



Effect Of Kinesiotaping On Knee Function Among Knee Osteoarthritis (OA) – A Randomised Control Trial

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Abstract

The study is to determine the effect of Kinesio tape on knee function among knee osteoarthritis persons. The study was conducted at Santosh medical college in Ghaziabad, U.P., India. A total of 128 people participated in this study. Participants were randomly divided between the control and experimental groups. Each group received 64 participants. Participants were explained about the study and consent was obtained from participants. A pre-test was conducted for both groups using WOMAC. Later participants were given intervention as per the protocol. The control group(n=64) received therapeutic exercises 30 minutes for thrice a day to reduce knee pain. The experimental group(n=64) received therapeutic exercise as well as Kinesiotaping, 2 times per week for 3 weeks. On completion of intervention as per protocol post-test were collected. Data was analyzed using SPSS software. Results shown that there were no significant changes in knee function among participants who received only therapeutic exercises. Participants who were receiving therapeutic exercises along with Kinesiotaping showed a significant effect on knee function. Furthermore, limitation of the study was short duration, hence long-term effect has not been studied. Another limitation found in the study is the smaller sample size due to which results cannot be generalized. It is recommended that this study with a long duration, and larger sample size.

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Keyword: Knee function, Osteoarthritis, WOMAC, Therapeutic exercise, Kinesiotaping

INTRODUCTION:

Knee osteoarthritis (OA) is a chronic degenerative joint disease characterized by gradual degradation of the articular cartilage resulting in pain, stiffness, and impairment of joint function. It is a major cause of disability and a decreased quality of life that impacts millions of individuals worldwide, particularly the elderly. Reducing pain, improving function, and delaying the course of the illness are the main objectives of contemporary knee OA therapy approaches. Even though mainstream interventions like physical therapy, Available online at: <https://jazindia.com>

medication, and exercise are commonly used, there is ongoing interest in researching alternative therapies to enhance outcomes and minimise symptoms.

Kinesiotaping has gained favour as a non-invasive therapy method for musculoskeletal conditions, such as knee OA. Flexible adhesive tape known as "kinesiotape" is applied to the skin in prearranged patterns to provide pain relief, stability, and support while maintaining full range of motion. In situations of osteoarthritis in the knee, kinesiotaping is supposed to help with proprioception, enhance muscle activation patterns, reduce discomfort, and promote lymphatic drainage. Further research is necessary because there is inconsistent data regarding the effectiveness of this treatment in improving knee function in people with osteoarthritis.

Therefore, the aim of this randomised controlled study is to find effect of kinesiotaping with therapeutic exercise versus therapeutic exercise on knee function among individuals with knee osteoarthritis (OA).

Hypothesis

Null hypothesis: There is no significant effect of Kinesio taping on knee function among knee osteoarthritis.

Alternative hypothesis: There is a significant effect of Kinesio tape on knee function among knee osteoarthritis.

Objective of the study:

- To determine the pre-test value using WOMAC in the control Group
- To determine the pre-test value using WOMAC in the experimental group
- To determine post-test value using WOMAC in the control Group
- To determine Post-test value using WOMAC in the experimental group
- To compare pre-test and post test results of the control and experimental group.
- To study demographic variables.

Methodology:

Study Design: Randomized control trial

Source Of Data: Santosh Hospital, Occupational therapy department.

Sample Size: 128

Inclusion Criteria:

- Patient diagnosed with knee OA
- Age range- 50 year or older
- Gender-male and female

Exclusion Criteria:

- Allergy to tape
- History of knee joint surgery
- Inflammatory arthritis

Sampling Technique: convenient sampling technique

Intervention Protocol:

1. Experimental Group

Kinesio tape application to knee joint with 2 times per week for 3 weeks.

Precautions before using Kinesio Tape

1. The area to be treated should be clean and check.
2. All the patients who were eligible to this study took allergic test to KT.
3. Hair should be removed

Taping method

1. The anchor portion of the tape is about 4 cm in length.
2. All bases of stripes and ends of stripes will apply with paper-off tension.

