



**ORIGINAL RESEARCH PAPER**

**Medical Science**

**SHORT TERM EFFECTS OF KINESIO-TAPING WITH CONVENTIONAL OCCUPATIONAL THERAPY AND CONVENTIONAL OCCUPATIONAL THERAPY ALONE ON PATIENTS WITH CHRONIC MECHANICAL NECK PAIN AND FORWARD HEAD POSTURE.**

**KEY WORDS:** Chronic Mechanical Neck Pain, Forward Head Posture, Kinesio-taping, Conventional Occupational Therapy

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**ABSTRACT**

The Study evaluated Short Term effects of Kinesio-taping with Conventional Occupational Therapy and Conventional Occupational Therapy alone on patients with Chronic Mechanical Neck Pain and Forward Head Posture on management of pain, active and passive Cervical ROM, functional ability and postural improvement". A Sample of 20 Subjects were divided into two groups (N=10) in each group. Kinesio-taping Group (received Kinesio-taping with Conventional OT Program) and Control Group (received only Conventional OT Program). All Subjects were evaluated for Neck Disability Index, Oswestry Neck Pain Questionnaire, Numeric Pain Rating Scale, Cervical ROM and Craniovertebral Angle Pre and Post Intervention. The data was compared and analyzed. Kinesio-taping Combined with Conventional Therapy found immediate effects in reducing pain, improving Cervical ROM, functional ability in patients with chronic mechanical neck pain and postural improvements in patients with forward head posture than exercises alone.

**INTRODUCTION**

Chronic mechanical Neck Pain and Forward Head Posture are the most common problems in all most all the general population and results in low level disability. Decreased strength in neck muscles has been associated with chronic mechanical neck pain. Exercises including stabilization exercises, strengthening and endurance exercises, proprioceptive exercises decrease pain and improve range of motion.

Intense exercises may increase activity in motor pathways thereby exerting an inhibitory effect on pain centers in Central Nervous Systems. Muscle contraction will stimulate mechanoreceptors and increase sensory nerve activity which in turn may inhibit the pathways mediating pain. Thus there appears to be several mechanisms in neural system through which training may relieve pain.

The conventional exercises have been shown effective in mechanical neck pain. Studies have shown effects of kinesio-taping with conventional exercises are in reducing pain, improving cervical range of motion, but in functional abilities were not found. The duration of Conventional exercises which is usually more than 6 weeks which is inconvenient for regular follow-up. Therefore it is beneficial to know the combined effect of kinesio-taping with conventional exercises.

After reviewing the literature very few studies were found which showed the effects of kinesio-taping and conventional exercises as exercises being used regularly was for longer duration follow up (1, 2, 3, 4). Therefore the aim of this study was "to find the Short Term effects of kinesio-taping with conventional therapy and Conventional Therapy alone in patients with chronic mechanical neck pain and forward head posture on management of pain, active and passive ROM, functional ability and postural improvement"

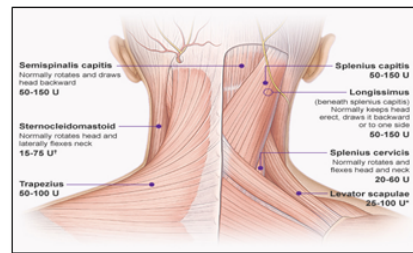
**Forward Head Posture:- Pathology & Causes**

FHP (Forward Head Position) is a cause of neck pain, upper back pain, lower back pain, TMJ dysfunction (temporal mandibular Joint Dysfunction), headaches, thoracic spine hump (Dowager Hump) and cervical spine pathology. A weakening of the extensor muscles and an imbalance of the flexor – extensor muscle ratio of the cervical spine due to many external factors causes anterior head gravitation, or forward head position. Rene Cailliet, M.D. Famous Medical author & Former Director of the Department of Physical Medicine & Rehabilitation at the University of Southern California states that:

"Head in Forward Posture can add up to 30 pounds of abnormal leverage on the Cervical Spine. This can pull the entire spine out of

alignment. Forward Head Posture may result in the loss of 30% of Vital Lung Capacity. These breath- related effects are primarily due the loss of the cervical lordosis, which blocks the action of hyoid muscles, especially the inferior hyoid responsible for helping lift the first rib during inhalation".

