

Effect Of Proprioceptive Neuromuscular Facilitation On Pain, Forward Head Posture, Scapular Dyskinesis And Quality Of Life Among Fulltime Housewives – A Pilot Study

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ABSTRACT

Introduction: The study aimed to investigate the effects of proprioceptive neuromuscular facilitation (PNF) on pain, forward head posture (FHP), scapular dyskinesis, and quality of life among full-time housewives. Musculoskeletal disorders (MSDs), particularly prevalent among this demographic due to repetitive household tasks, necessitate targeted interventions to mitigate symptoms and enhance functional outcomes.

Methods: A total of 30 full-time housewives were included, divided equally into experimental (Group A: PNF + conservative treatment) and control groups (Group B: conservative treatment alone). Measures included Numeric Pain Rating Scale (NPRS) for pain assessment, craniovertebral angle (CVA) for FHP evaluation, visual assessment for scapular dyskinesis, and Short Form-36 (SF-36) questionnaire for quality of life assessment.

Results: Group A demonstrated statistically significant improvements compared to Group B in all measured outcomes post-intervention. Specifically, NPRS scores significantly decreased in Group A ($p < 0.001$), indicating reduced pain levels. Similarly, CVA showed significant improvement in Group A ($p < 0.001$), indicating a reduction in FHP. SF-36 scores also significantly improved in Group A ($p < 0.001$), indicating enhanced quality of life. Visual assessment revealed improvements in scapular dyskinesis severity post-PNF intervention.

Discussion: The findings underscore the efficacy of PNF in alleviating pain, correcting FHP, improving scapular dyskinesis, and enhancing quality of life among full-time housewives. These outcomes suggest the potential of PNF as a valuable therapeutic approach in managing MSDs associated with rigorous household activities.

The societal construct of women's roles has traditionally categorized them into married and unmarried, with further divisions among the married segment delineating between part-time and full-time housewives. Part-time housewives often navigate a dual role, balancing professional responsibilities with household duties, often with the aid of domestic help. On the other hand, full-time housewives dedicate themselves entirely to managing household tasks, which encompass a myriad of responsibilities spanning from cooking and cleaning to nurturing and educating children. Studies indicate a stark contrast in the distribution of household chores, with women shouldering approximately 54% more tasks compared to men, thereby highlighting the disproportionate burden placed on women in domestic spheres.

The exhaustive engagement of full-time housewives in household activities renders them particularly susceptible to musculoskeletal disorders (MSD), a prevalent health concern stemming from prolonged physical strain and inadequate rest. Globally, millions suffer from various forms of MSD, ranging from back pain to knee osteoarthritis, with a substantial portion of these cases attributed to the strenuous demands placed on full-time housewives. The World Health Organization underscores the occupational nature of these disorders, elucidating the link between the rigorous demands of full-time homemaking and the heightened risk of MSDs affecting diverse anatomical regions.

Central to the manifestation of MSDs among full-time housewives is the phenomenon of lower cross syndrome (LCS), characterized by an imbalance in pelvic muscle groups. This syndrome engenders a cascade of

physiological repercussions, including lumbar lordosis and associated discomfort. Similarly, upper cross syndrome (UCS) afflicts individuals with neck and upper back pain, perpetuated by muscle imbalances precipitated by prolonged poor posture and inadequate muscular support.

The intricacies of UCS extend to the development of forward head posture (FHP), a maladaptive condition marked by cervical lordosis and thoracic kyphosis. FHP not only exacerbates musculoskeletal discomfort but also impairs scapular movement and stability, thereby compounding the challenges faced by full-time housewives in executing routine tasks. The confluence of repetitive manual labor and suboptimal ergonomic conditions in household chores exacerbates these musculoskeletal imbalances, rendering full-time housewives vulnerable to chronic pain and functional limitations.

Moreover, the interplay between FHP and scapular dyskinesis further complicates the musculoskeletal landscape, fostering aberrant scapular movement patterns that compromise shoulder function and exacerbate existing discomfort. The assessment of FHP and scapular dyskinesis is integral to understanding the mechanistic underpinnings of MSDs among full-time housewives, facilitating targeted interventions aimed at mitigating pain and restoring functional capacity.

The measurement of craniovertebral angle (CVA) serves as a quantitative marker of FHP severity, providing valuable insights into the musculoskeletal adaptations precipitated by prolonged poor posture. Additionally, scapulohumeral rhythm analysis elucidates the dynamic interplay between glenohumeral and scapulothoracic motion, highlighting the compensatory mechanisms employed by the musculoskeletal system to mitigate functional deficits.

AIMS AND OBJECTIVES OF THE STUDY

To find the effect of proprioceptive neuromuscular facilitation on pain, forward head posture, scapular dyskinesis and quality of life among fulltime housewives?

