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EFFICACY OF KINESIO TAPE ON LUMBAR SPINE FLEXIBILITY

Physiotherapy

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ABSTRACT

Background: When the lumbar spine is imbalanced, it causes instability, discomfort, and greater energy consumption during functional activities. 1-2. **Methodology:** 30 participants were taken and divided evenly into 3 groups: Group A (Taping with tension), Group B (Taping without tension) and Group C (Normal). Post-test measure of Schober test was performed. **Result:** There was a significant improvement in the lumbar flexibility in the subject of Group A which receive Kinesio taping with tension when compared with other two groups **Conclusion:** The present study concluded that after Kinesio taping there was a significant improvement in the lumbar flexibility.

KEYWORDS

Kinesio Tape, Lumbar Flexibility, Schober Test

INTRODUCTION

The lumbar spine is vital in absorbing downward loads imposed by body weight, action of muscles, and external forces. Abnormalities of lumbar spine can cause instability, discomfort, and higher energy expenditure while carrying out their activities of daily living [1-2]. The fascial system of lumbar integrates and distributes muscular and gravitational forces, as well as supports and connects all tissues in the region. [3-4]

Low back discomfort affects 80% of the general population, with 50% recovering spontaneously within two weeks and 90% recovering within six weeks. [5]

The Kinesio Taping (KT) methodology encompasses a tape with specific properties, which have physiological applications such as correction of muscle activities, improvise active range of motion, enhance circulation of blood and lymph, minimizing pain through neural suppression, and repositioning joints. [6-7]

In KT treatment, the Kenzo Kase fascial correction technique is utilized to produce and/or direct fascia movement in a way that directs it towards a desired alignment. [8] As a result, the mechanical tension generated by the elastic KT which intended to free the fascia from any restriction of movement by moving the skin relative to the target muscles. [9] By stretching the bonds between the molecules, the strain created in KT deforms the band and promotes a gradual electron flow which creates a piezoelectric charge.

Cells understand charge, which prompts them to alter, increase, or decrease their local intercellular elements in response. If stretching is done slowly enough, fascia is a tissue that will deform plastically.

By stretching the links between molecules, the strain created in KT deforms the fascia, and encourages a gradual flow of electrons creates a piezoelectric charge. Cells understand the charge, which prompts them to alter, increase, or decrease their local intercellular elements in response. If stretching is done slowly enough, the fascia is a tissue that will plastically deform. [10]

Although in the past there have been a lot of researches which had studied the long term on pain or flexibility in the patient with low back pain. However, there is a lack of literature to study or examine the immediate effect of Kinesio taping on low back pain or flexibility.

Therefore, the present study aimed to examine the immediate effect of Kinesio taping on lumbar flexibility.

MATERIALS AND METHODS

Inclusion Criteria:

1. Undergraduates aged between 20-25 years
2. Voluntarily consent of participants

Exclusion Criteria:

1. Allergy to tape
2. Overweight/Obese
3. No any history of musculoskeletal, neurological or cardiopulmonary disorders.
4. Using assistive devices
5. Any co-morbidities

Procedure

The study has been approved by I.T.S. Institutional ethics committee (ECR/697/Inst/UP/2014/RR-18). Informed consent was obtained from the subjects who were willing to participate in the study. A sample of 30 undergraduate students was selected. The subjects were randomly assigned into 3 groups. Group A (Taping with tension), Group B (Taping without tension), Group C (Normal), containing 10 each. Before starting the treatment, the procedure was explained to every participant.

The entire process consists of three phases

1. Pretest measurement
2. Intervention
3. Posttest measurement

Pretest measurement

Schober's test was used to evaluate lumbar flexibility at the center of the posterosuperior iliac spines (level S2), as well as two additional locations 5 cm below and 10 cm above the anterior level. The participant was asked to lean forward for another test after measuring the distance between the three points while standing. For lumbar range of motion to be considered normal, the amount of flexion that occurs in the lower back must be at least two inches, which is the difference between the two measurements. [16]

Intervention

The KT procedure was carried out on a 5 cm wide piece of Kinesio Tex Gold. The individuals were in the maximal forward bending of the spine when group B received the KT application with two 30 cm "I" strips. Simple zero-tension application of the tape to the skin was used for this application. The group A applied a range of tension from 15% to 50% using short and long oscillations while using the same cut of tape and technique as the group B. The second tape was applied using the same process. After applying the Kinesio Tape for 5 to 20 minutes, the group A and B patients underwent a second evaluation.