**Fig 1:- Showing Extensor Muscles of the Neck**



**Aims & Objectives**

- 1) To evaluate and compare the effect of Kinesio taping combined with conventional therapy and conventional therapy alone on patients with chronic mechanical neck pain.
- 2) To evaluate and compare the cranio-vertebral angle with the application of kinesiotaping combined with conventional Therapy and Conventional Therapy alone on patients with forward head posture.
- 3) To determine the Short Term effects of kinesiotaping with conventional Therapy and Conventional Therapy alone on management of pain, neck functional disability, cervical range of motion, and postural improvement.

**Hypothesis**

**Null Hypothesis (H0):** There will be no Significant Effect of Kinesiotaping with conventional Therapy & Conventional Therapy alone on, reducing pain, improving cervical range of motion (CROM), and Neck Functional Ability in patients with Chronic Mechanical Neck Pain  
**Null Hypothesis (H0):** There will be no significant Effect of Kinesiotaping with conventional Therapy & Conventional Therapy alone on postural Improvement (Craniovertebral Angle) in patients with Forward Head Posture.

**Alternate Hypothesis (H1):** There will be Significant Effect of Kinesio taping with Conventional Therapy & Conventional Therapy alone on, Reducing pain, Improving Cervical Range of Motion (CROM), and Neck Functional Ability in patients with Chronic Mechanical Neck Pain

**Alternate Hypothesis (H1):** There will be Significant Effect of

Kinesio taping with Conventional Therapy & Conventional Therapy alone on Postural Improvement (Craniovertebral Angle) in patients with Forward Head Posture.

**MATERIALS & METHODS**

The Study was a Comparative study in which 20 patients (N=10 in each group) fulfilling the inclusion criteria participated. The duration of study was of 4 weeks.

**Inclusion Criteria**

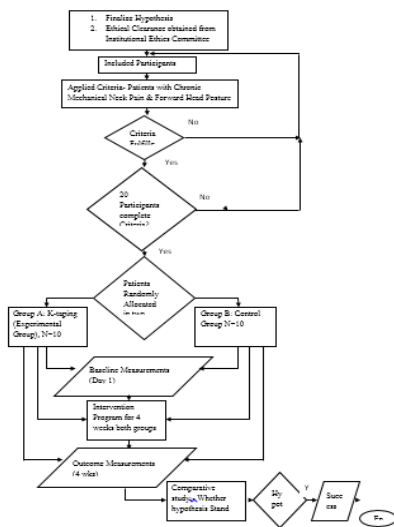
- 1) Subjects with Chronic Mechanical Neck Pain (> 3 months duration).
- 2) Subjects with moderate severity of pain based on Oswestry pain questionnaire scoring 20 to 40.
- 3) Both male and female subjects aged between 25 to 55.
- 4) Subjects whose dull aching pain increased by sustained postures, neck movement and palpation of cervical musculature.
- 5) Subjects willing to participate in the study

**Exclusion Criteria**

**Subjects with:**

- 1) Spinal Deformities, Short Neck, Disc lesion, inflammatory disease, neoplasm
- 2) History of osteoporosis, fracture, whiplash injury, cervical surgery, cervicogenic headache, Allergic to Kinesio-tape
- 3) Who are not on any kind of analgesics

**Procedure:** Flowchart Showing Procedure of Study



**Figure 2: Showing Measurement of Craniovertebral Angle**



Angle measuring between horizontal line passing through C7 & line extending from tragus of ear to C7.

Both the Groups were given same Conventional OT Program only the K-taping (experimental group) was treated with Kinesio-taping with Conventional OT program.

