BJMHR
British Journal of Medical and Health Research
Journal home page: www.bjmhr.com

To Compare the Effect of Strenthening Neck Exercise and Mckenzie Neck Exercise In Neck Pain Subject

Kumar Neeraj[1*], Verma Shiv[2]
1. SGRRIHMS Dehradun, Physiotheray Dept
2., SRHU Physiotheray Dept Jollygrant, Dehradun

ABSTRACT

Neck pain is one of the most common persisting symptoms. It increases with age in men and women and this appears to differ from low back pain. While in men its peaks between 40 years and 50 years of age and it is more common in women than men. The McKenzie method was introduced in Sweden in 1985 and came to be frequently used in the 1990. as a treatment modality for patients with mechanical problems of the spine. Patient with neck pain may have reduced neck strength in flexion, extension and rotation. A convenience sample of 45 subject with neck pain randomly assigned into three groups like group A,B and C. The Group A subject will receive McKenzie treatment, Hot Pack and Postural Correction. The Group B subject will receive Strengthening Exercise, Hot Pack and Postural Correction. The Group C subjects Hot Pack and Postural Correction. All three groups were treated for four week. Instrumentation The age, weight and height of subjects in groups A, B and C were compared by using analysis of variance. There was no significant difference found in age, weight and height in all 3 groups (P>0.05) In the present study, there was significant difference between the McKenzie treatment, Isometric strengthening exercise and Hot Pack treatment for neck pain. The McKenzie protocol has been found to be more beneficial that the Isometric Strengthening exercise.

Keywords: McKenzie treatment, Hot Pack and Postural Correction, Strengthening Exercise.

*Corresponding Author Email: vermashiv_2005@yahoo.co.in
Received 21 September 2016, Accepted 2 October 2016

Please cite this article as: Neeraj K *et al.*, To Compare the Effect of Strenthening Neck Exercise and Mckenzie Neck Exercise In Neck Pain Subject. British Journal of Medical and Health Research 2016.

INTRODUCTION

Neck pain is one of the most common persisting symptoms in the general population with an estimate lifetime prevalence of 67% among adults of age group 20 to 69 years. Limited range of motion and a subjective felling of stiffness may accompany neck pain, which is often precipitated or aggravated by neck movements or sustained neck postures. Headache, brachialgia, dizziness and other signs and symptoms may also be present in combination of neck pain.[1]

Neck pain arises from habitual postures referred as non specific neck pain.[2]

Several authors proposed that non specific neck pain problems results from poor posture in terms of sustained long–term abnormal physiological load on the neck. Instability is one element of cervical pain and may contribute to the clinical presentation of various conditions including cervicogenic headache, chronic whiplash dysfunction, rheumatoid arthritis, osteo-arthritis and segmental degeneration.[3, 4]

In neck pain conservative treatment methods are frequently used in general practice includes Analgesic, rest or referral to a physical therapist or manual therapist. Physical therapist may include passive treatment such as massage, interferential current or heat application and active treatment such as exercises therapies.[1]

The McKenzie method was introduced in Sweden in 1985 and came to be frequently used in the 1990. as a treatment modality for patients with mechanical problems of the spine. Today, physiotherapists in primary care often employ this procedure as both a diagnostic tool and a treatment model. A randomized clinical trial involving patient with neck pain and comparing treatment effect of the McKenzie method, General exercise and Ultra sound. They found that McKenzie treatment is favorable than other.[1]

Nwuga and Nwuga et al compared the MacKenzie approach to the Williams approach to determine which was effective in decreasing pain and restoring spinal range of motion in patient with low back pain. They concluded that the MacKenzie approach was more effective in decreasing the patient's level of pain and in restoring range of motion.

Stankovic and Johnell et al [40] Compared the effect of the MaKenzie method of treatment with patient education in mini back school in patient with low back pain. They concluded that treatment according to MacKenzie principal was superior to mini back school.

The McKenzie treatment is effective on both low back pain and neck pain. Several studies have been done to prove the individual effect of McKenzie, Hot Pack and Strengthening exercise in both low back pain and neck pain. But none of study has been done to prove which one is more effective so the need arises to see the comparative effect of McKenzie, Strengthening Exercise and Hot Pack.