Posttest measurement

Forward Bending was measured again using Schober Test.

Statistical Analysis

The data was analyzed by using of SPSS 15.0 version software and Microsoft Excel 2007. ANOVA was used to find the difference between demographic data of subjects including age, height, weight.

ANOVA was used to compare baseline measurement of Schober between Groups A, Group B, and Group C.

Gain score was calculated by subtracting posttest from pretest. ANOVA was used to compare Gain score between Groups A, B, and Group C.

Within group comparison of pretest and posttest measurement of was done using paired t test for Group A, B and Group C.

RESULT

Demographic Data

A total number of 30 subjects which were divided into three groups A, B, and C participated in the study with their mean age (20.10±1.19years), (19.80± 1.03), and (20.2 ±1.03), height (162.8± 2.57), (163.4± 2.36), and (162.5± 2.59), weight (55.5± 2.27kg), (55.5±2.27kg), and (59.1± 2.37kg) respectively.

Independent t test was applied to analyzed the difference between the Age, Weight, Height of group A B, and C. insignificant difference were observed between Age (f= .364, p=.698), Height (f= .333, p= .720), Weight (f=8.106, p= .02) respectively.

Between Group analysis

Since the baseline Characters of the subjects in both groups are comparable, the outcome variable i.e., difference of Schober test was compared between the group A, B, and C by ANOVA test. The mean difference of Schober test in group A, B, and C (5.2±3.487) (-.2±.3496) and (-.3±.483) respectively. Result reflected significant difference between the two group (p= .000) and (f= 23.7) Within Group Result

Table- Comparison of pretest and posttest measurement of Schober test (Group A, Group B, Group C)

	Pre Schober test	Post Schober test	T	p
Schober test (Group A)	21.2 ±.2.269	26.0 ±.2.49	4.272	0.002
Schober test (Group B)	21.2 ±.2.69	21.0 ±.7817	1.809	0.14
Schober test (Group C)	21.2 ±2.69	20.9 ±2.46	1.96	0.81

DISCUSSION

The suggested study implies that Kinesio taping can be used in conjunction with other conventional therapies to increase lumbar flexibility in patients suffering from low back pain.

The current study's findings may be linked to the effect of Kinesio taping on proprioception because KT has an effect on cutaneous mechanoreceptors through stretching skin. Stretching is supposed to enlarge on a single piece of information for joint mobility or joint position. Reimann and Lephart confirmed that cutaneous mechanoreceptors, like joint mechanoreceptors, detect joint movement and joint position as a result of skin stretching at extremes of motion.

The findings are also consistent with a study conducted by Yong-Kyu Choi, Chan-Woo Nam, and Jung- oh Park to examine the effect of taping prior to PNF treatment on Lower Extremity Proprioception of Hemiplegic patients. The application of taping on the knee joint prior to rehabilitation treatment for patients with nervous system damage positively influences their functional improvement. KT is useful at correcting musculoskeletal malalignments.

After KT therapy, physiological disturbances can affect muscle and myofascial function. According to one theory, KT stimulates cutaneous mechanoreceptors in the fascia area, and this stimulation can alter KT through modulation of muscle tone. Consequently, by controlling muscle tone, KT can increase muscle function.

The direction the tape is placed on the skin affects the tape's ability to increase overall muscle power. Tape applied to the origin and insertion of muscles relaxes muscle tone, while tape applied in the direction of muscle contraction controls and increases muscle tone by stretching the insertion area.

CONCLUSION

This study concluded a statistically significant difference in Group A when compared with Group B and Group C.

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