

Effectiveness Of Pilates and Range of Motion Exercises in Improving Mechanical Pain and Functional Performance in Neck Pain

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ABSTRACT: BACKGROUND: Mechanical neck pain is a common problem in the world today and there are various studies that shows the high incidence and prevalence of mechanical neck pain which affects people daily activities. Neck pain is characterized by pain and limited range of movement at neck. This condition causes reduction in quality of life, leading to emotional and psychological changes and difficulties at work. Generally, the therapeutic methods for the treatment of mechanical neck pain consists of stretching and strengthening of neck muscles, cervical mobilization exercises, and electrotherapy. The Pilates is to improve general body flexibility and health by emphasis on stability to the center of the body (i.e. the core), posture, and coordination of breathing with movement. It heals the individual physically, emotionally and psychologically. METHOD: 30 participants were taken who were aged 18 – 40 years and had neck pain more than 3 months. The participants were given Pilates and range of motion exercises for 3 weeks. Outcome measure were calculated using Visual Analog Scale (VAS) and Neck Disability Index (NDI). RESULT: As a result, both the groups showed significant improvement but Pilates group shows more improvement in all the parameters of reducing pain & improving functional performance. CONCLUSION: However, we could conclude that, Pilates exercises had a significant impact on reducing cervical pain and disability among patients with chronic neck pain, with 3 weeks of the exercises.

Keywords: Neck Pain, Neck Disability Index, Function, Range Of Motion, Pilates, Flexibility, Mechanical Neck Pain, Visual Analog Scale.

1. GENERAL INTRODUCTION ABOUT NECK PAIN

Mechanical neck pain is a common problem in the world today and there are various studies that show the high incidence and prevalence of mechanical neck pain, which affects people daily function. Nearly 50% of the population suffer from neck pain at least once in their lifetime, prevalence is high in middle aged, with women being more affected than men.[1]

Neck pain is characterized by pain along the base of neck including its sides and that leads to limited movement and muscle imbalance. This condition causes reduction in quality of life, leading to emotional and psychological changes.[2]

Generally, Physiotherapy consists of exercise treatment and electrotherapy treatment that includes the range of motion exercises, strengthening exercises, stretching exercises[3].

Pilates training consists of exercises that focus on improving flexibility and strength in muscles without increasing its mass. It is developed by Joseph Pilates. It encourages physical and mental conditioning [4].

AIM OF THE STUDY The aim of the study is to investigate the effects of pilates and range of motion exercises in improving pain and functional performance in neck pain.

1.1. REVIEW OF LITERATURE

- Kim Dunleavy PhD, PT, OCS, Wayne State University (2013) - This study investigated the effect of group

Yoga and Pilates exercise compared to a wait-listed control group on impairments and function related to neck pain for individuals with chronic cervical pain. They found significant improvements in both the groups.[5]

□ Uluğ N, Yılmaz ÖT, Kara M, Özçakar L. (2018) – Their aim was to investigate the effects of different exercise treatments on neck muscles in patients with chronic neck pain. They found that pain, disability, depression and quality of life improved similarly within all groups (all $p < 0.05$), muscle thickness values as regards the semispinalis capitis were increased only in the Pilates group.[8]

□ Jill Shah¹, Krupa Soni² (2019) - The aim of the study was to find the effectiveness of Pilates versus Conventional Exercise Program in students with Text Neck Syndrome and determine the better of these for benefit of patients. They found that both the groups showed significant improvement in pain, disability, cervical muscle strength and endurance. The use of Pilates along with Conventional Exercise Program evidenced a significantly greater improvement in reducing pain, neck disability, increasing cervical muscle strength and endurance when compared to Conventional Exercise Program alone.[7]

□ Luciana de Araujo Cazotti, Anamaria Jones, Diego Roger-Silva, (2018) - To assess the effectiveness of the Pilates method on pain, function, quality of life, and consumption of pain medication in patients with mechanical neck pain. This trial demonstrated the effectiveness of the Pilates method for the treatment of chronic mechanical neck pain, resulting in improvement of pain, function, quality of life, and reduction of the use of analgesics.[10]

2. MATERIALS AND METHODOLOGY:

2.1. Design: comparative study

Study setting: Ikon multispeciality hospital, Aurangabad

Number of subjects: There are thirty subjects between the age group of 18-40 yrs were taken.