Aims and Objectives

To study the efficacy of McKenzie treatment, Isometric Strengthening Exercise and Hot Pack in the treatment of neck pain.

Statement of Question

Is McKenzie treatment more effective than Isometric Strengthening Exercise and Hot Pack?

Hypothesis

The McKenzie Treatment on neck pain will be very effective than strengthening exercise and Hot Pack.

Inclusion Criteria

1. Patient with neck pain (duration two month or more) with or without radiation.
2. Age Group - 25-50 years.
3. Weight -50to 80 kg.
4. Mechanical pain cervical region
5. VAS : 4-7
6. FRI : 40-70%

Exclusion Criteria

1. Subjects with a history of severe trauma such as fracture
2. Congenital disorder of cervical spine
3. Patient with neurological deficit
4. Spondylolisthesis
5. Tumour
6. Spinal surgery
7. Pott's spine
8. Rheumatoid Arthritis Disorder
9. Ankylosing Spondylosis
10. Vertebro- Basilar Insufficiency
11. Cardiac Problem

Study Design

It is an experimental study design. Subject with neck pain randomly assigned into three groups viz group A, B and C. The Group A subjects were received McKenzie treatment, Hot Pack and Posture Correction. The Group B subjects were received Strengthening exercise, Hot Pack and Postural Correction. The Group C subjects were received Hot Pack and Postural Correction. All three groups were treated for four weeks.

MATERIALS AND METHOD

A approval for the study was obtained from the institutional ethical committee. patient were included as per the inclusion and exclusion criteria. . They study made of 45 subjects who were randomly divided into three groups A,B & C. prior to participation all subjects were informed about the study and an informed consent was taken. The Group A subjects were received McKenzie treatment, Hot Pack and Postural Correction. The Group B subjects were received Strengthening exercise, Hot Pack and Postural Correction. The Group C subjects were received Hot Pack and Postural Correction. All three groups were treated for four weeks.

VAS and FRI were taken for all the subjects before starting the study.

VAS has been shown to be effective and reliable instrument for measuring patient's interpretation of pain. Patient using 0-10 cm horizontal scale has measured and intensity, in which 0 indicates no pain and 10 indicates worst pain. VAS provides a reliable, responsive measurement and was easy to understand.

Functional Rating index (FRI)

FRI has been designed to show clinical change in conditions affecting the spine, whether cervical, thoracic or lumber, in other words it is reliable instrument to measure the magnitude of clinical changes in spinal condition. In order to properly asses the patient condition, FRI has been marked from 10% to 100% on scale line, which show the ability of patients to manage everyday activates.[5]

PROCEDURE

McKenzie Exercise

McKenzie exercise is one of the numerous techniques used by physical therapists to assess and treat patients. McKenzie exercise used in the form of neck retraction exercise. The patient is instructed to move the head backwards as far as possible but at the same time maintain forward facing position. It is important that the movement is made to the maximum. On completion the patient returns to the neutral rest position. The movement is done for four sets of 10-15 repetitions with 1-2 minutes rest between each set.

Figure: Mckenzie exercise (neck retraction)

Figure: Mckenzie exercise (neck extension)

First Week

The patient was lying in supine position, chin was trucked in or head was retracted. A small pillow was used under the occiput to maintain slight flexion. The patient was asked to pull his head and neck posterior into a position in which head was directly over the shoulder girdle. The end position was maintained for one second and then allowed to relax into a resting posture. This procedure was done for4 sets of 10 to15 repetitions and 1 to 3 minutes rest between each set.

Second Week

In sitting position, progression was given by the addition of neck extension with chin trucked overpressure in the end of motion by the therapist. This procedure was done for four sets of 1 to 2 minutes rest was given in between each set.

Third Week

In supine lying, head was kept out of the couch. The retraction and extension exercise with traction was performed by the therapist. The traction and extension was maintained throughout the range of motion.