3. The desired tension will apply between the bases and ends (Middle portion).
4. The patient will be positioned in supine lying.
5. The KT application will be kept for 3 days. After the three-day interval, KT will replace.
6. The patient will renew KT in cases the tape will separate



Figure -1: "I" Band



Figure -2: "Y" Band Showing Anchor Points



Figure -3: Kinesiotape Taping Technique (Step-I)



Figure -4: Kinesiotape Taping Technique (Step-II)

No of strap	Type of strap	Length of the strap	Procedure
3	2 "Y" strips	1 st Y strip	Represent of quadriceps and the tails wrap the patella medially and laterally with 50% tension with maximum knee flexion (FIG.6)
		2 nd Y strip	
	1 "I" Strap	11cm	1. Applied between tibial tuberosity and inferior pole of the patella with 90° of knee flexion. 2. The tails wrap the patella medially and laterally with 50% tension. (FIG 7)
			Applied to patella mediolateral with 50% tension in the position of 30° knee flexion (FIG. 8)

2. CONTROL GROUP:

The exercises will be administered in three sessions per day for a duration of three weeks.

S.No	Activity	Repetition
1.	Bilateral toes touching exercise	10 times
2.	Full range knee extension exercise	10 times
3.	Mini squat exercise	10 times

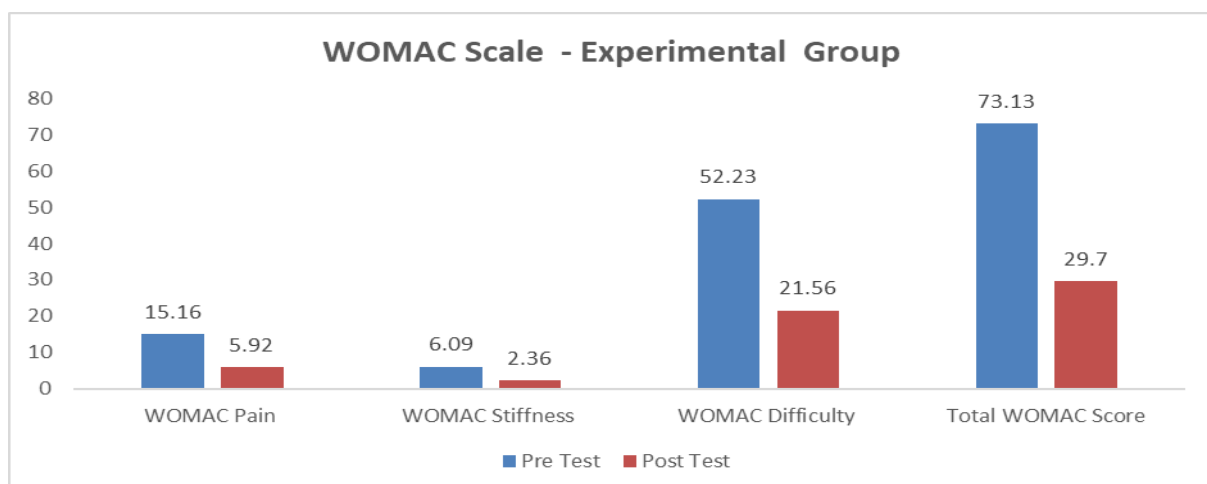
Outcome Measures: Western Ontario and McMaster Colleges Osteoarthritis List (WOMAC)

Procedure: Written consent was obtained from 128 subjects who fulfilled the inclusion criteria. Participants were assigned randomly in control and experimental groups. Each group received 64 subjects (n=64) Experimental group (Received Kinesiotaping with therapeutic exercise) = 64 subjects, Control group (Received therapeutic exercises) = 64 subjects. Pre-test was done prior to intervention using WOMAC. Both groups received intervention as per their group protocol. Post-test data was collected using same tool. Further data was analyzed using SPSS.