**Table 1: Showing Conventional OT- Chronic Mechanical Neck Pain (1<sup>st</sup> & 2<sup>nd</sup> Week)**

Intervention- Chronic Mechanical Neck Pain				
Kinesio-taping Group :- Treated by the Application of Kinesiotape with Conventional OT Program				
FIRST & SECOND WEEK				
Exercises	Position	No Of Repetitions	Amount of Resistance	Explanation
Strengthening exercises	Lying, Prone & Sitting	12	Manual	Flex, Extend & Rotate the Neck
Stabilization Exercises	Supine	10	Manual	Chin tucks with various arm movements
Endurance Exercises	Supine	15	Manual	Chin tucks with lifting head up
Proprioceptive Exercises	Sitting	10	Manual	Neck movements in various positions with fixing the gaze

**Table 2: Showing Conventional OT- Chronic Mechanical Neck Pain (3<sup>rd</sup> & 4<sup>th</sup> Week)**

Intervention- Chronic Mechanical Neck Pain				
Kinesio-taping Group :- Treated by the Application of Kinesiotape with Conventional OT Program				
THIRD & FOURTH WEEK- All the exercises were performed using the Theraband				
Exercises	Position	No Of Repetitions	Amount of Resistance	Explanation
Strengthening exercises	Sitting	2 sets of 15 repetitions	Maximum	Cervical Flexion, Extension, Rotation and Lateral Flexion
Stabilization Exercises	Sitting & Standing Position	2 sets of 15 repetitions	Maximum	Chin tucks with various arm movements
Endurance Exercises	Supine	2 sets of 15 repetitions	Maximum	Chin tucks with lifting head up
Proprioceptive Exercises	Sitting	2 sets of 15 repetitions	Maximum	Neck movements in various positions on stable & unstable Surfaces

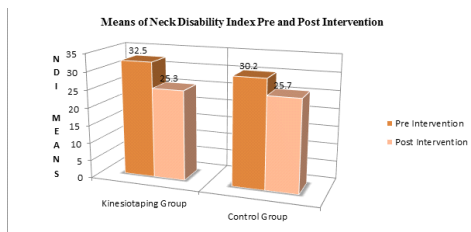
**Table 3: Showing Conventional OT- Forward Head Posture**

Intervention				
Kinesiotaping Group :- Treated by the Application of Kinesiotape with Conventional OT Program				
FORWARD HEAD POSTURE				
Exercises	Position	No Of Repetitions	Amount of Resistance	Explanation
Neck Extensor Muscle Stretch	Sitting	15	Fair	Holding chin with one hand other hand was use to reach top of the head. Stabilizing the chin top of the head was gently pulled by Subjects

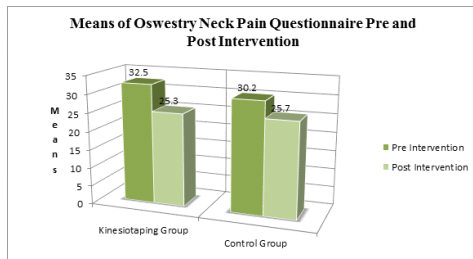
Levator Scapulae Stretch	Sitting	15	Fair	With one hand over the shoulder and other hand over the head subjects were asked to bring the elbow back, pointing your elbow up to the ceiling
Upper Trapezius Stretch	Sitting	15	Fair	With one hand holding the chair and the other hand on head, subjects were asked to turn the head to the contralateral side
Results				
Sternocleidomastoid Stretch	Sitting	15	Fair	Rotate head to one side, side flexing neck to opposite side, subjects were asked to extend their head back while maintaining side flexion & rotation
Longus Colli Stretch	Sitting	15	Fair	Subjects were asked to retract their head by tucking in their chin.

Pre & Post intervention readings of the outcome measures within both the groups were analyzed and compared using paired 't' test. Results were presented as mean & standard deviation. Significance was assessed at 5% level of significance with p value was set at 0.05 (1 tailed hypothesis) Less than this was considered as statistically significant difference.

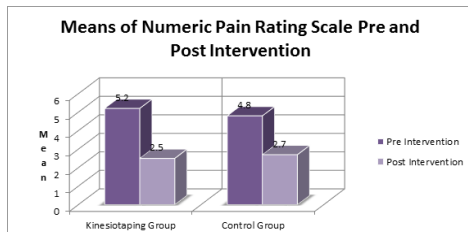
**Graph I: - Means of Neck Disability Index (NDI) Pre & Post Intervention of both the Groups.**