Fourth Week

The patient was asked to come in sitting, progression was done by addition of first retraction with lateral flexion, then neck rotation, and finally combined retraction and neck flexion with

overpressure performed by the therapist. This procedure was done for four sets of 10 to 15 repetitions and 1 to 2 minutes rest was given in between each set.[13]

Isometric Strengthening Exercise

The patient was in sitting position. These were initially done with the neck in neutral postures and with a therapist resisting flexion, extension, lateral flexion and rotation by the therapist. Contraction were held for 5 seconds/repetitions and repeated 10 times, with 3 seconds rest in between them. These exercises were done for 2 sets with 1 to 2 minutes rest in between each set. Placement of therapist hand for each movement is as follows:-

1. Flexion

The therapist placed his hand on the forehead of patient and the patient was asked to press the forehead in to the palms of the therapist in a nodding fashion.

2. Side Flexion

The therapist placed his one hand on the side of the patient's head and the patient was asked to press the therapist hand in a side flexion fashion.

3. Extension

The therapist placed his one hand on the back of the patient's head, near the top of the head. The patient was asked to press the head on the therapist hand.

4.Rotation

The therapist placed one hand against the region just superior and lateral to the eye. The patient was asked to turn the head to look one's own shoulder.

Hot Pack

The hot pack was initially hearted for two hours and 30 minutes reheated between each use. Lahmann et al (1996) state that after 8 minutes application of hot pack the skin temperature was reached its maximum. The pack was left in place for 20 minutes.[14, 15]

Postural Correction

The patients in all groups were given postural correction and postural awareness as home program. The postural correction was recommended as axial extension or neutral neck position. These were done to

correct neck position for patient with neck pain and spasm of upper trapizius. The postural awareness program consists of the following points

Reading Posture

1.Neck should not be kept in one position for prolong time.

2.Adjust the height of reading table such that the books are at the level of eyes and arms are comfortably place. Avoid slouching lower back and shoulders. Sit tall with whole back against chair back and head erect.

3.Computer and TV screen should be at proper height and distance. Position & height of monitor should be within $20^{0.}$

Sleeping Posture

1.Avoid big pillows: they make neck rest higher than body causes it to bend forward.

2.Use pillows of adequate height that aligns the head and neck at the same level of body. The pillows should support the head and neck fully and should extend up to shoulders.

DATA ANALYSIS

Data was analyzed using SPSS software 12.0 version. Variable i.e. age weight and height of group A, B and C were analyzed by using one way ANOVA.

RESULTS AND DISCUSSION

The age, weight and height of subjects in groups A, B and C were compared by using analysis of variance. There was no significant difference found in age, weight and height in all 3 groups (P>0.05)

Comparison of VSA between groups was done by using ANOVA. No significant difference was found from 0 to 1 week (P>0.05). But significant difference found at 2 to 4 weeks in all 3 groups. (P<0.05)

Comparison of FRI between groups was done by using ANOVA. There was no significant difference found at 0 and 1 weeks (P<0.05). But significant difference was found at 2 to 4 weeks in all 3 groups. (P<0.05) (Table 5.2)

Comparison of VAS between the 3 groups i. e. groups A,B and C was done by Post Hoc test using Tukey HSD at 0 to 1st week . There was insignificant difference between the groups. Also there was no significant difference was found at 2 and 4 weeks between A & B and B & C (P>0.05) but significant difference was found between A & C at 2 to 4 weeks (P<0.05) (Table 5.3)

Comparison of FRI between the 3 groups i.e groups A, B and C was done by using Post Hoc test (Tukey HSD) at 0 to 1 week. No significant difference was found between the groups (P>0.05). Also no significant difference was found at 2 to 4 week between A & B and B & C.(P>0.05)

But significant difference was found between A & c at 2 to 4 weeks.(P<0.05) .

Table 1 Demographic data

Variable	f- value	p-value
Age	1.776	0.491
Weight	1.165	0.322
Height	2.687	0.080

Table 2: Comparison of VAS and FRI between groups 0 to 4 weeks.

Variable	Week	f- value	p-value
VAS	0	0.024	0.976
	1	0.160	0.853
	2	5.615	0.007
	3	10.635	0.000
	4	12.860	0.000
FRI	0	0.209	0.812
	1	0.929	0.403
	2	9.086	0.001
	3	13.899	0.000
	4	12.293	0.000

The McKenzie method of treatment was more effective or successful than isometric strengthening exercise and hot pack in control group with a more rapid improvement in pain intensity during third and fourth week. The purpose of this study was to find-out whether any clinically observable improvement in neck pain, occurs after performance of McKenzie exercise in comparison to other isometric strengthening exercise and hot pack in control group.