Total number of subjects $n = 30$ were divided based on random sampling and divided into two groups consisting of 15 subjects each and named as control group and experimental group.

15 subjects in Group A were advised range of motion exercises and

15 subjects in Group B were advised pilates program.

2.2. Selection Criteria

1. Inclusion Criteria –

- People having neck pain in the age group 18-40 years of both genders. Neck pain for more than 3 months.
- People who are medically stable and willingly participate in survey.

2. Exclusion Criteria –

- All people who do not fulfil above mentioned criteria
- Neurological symptoms in arms & legs
- Recent Injury or surgery
- Pregnant women

2.3. OUTCOME MEASURES:

- NECK DISABILITY INDEX

- VISUAL ANALOG SCALE
- GONIOMETER

2.4. DURATION OF THE STUDY: 3 WEEKS

CONTROL GROUP METHODOLOGY:

Control group exercises session consist of range of motion exercises of duration 20 mins per session , 1 session per day and 5 session per week for total period of 3 weeks.

EXPERIMENTAL GROUP METHODOLOGY:

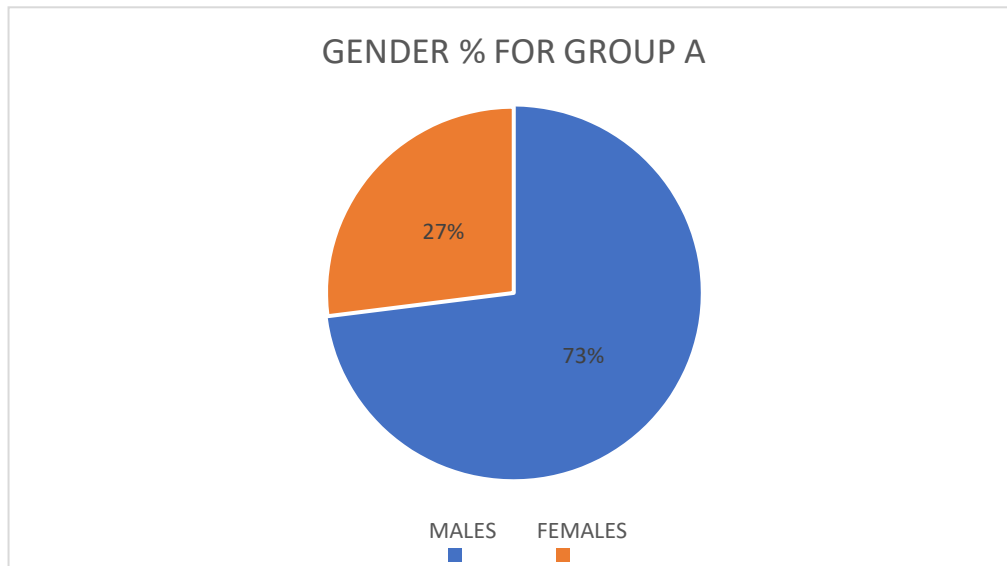
Experimental group exercises session consists of 20 mins of Pilates exercises, 1 session per day and 5 sessions per week for total period of 3 weeks.

3. RESULTS AND DISCUSSIONS

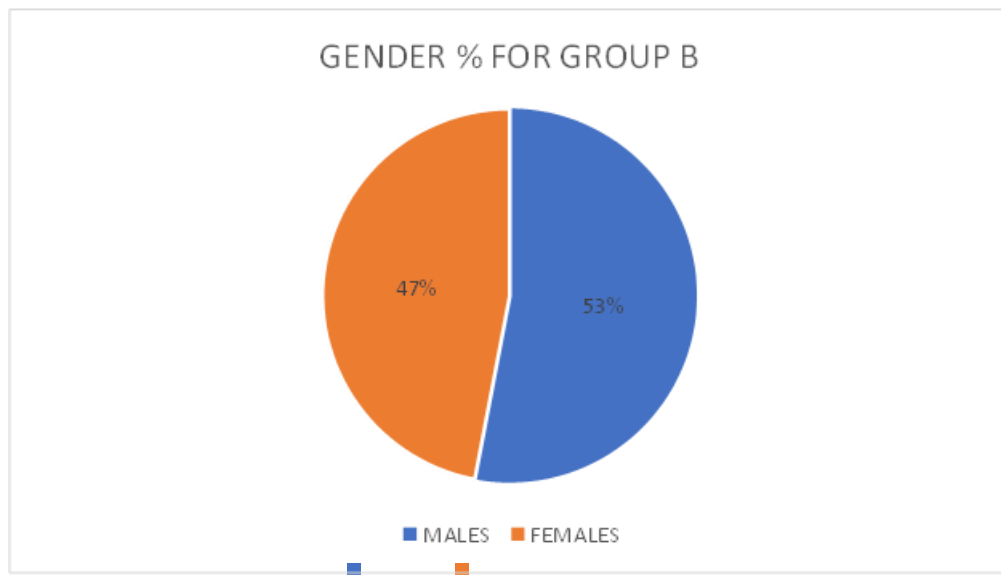
Basic descriptions were presented in the form of mean and Standard deviation. Paired Sample t' test was used to analyse the pre and post differences for continuous data with range of motion exercises and Pilates.