The main objective of this study to find the effects of proprioceptive neuromuscular facilitation on pain, forward head posture, scapular dyskinesis and quality of life among fulltime housewives?

METHODOLOGY

Sampling Method:

- No of Sample:30
- Groups: Two groups (15 subjects in each group)

Inclusion Criteria:

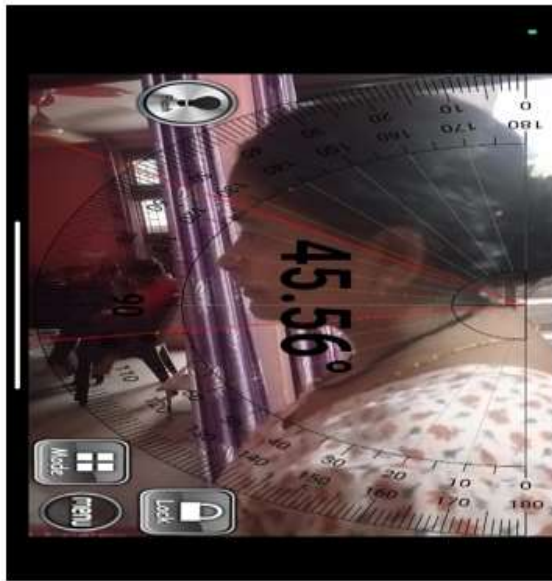
1. Only for Housewives
2. Do their household task by own.
3. She not had any servant for household task.
4. Participant had less than 50° Craniovertebral angle (CVA) considered in forward head posture.
5. Age group 25 to 60.
6. Resting hours

Exclusion Criteria:

1. None of the participants had suffered from any past injury, trauma, mental disorder.
2. Avoid those housewives who had servants for household task.
3. Avoid working housewives in our study.

Instrumentation

1. Craniovertebral Angle= The Angle Was Checked By “ on protractor” Smartphone application version 6.0. to check CV angle. Craniovertebral angle (CV angle)form between one horizontal line pass through tragus and another line pass through C7 vertebrae in between the angle form called Craniovertebral angle CV angle. Use to check Forward Head Posture .



"ON Protractor" Smartphone application 6.0 version

2. Numeric Pain Rating Scale (NPRS) = I was measured pain level in neck by using numeric pain rating scale it has 11 points scale. Start from 0 to 10, 0 indicates "no pain" while 10 indicates "worst pain".

3. SF 36 questionnaire= Short form 36 Health Survey questionnaires google form this used to check the health status of person or specific population. Via this we checked the quality of life among housewives. It was multiple choice pattern form. Through this therapist check the quality of life among housewives. Example - In some questions had 3 options so reading give as 100 if participant choose no limited at all, if participant choose limit a little gives as 50 and if participant choose limit a lot mark as 0. Different questions have 2/3/4/5/6 options So i took in my study as A =1, B = 2 ,..., F = 6 its easy way to calculate quality of life via this.

4. Scapular Dyskinesia - Done by visual assessment by their scapular movement during abduction-adduction, flexion-extension. I told her to actively performed flexion-extension, abduction-adduction. While I was stood behind the participant so that I could see the scapular irregular movement and easy record via vedios or photos. Observation the medial border prominence, lack of smooth coordinated movement, scapular elevation during forward flexion or downward rotation of scapula during arm lowering full flexion or during abduction. Using scapular screening form If any scapular abnormalities seen in flexion or abduction. Dyskinesia present on basis dysrhythmia so it take as (1), medial border so it take as (2) and if basis on inferior angle so it take as (3). Rating scale, normal motion no abnormalities as (1), mild evidence of abnormality not consistently present subtle motion as (2), clearly apparent abnormality obvious motion as (3)

**FLEXION PATTERN****EXTENSION PATTERN****SCAPULAR PATTERN- POSTERIOR ELEVATION****SCAPULAR PATTERN – ANTERIOR DEPRESSION**

RESULTS

TABEL 1 SHOWS AGE OF BOTH THE GROUPS

	GROUP A	GROUP B	P VALUE
AGE	33.93±7.324	44.87±11.147	0.004

Group A= Experimental Group (PNF + conservative treatment) Group B= Controlled Group (conservative treatment)

The table presented displays the results of an experiment or study involving two groups: Group A, the experimental group receiving a treatment combination of PNF (Proprioceptive Neuromuscular Facilitation) and conservative treatment, and Group B, the controlled group receiving conservative treatment alone without PNF. The table provides information on the age distribution within each group, with Group A having a mean age of 33.93 (± 7.324) and Group B having a mean age of 44.87 (± 11.147). The standard deviation values for both groups indicate the amount of variability or dispersion in ages around the mean. Group A has a slightly higher mean age compared to Group B, but further statistical analysis would be necessary to determine if this difference is statistically significant. Additionally, the standard error of the mean values for each group, 2.642 for Group A and 2.184 for Group B, represent the precision of the sample mean as an estimate of the population mean. While the table offers valuable insights into the age characteristics of both groups, more comprehensive statistical analyses and a deeper examination of other relevant variables would be required to draw more definitive conclusions and assess the impact of the treatment on the study's objectives.