Sufka et el[56] analyzed a small cohort of patients, reported a complete centralization occurrence rate of 83% in patients with neck pain. But there were symptomatic reduction in radicular pain reporting a centralization occurrence rate of 85% in patients with acute pain.

G.Kjellaman and B.Oberg et al[1] McKenzie treatment was more favorable than general exercise and the ultrasound in control group, with a more rapid improvement in neck pain intensity during the first 3 week.

Chukuka S. Enweneka et al[6-] neck pain is often accompanied by protective muscle spasm which developed pressure within the homonymous muscle, thus producing ischemia, more pain and abnormal neck posture. They showed that postural correction was effective in reducing neck pain and muscle spasm other studies have showed that spasm of the sternocliedomastoid and perhaps temporomandibular pain may be reduced by postural correction.

Donelson et al[27] study showed that 91% of the patients with acute pain in whom symptoms centralized as excellent as excellent outcomes with relief of pain and full functional recovery.

Thomas R, Highland and Dreisinger et al[55] studied the changes in isometric strength and range of motion of the isolated cervical spine after 8 weeks of clinical rehabilitation. They found that all group showed significant gain in average strength, range of motion and decreased pain.

Alan Jordan et al[11]- treated the neck pain with combination of active and passive elements, included in the passive elements were hot packs for duration of 20 minutes, massage,

continues ultrasound (3 W/cm^2 for 5 minutes) and manual traction. Active therapy approximate 50% reduction of neck pain in all groups.

In my study there was significant reduction of neck pain and radicular neck pain through McKenzie treatment within the groups. The group A showed more improvement that other group B and C

Future Research

1. Future research can be carried out with increased number of patients to analyze the effectiveness of McKenzie protocol.
2. The future research can also be carried out with increased duration of treatment protocol and increased VAS (visual analogous scale) and FRI (functional rating index)

CONCLUSION

In the present study, there was significant difference between the McKenzie treatment, Isometric strengthening exercise and Hot Pack treatment for neck pain. The McKenzie protocol has been found to be more beneficial that the Isometric Strengthening exercise and Hot Pack.

REFERRENCES

1. Sundeep Rathore et al Use of McKenzie cervical protocol in the treatment of radicular neck pain in a machine operator. J Can Chiropr Assoc 47, 4, 2003.
2. John Low & Ann Reed et al Electrotherapy explained Principals & practice. 3rd Edition, pp-246 to 247.
3. Kishner & Colby et al Therapeutic Exercise Foundations & Technique, 3rd ed.pp-555-556,JP ,F.A. Davis Company,1996.
4. David Magee et al Orthopedics Physical Assessment.4th ed. Sunder Elsevier Science,2002.
5. Chukuka S. Enwemeka et al, Postural correction in persons with neck pain, a survey of neck positions recommended by Physical Therapists. JOSPT, 235-239,1986.
6. Scoott H Leggett et al Quantitaive assessment and training of isometric cervical extension strength.19,No-6,653-659,JOSPT 1991.
7. Chuen RH, Linchen Tsai et al. Immediate effect of various physical therapeutics modalities on cervical myofascial pain and trigger point sensitivity. Arch.Phys.Med Rehab, 83,October:2003.
8. Jan Hartigsen et al.Small Effect of genetic factor on neck pain in old age.Spine,30(2), PP206-208, 2005.