**Graph II:- Means of Oswestry Neck Pain Questionnaire Pre & Post Intervention of both the Groups.**



**Graph III:- Means of Numeric Pain Rating Scale Pre & Post Intervention of both the Groups.**



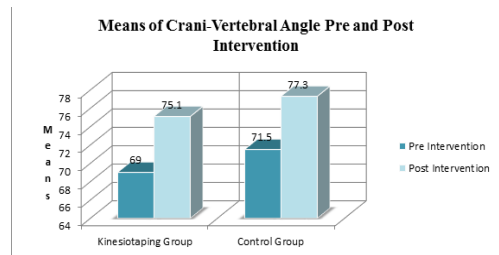
**Table 4:- Showing % improvement in Cervical Range of Motion Pre to Post intervention of K-taping (expt.) Group.**

Cervical ROM	Kinesiotaping Group			
	Pre Intervention	Post Intervention	Mean Difference	Improvement %
Flexion	29.6	37.8	8.2	36.8
Extension	29.3	37.9	8.6	36.9
Rotation to Right	36.5	47.6	11.1	46.6
Rotation to Left	38.4	49.3	10.9	48.3

**Table 5:- Showing % improvement in Cervical Range of Motion Pre to Post intervention of Control Group**

Cervical ROM	Control Group			
	Pre Intervention	Post Intervention	Mean Difference	Improvement %
Flexion	29.5	34.6	5.1	33.6
Extension	28.6	35.8	7.2	34.8
Rotation to Right	42.1	45.7	3.6	44.7
Rotation to Left	40.8	46.6	5.8	45.6

**Graph IV: - Means of Craniovertebral Angle Pre & Post intervention of both the groups.**



**DISCUSSION**

It is found from the Analysis that K-taping group who received 4 weeks of Kinesiotaping with Conventional Occupational Therapy showed greater percentage of improvement than the group who received only Conventional Occupational Therapy.

Graph I shows significant decrease in the neck disability from pre intervention to post intervention of both the groups however greater decrease was seen in k-taping group. When neck disability was evaluated 40% of the subjects showed the functional disability in the driving component and Lifting component of the Neck Disability Index Scale.

Graph II shows significant decrease in the pain on Oswestry neck pain questionnaire of both the groups' pre to post intervention however greater decrease was seen in k-taping group.

Graph III shows decrease in the pain on Numeric Pain Rating Scale of both the groups pre to post intervention however greater decrease was seen in k-taping group. This is in accordance with the study done by Manual Savedra (6), Patients with mechanical neck pain who received cervical thrust manipulation or Kinesio Taping exhibited similar reductions in neck pain intensity.

Table no. 4 & table no. 5 shows percent improvement in the Cervical ROM of both the groups pre to post intervention however higher improvement was seen in k-taping group. In KT Group improvements could be due to both Kinesio-tapping and conventional Therapy. When KT was applied to posterior muscles, the tension in the tape might have provided neural feedback and muscle support during neck movement, improving neck ROM with a reduced mechanical irritation of the soft tissues without restricting the motion. This creates tension in the soft tissue

structures providing afferent stimuli, facilitating a pain-inhibitory mechanism thereby reducing the pain. Javier. G (2) stated presence of tension in KT reduces pain & improves Neck ROM. Duscenceli (1) suggested proprioceptive and neck strengthening exercises reduces neck pain.

Graph IV shows increase in the craniovertebral angle pre to post intervention in both the groups Based on analysis it was found that combination of Kinesiotaping with Conventional Exercises has significant immediate effects on reducing pain intensity and Functional Disability, improving Cervical Range of Motion and improve Forward Head Posture. Therefore, present study rejects Null Hypothesis.

### CONCLUSION

The study concludes that Kinesiotaping Combined with Conventional Therapy for 4 weeks found immediate effects in reducing pain, improving Cervical Range of Motion, functional ability in patients with chronic mechanical neck pain and postural improvements in patients with forward head posture than exercises alone. It is recommended that use of Kinesiotaping along with the conventional exercises enhances the performance and recovery for subjects with chronic mechanical neck pain & forward head posture.

### Limitations

1. The duration of intervention was 4 weeks
2. Small Sample size
3. Follow up was not considered.

### Future Recommendations

1. The study can be carried out on large population.
2. Double Blinded Trial is necessary for the validation of the study.
3. Further study is necessary to find the effect of combination of kinesiotaping with other intervention on pain, cervical muscle strength, proprioception, quality of life in other cervical disorders.

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