TABLE 2 SHOWS RESTING HOUR

	GROUP A	GROUP B	P VALUE
RESTINGS HOURS PRE	6.67±1.234	7.20±1.265	0.252

Group A= Experimental Group (PNF + conservative treatment) Group B= Controlled Group (conservative treatment)

Table 2 provides information on the resting hours for two groups: Group A, the experimental group receiving a treatment combination of PNF (Proprioceptive Neuromuscular Facilitation) and conservative treatment, and Group B, the controlled group receiving conservative treatment alone without PNF. The table presents data for resting hours before the treatment (PRE) for both groups. For Group A, the mean resting hours before the treatment is 6.67 ± 1.234 , indicating that, on average, participants in this group rested for 6.67 hours, with a standard deviation of 1.234, reflecting the variability in resting hours within the group. For Group B, the mean resting hours before the treatment is 7.20 ± 1.265 , suggesting that participants in this group rested for an average of 7.20 hours, with a standard deviation of 1.265. The P-value of 0.252 indicates the statistical significance of the difference in resting hours between the two groups before the treatment. A P-value above the significance level (usually 0.05) suggests that the difference observed in resting hours between the groups may not be statistically significant. In summary, Table 2 provides insights into the resting hours of both groups before the treatment, and the P-value helps researchers assess whether the observed differences in resting hours between the experimental (Group A) and controlled (Group B) groups are statistically significant. However, to draw more definitive conclusions about the impact of the treatment on resting hours, further analysis and examination of additional variables would be necessary.

TABLE 3 SHOWS NPRS RESULTS

	GROUP A	GROUP B	P VALUE
NPRS PRE	5.93 ± 3.327	5.40 ± 2.444	0.621
NPRS POST	0.93 ± 1.100	1.47 ± 1.642	0.305
P VALUE	<0.001	<0.001	

Group A= Experimental Group (PNF + conservative treatment) Group B= Controlled Group (conservative treatment)

Table 3 presents the NPRS (Numeric Pain Rating Scale) results for two groups: Group A, the experimental group receiving a treatment combination of PNF (Proprioceptive Neuromuscular Facilitation) and conservative treatment, and Group B, the controlled group receiving conservative treatment alone without PNF. The table displays the NPRS scores both before and after the treatment for both groups, along with the corresponding P-values. For Group A, the NPRS scores before the treatment (NPRS PRE) are reported as 5.93 ± 3.327 , indicating an average pain rating of 5.93 with a standard deviation of 3.327. After the treatment (NPRS POST), the NPRS score significantly decreases to 0.93 ± 1.100 , suggesting a considerable reduction in pain after the intervention. In Group B, the NPRS scores before the treatment (NPRS PRE) are reported as 5.40 ± 2.444 , indicating an average pain rating of 5.40 with a standard deviation of 2.444. After the treatment (NPRS POST), the NPRS score is 1.47 ± 1.642 , showing a notable decrease in pain after the conservative treatment. The P-values provided in the table indicate the statistical significance of the differences in NPRS scores between the two groups both before and after the treatment. For both NPRS PRE and NPRS POST, the P-values are reported as "<0.001," which means that the observed differences in pain ratings between Group A and Group B are highly statistically significant. In summary, Table 3 demonstrates the NPRS scores for both groups before and after the treatment. The results indicate that the experimental group (Group A) experienced a significant reduction in pain after receiving the PNF and conservative treatment, as evidenced by the statistically significant P-values. However, to draw more comprehensive conclusions, it is essential to consider other factors, conduct further analyses, and assess long-term effects if applicable.

TABLE 4 CV ANGLE

	GROUP A	GROUP B	P VALUE
CV ANGLE PRE	46.322 ± 1.024	46.79 ± 1.479	0.322
CV ANGLE POST	54.098 ± 1.25	49.55 ± 1.958	<0.001
P VALUE	<0.001	<0.001	

Group A= Experimental Group (PNF + conservative treatment) Group B= Controlled Group (conservative treatment)