Result:

In the control group, 33 participants were male, and the remaining 31 participants were female. In the experimental group, 31 participants were male, and the remaining 33 participants were female. In both the control and experimental groups, 32 participants were affected on both the right and left sides. The control group results shown WOMAC Pain Pre-Test: 16.2 Post-Test: 11.8. WOMAC Stiffness: Pre-Test: 6.5 Post-Test: 4.6. WOMAC Difficulty: Pre-Test: 53.9 Post-Test: 40.3. Total WOMAC Score: Pre-Test: 63.7 Post-Test: 47.1. The Experimental group results shown WOMAC Pain Pre-Test: 15.16 Post-Test: 5.92. WOMAC Stiffness: Pre-Test: 6.09 Post-Test: 2.36. WOMAC Difficulty: Pre-Test: 52.23 Post-Test: 21.56. Total WOMAC Score: Pre-Test: 73.13 Post-Test: 29.70.

Parameter	Pre-Test	Post Test	P Valu
	Mean± Standard deviation	Mean± Standard deviation	
WOMAC Pain	15.16 ± 3.502	11.8 ± 3.113	0.000
WOMAC Stiffness	6.09 ± 1.411	4.6 ± 1.384	0.000
WOMAC Difficulty	52.23 ± 8.761	40.3 ± 8.537	0.000
Total WOMAC Score	73.13 ± 12.787	47.1 ± 11.989	0.000



Discussion:

Osteoarthritis (OA) is a prevalent musculoskeletal condition characterized by joint pain, stiffness, and functional limitations. Occupational therapy interventions play a crucial role in managing OA symptoms. This study investigates the effects of a targeted intervention on pain and functionality in OA patients. We conducted a randomized controlled trial involving two groups: a control group (n=64) and an experimental group (n=64). Participants were diagnosed with knee OA and were matched for age, gender, and disease severity. Both groups received intervention as per protocol for 3 weeks. In both groups, gender distribution was nearly equal. The control group consisted of 33 male and 31 female participants, while the experimental group had 31 male and 33 female participants. This balanced representation ensures that gender-related confounders do not significantly impact our findings. Interestingly, 32 participants in both the control and experimental groups reported bilateral joint affection (i.e., affected on both the right and left sides). This highlights the symmetrical nature of OA and underscores the need for comprehensive interventions targeting both sides. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) was used to assess pain, stiffness, and difficulty. Pre-test and post-test scores were recorded for both groups. Control Group Results: WOMAC Pain: Pre-Test: 16.2, Post-Test: 11.8, WOMAC Stiffness: Pre-Test: 6.5, Post-Test: 4.6, WOMAC Difficulty: Pre-Test: 53.9 Post-Test: 40.3, Total WOMAC Score: Pre-Test: 63.7, Post-Test: 47.1. The Experimental Group Results: WOMAC Pain: Pre-Test: 15.16, Post-Test: 5.92, WOMAC Stiffness: Pre-Test: 6.09, Post-Test: 2.36, WOMAC Difficulty: Pre-Test: 52.23, Post-Test: 21.56, Total WOMAC Score: Pre-Test: 73.13, Post-Test: 29.70 Pain Reduction: Both groups experienced pain reduction, but the experimental group showed a more significant decrease. Occupational therapy likely contributed to improved pain management. Functional Improvement: Stiffness and difficulty scores decreased in both groups, with the experimental group demonstrating greater improvement. Targeted interventions positively impacted functionality. Total WOMAC Score: The experimental group achieved a substantial reduction in the total WOMAC score, indicating overall better outcomes.

Conclusion:

This study found that the effect of kinesiotaping with therapeutic exercise is more significant than only therapeutic exercise for improving knee function among knee osteoarthritis people. Kinesiotaping with therapeutic exercises has shown positive effects in reducing pain, stiffness and improving knee function.

Limitation of study:

Smaller sample size so the result cannot be generalized. Short Duration of study, hence long-term effect not been studied.

Future Recommendations:

Broad demographical variables, a larger sample size, and prolong intervention duration shall be studied in the future with a focus on long-term effect of the intervention.

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