9. Gunnas Bovim, Harald shrader, et al Neck pain in General Population. Spine, 19(12), PP 1307-1309.
10. Alan Jorden.et al Intensive training physiotherapy or manipulation for patient with chronic pain. Spine, 23 (3),PP 311-319 1998.
11. Gert Bronfort et al A Randomized Clinical trial at exercise and spinal manipulation for patient with chornic neck pain, Spine, 236(7), PP 788-799 2001.
12. Peter D Aker et el. Conservative management of mechanical neck pain systematic overview and meta analysis. BMJ 313(23), November 1996.
13. Chukuka S. Enwemeka et al, Postural Correction in persons with neck pain, integrated EMG of the upper trapezius in three simulated neck positions. JOSPT, 240-242, 1986.
14. Petri salo, Matti, Nykanen et al. Decreased isometric neck strength in women with chronic neck pain and the repeatability at neck strength measurement. Arch .Phys.Med.Rehabil, 85 August 2004.
15. Kevin and Harris et al Reliability of a measurement of neck flexor muscle endurance. Physical therapy, 85,(1 Grays Anatomy. Cervical vertebra 38th ed PP 516-522.
16. Lucas & Koes et al Manual therapy, Physical therapy or continued care by a general practicener for patients with nwck pain. Ann. Intern. Med., 136:713-722, 2002.
17. Hans E.Berge et al Dynamic neck Strength training effect on pain & function. Arch.Phys Med, 75, june 1994.
18. Wang & Olson et al Effectiveness of physical therapy for patient with neck pain.Am.J.Phys.Med.Rehabil, 82,(3), March 2003.
19. Basmajian JV et al Cervical Spine Dynamic of clinical Rehabilitation exercise. PP-142 to 153, 5th ed 1982.
20. Ylinen & Salo et al Decreased Isometric neck strength in women with chronic neck pain & the repeatability of neck strength measurement. Arch.Phys.Med,Rehabil.,85 Augest 2004.
21. Mark Werneke et al Descriptive study of the centralization phenomenon.spine.24(7),PP676-683.1999
22. Wendy Rheault et al Intersteter Reliability of the flexible ruler for the cervical spine .JOSPT Janurary 1989.
23. Pearson & Welmsley et al trail into the Effects of Repeated neck retractions in Normal Subjects. Spine, 20,(11)PP 1245-1251,1995.
24. Nathaniel R.Ordway et al Cervical flexion, extension, protrusion & retraction, Spine, 24(3)1999.
25. Michelle H.Cameron et al Physical, Agents in Rehabilitation : from Research to

Practice, 2nd ed. Saunders Elsevier Scince (USA) 2003.

26. John low & Ann Read et al Electrotherapy explained Principals & practice 3rd Edition, PP-246 to 247.
27. Joshua A.Cleland et al manual Physical Therapy Cervical traction & strengthening exercise in patients with cervical radiculopathy. JOSPT,35: 802-811,2005.
28. Wang & Compbell et al Effectiveness of physical therapy for patients with neck pain.Am,J,Phys,Med Rehabil,82 PP 203-218: 2003.
29. Jane Scott & E.C.Huskissan et al Vartical or horizontal VAS. Annals of the Rheumatic Disease, 38-560,1997.
30. Ylinen and Ruuska et al Clinical use of Isometric Strength measurement in Rehabilitation. Arch.Phys.Med Rehabil, 75, April 1994.
31. Lee and Nicholson et al Cervical Range of motion association with sub clinical neck pain. Spine,29 (1): PP 33 to 40 2003.
32. Chad cook and J.M Brismee et al Identifiers suggestive of cervical spine instability: Adelphi study of physical therapist. Physical Therapy, 85(9), September 2205.
33. Daniel L.Riddel & Rothstein et al intertrester Reliabilabilty of Mckenzie Classification of the Syndrome types Present in patient with low back pain. Spine18,(10),PP1333-1344:1993.
34. Stankovic and Jobnell at al A prospective Randomized Trial: McKenzie Method of Treatment versus Patient Education in Mini Back School. Spine, 15(2): 120to 123: 1990.
35. Petty & G.D Maitland et al Neuromuculoskeltal Examination and Assessment,2nd ed. Churchill Livingstone (Elsevier Science limited)2001.
36. G.D Maitland et al Maitland's vertebral Manipulation.6th ed.
37. Paul Brinckman et al Musculoskeletal Biomechanics, 2000.
38. Cynthia C Norkin et al Joint Structure and function. 3rd ed .J.P Brother (F.A.Davis Company) 2001.
39. Cleland and Whitman et al, Manual Physical Therapy, Cervical traction and Strengthening Exercise in Patient with Cervical Radiculopathy :A case series. JOSPT,35(12),December 2005.

BJMHR is

- **Peer reviewed**
- **Monthly**
- **Rapid publication**
- **Submit your next manuscript at**

editor@bjmhr.com