A randomized control trail	Demographic and clinical features of the groups were similar. there were significant improvements in all parameters during intervention period in 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.	Kinesiotaping reduced analgesic need of patients with ldh when compared with placebo taping.
7.	Marco aurelio nemitalla added,et al.(10)	2016 Journal of orthopaedic & sports physical therapy	Kinesio taping does not provide additional benefits in patients with chronic low back pain	A randomized controlled trial	No between-group differences in the primary outcomes pain intensity and disability were observed. in addition, no between-group	Patients who received a physical therapy program consisting of exercise and manual therapy did not get

			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.(2)	2017 Journal of back and musculoskeletal rehabilitation	The effect of kinesio taping on pain,functionality, mobility and endurance in the treatment of chronic low back pain	A randomized control trail	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
9.	Olga velasco roldan,et al.(11)	2017 PM&R journal	Immediate and short-term effects of kinesio taping tightness in mechanical low back pain	A randomized control trail	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 a statistically significant interaction group x	Kinesio taping tightness does not seem to influence results on pain sensitivity and lumbar mobility in chronic lbp in an immediate and short terms

					gender x time was only observed for mechanosensitivity values	
10.	Kim trobec,et al.(12)	2017 Journal of health sciences	Efficacy of kinesio taping in reducing low back pain	A comprehensive review	A total of 137 records were identified, 123 abstracts screened, and 14 full-text articles assessed for eligibility. finally, nine publications were selected using critical appraisal skills program tool: eight randomized clinical studies and one literature review. the key variables from collected data were the subject characteristics, taping technique, control interventions, instrument, and outcome.	The effect of kinesio taping in reducing low back pain is positive but was not statistically significant in analyzed studies. taping therapy may therefore be used as a supplementary method to conventional physical therapy procedures and may be important for patients because of its easy accessibility and safety.
11.	Yuejie li,et al.(13)	2018 Clinical rehabilitation	Effects of kinesiotape on pain and disability in individuals with chronic low back pain	A systematic review and meta-analysis	A total of 10 articles were included in this meta-analysis. a total of 627 participants were involved, with 317 in the kinesiotape group and 310 in the control group. the effects of kinesiotape on pain and disability were explored. while kinesiotape was not superior to placebo taping in pain reduction, either alone or in conjunction with physical therapy, it could significantly improve disability when compared to	Since kinesiotape is convenient for application, it could be used for individuals with chronic low back pain in some cases, especially when the patients could not get other physical therapy.

					the placebo taping	
12.	Liane de Brito Macedo, et al.(14)	2018 Chartered society of physiotherapy	Kinesio taping reduces pain and improves disability in low back pain patients	A randomized control trial	Improved pain relief was observed for ktt group and ktnt group mean difference to compared with cg at 3 days after application of the tape. for disability, there was a difference between cg and ktt group at 3 days and 10 days. for all the other variables, there were no differences between groups.	Kinesio taping with or without tension reduces pain 3 days after its application. additionally, when applied with tension, it improves disability after 3 and 10 days in patients with lbp
13.	Nilanjan sarkar, et al.(15)	2018 International journal of health sciences and research	Efficacy of kinesio-taping on pain, range of motion and functional disability in chronic mechanical low back pain	A randomized control trial	Both groups showed statistical significant improvement after 4 weeks of intervention in respect to pain intensity, range of motion and functional disability. group-a showed significant improvement than group-b in respect to pain intensity and functional disability, however, there was insignificant changes found between the groups for lumbar spine range of motion after 4 weeks of treatment.	The results of this study suggested that kinesio taping with standardized exercise has a significant effect in improving pain and function in subjects with chronic mechanical low back pain
14.	Yilan sheng, et al.(16)	2019 Journal of rehabilitation medicine	Kinesio taping in treatment of chronic non-specific low back pain	A systemic review and meta analysis	Eight studies fulfilled the inclusion and exclusion criteria. the quality of included studies was moderate. patients with chronic non-specific low back pain in the kinesio	Kinesio taping may be a new, simple and convenient choice for intervention in low back pain. in the future, we can measure the efficacy about

					taping group achieved better pain relief and activities of daily living than those in the control group.	kinesio taping via clinical application in order to prove the possibility of treatment for low back pain.
15.	Maria lourdes penalver-barrios,etal(17)	2021	A novel (targeted) kinesio taping application on chronic low back pain	A randomized control trail	Targeted kinesio taping, according to skin/fascia mobility exploration, was applied in the experimental group once a week for four sessions. the control group underwent a placebo taping application. at post-treatment time there was a statistically significant reduction both in disability (roland-morris disability questionnaire) and pain (numeric pain rating scale) in the experimental group and the control group. however, at six months, these changes only remained significant in the experimental group	The application of targeted kinesio taping produced a significant reduction in pain and disability, at 4 weeks and at 6 moths follow-up, although there were no differences between groups at any measurement time point.

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 an increase in range for people who are having mechanical lower back pain. and 5 articles are stating that there is no significant difference between kinesiotalping 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.

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