Table 1: Gender & Age mean+SD for participants in both groups

	Group A (Range of motion exercises)	Group B (Pilates exercises)
Age (Mean ± SD)	29.73333±6.19293	33.26667±9.902862
Gender	Male 11 Female 4	Male 8 Female 7



Pie Chart 1 showing male and female population in group A



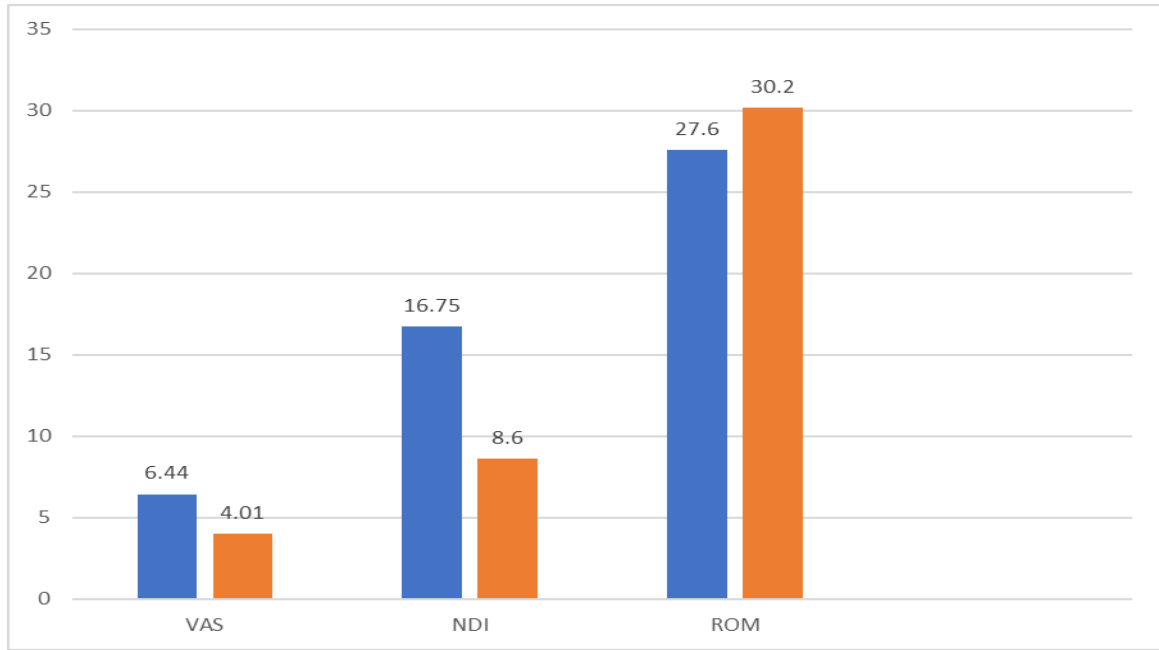
Pie Chart 2 showing male and female population in group B

Table 2: Pre & Post comparison of VAS, NDI & ROM scores in Group A

Group A	Mean ± SD	Mean Difference	t value	p value
VAS				
Pre	7.53 ± 1.12	3.33	8.5	0.01
Post	4.20 ± 1.01			
NDI				
Pre	16.75 ± 5.99	8.14	5.14	<0.001
Post	8.60 ± 3.16			
ROM				
Pre	27.60 ± 8.79	2.60	4.74	<0.01
Post	30.20 ± 10.24			

Table 3: Pre & Post comparison of VAS, NDI & ROM scores in Group B

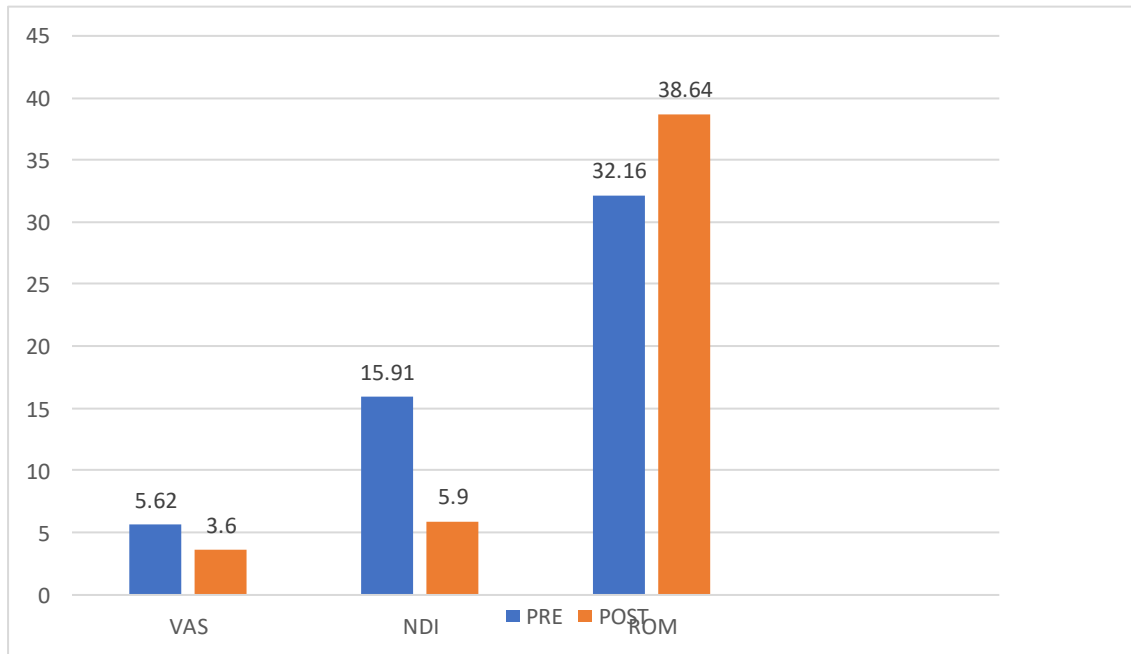
Group A	Mean ± SD	Mean Difference	t value	p value
VAS				
Pre	7.53 ± 1.12	3.33	8.5	0.01
Post	4.20 ± 1.01			
NDI				
Pre	16.75 ± 5.99	8.14	5.14	<0.001
Post	8.60 ± 3.16			
ROM				
Pre	27.60 ± 8.79	2.60	4.74	<0.01
Post	30.20 ± 10.24			



Graph showing pre and post value of VAS, NDI and ROM in Group A

Table 4: pre and post value of VAS, NDI and ROM in Group A

SR NO		PRE	POST
1.	VAS	6.44	4.01
2.	NDI	16.75	8.6
3.	ROM	27.6	30.2



Graph showing pre and post values of Group B

Table 5: showing pre and post values of Group

SR NO		PRE	POST
1.	VAS	5.62	3.6
2.	NDI	15.91	5.9
3.	ROM	32.16	38.64

DISCUSSION

- The present study aimed to find out the effects of pilates and range of motion exercises in patients having mechanical neck pain.
- In this study, 30 participants were recruited those having neck pain of age group 18-40 years, irrespective of the gender and were allocated in 2 groups: Group A (Control Group) and Group B (Experimental group), 15 in each.
- The participants in Group A were given Range of motion exercises for 20 mins, 1 session per day and 5 session per week for 3 weeks.
- The participants in Group B were given pilates exercises for 20 mins, 1 session per day and 5 session per week for 3 weeks.
- The participants were assessed before starting the program & after 3 weeks of program using VAS, NDI & ROM.
- Pre & post data was collected and statistically analysed.
- The statistical analysis showed that there is improvement in pain, Neck disability index score and range of motion in experimental group.

CONCLUSIONS

The study concludes that pilates is more beneficial than range of motion exercises in improving pain and function, quality of life and functional performance.

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