Table 4 presents the CV (Cervical Vertebrae) angle results for two groups: Group A, the experimental group receiving a treatment combination of PNF (Proprioceptive Neuromuscular Facilitation) and conservative treatment, and Group B, the controlled group receiving conservative treatment alone without PNF. The table displays the CV angle measurements both before and after the treatment for both groups, along with the corresponding P-values. For Group A, the CV angle measurements before the treatment (CV ANGLE PRE) are reported as $46.322^\circ \pm 1.024$, indicating an average angle of 46.322° with a standard deviation of 1.024. After the treatment (CV ANGLE POST), the CV angle significantly increases to $54.098^\circ \pm 1.25$, suggesting a notable improvement in the CV angle after the intervention. In Group B, the CV angle measurements before the treatment (CV ANGLE PRE) are reported as $46.79^\circ \pm 1.479$, indicating an average angle of 46.79° with a standard deviation of 1.479. After the treatment (CV ANGLE POST), the CV angle is $49.55^\circ \pm 1.958$, showing a slight increase in the CV angle after the conservative treatment. The P-values provided in the table indicate the statistical significance of the differences in CV angle measurements between the two groups both before and after the treatment. For both CV ANGLE PRE and CV ANGLE POST, the P-values are reported as "<0.001,"

which means that the observed differences in CV angles between Group A and Group B are highly statistically significant. In summary, Table 4 demonstrates the CV angle measurements for both groups before and after the treatment. The results indicate that the experimental group (Group A) experienced a significant improvement in the CV angle after receiving the PNF and conservative treatment, as evidenced by the statistically significant P-values. However, it's important to consider other factors, conduct further analyses, and assess long-term effects, if applicable, to draw more comprehensive conclusions about the effectiveness of the treatment on the CV angles.

TABLE 5 SF36

	GROUP A	GROUP B	P VALUE
SF 36 PRE	90.13±10.232	88.40±8.458	0.617
SF 36 POST	101.00±6.392	97.07±6.170	<0.097
P VALUE	0.002	<0.001	

Group A= Experimental Group (PNF + conservative treatment) Group B= Controlled Group (conservative treatment)

Table 5 presents the SF36 (Short Form-36) results for two groups: Group A, the experimental group receiving a treatment combination of PNF (Proprioceptive Neuromuscular Facilitation) and conservative treatment, and Group B, the controlled group receiving conservative treatment alone without PNF. The table displays the SF36 scores both before and after the treatment for both groups, along with the corresponding P-values. For Group A, the SF36 scores before the treatment (SF 36 PRE) are reported as 90.13 ± 10.232 , indicating an average score of 90.13 with a standard deviation of 10.232. After the treatment (SF 36 POST), the SF36 score significantly increases to 101.00 ± 6.392 , suggesting a considerable improvement in the quality of life after the intervention. In Group B, the SF36 scores before the treatment (SF 36 PRE) are reported as 88.40 ± 8.458 , indicating an average score of 88.40 with a standard deviation of 8.458. After the treatment (SF 36 POST), the SF36 score is 97.07 ± 6.170 , showing a notable increase in the quality of life after the conservative treatment. The P-values provided in the table indicate the statistical significance of the differences in SF36 scores between the two groups both before and after the treatment. For SF 36 PRE, the P-value is reported as 0.002, and for SF 36 POST, the P-value is reported as " <0.001 ," which means that the observed differences in SF36 scores between Group A and Group B are statistically significant. It is important to note that for SF 36 POST, the P-value is reported as " <0.001 ," which indicates a high level of statistical significance. However, for SF 36 PRE, the P-value is 0.002, which is still below the conventional significance level of 0.05 but may require further investigation or a larger sample size to confirm the significance. In summary, Table 6 demonstrates the SF36 scores for both groups before and after the treatment. The results indicate that the experimental group (Group A) experienced a significant improvement in quality of life after receiving the PNF and conservative treatment, as evidenced by the statistically significant P-values. Similarly, the controlled group (Group B) also demonstrated a significant increase in quality of life after the conservative treatment. However, to draw more comprehensive conclusions and assess the impact of the treatment on the SF36 scores, further analysis and consideration of other factors are necessary.

GROUP * DYSKINESIS PRESENT Crosstabulation					
Count					
		DYSKINESIS PRESENT			Total
		dysrhythmia	medial border	inferior angle	
GROUP	1	13	1	1	15
	2	11	3	1	15
Total		24	4	2	30

The table provided is a crosstabulation, or contingency table, displaying the counts of participants based on the presence of dyskinesia in three different locations: dysrhythmia, medial border, and inferior angle. The participants are divided into two groups, Group 1 and Group 2. In Group 1, which comprises a total of 15 participants, 13 individuals have dyskinesia in the "dysrhythmia" location, one participant exhibits dyskinesia at the "medial border" location, and another participant shows dyskinesia at the "inferior angle" location. In Group 2, consisting of 15 participants, 11 individuals have dyskinesia in the "dysrhythmia" location, three participants display dyskinesia at the "medial border" location, and one participant demonstrates dyskinesia at the "inferior angle" location. The "Total" row and column provide the combined counts for both groups and all dyskinesia locations. Across both groups, there are 24 participants with dyskinesia in the "dysrhythmia" location, four participants with dyskinesia at the "medial border" location, and two participants with dyskinesia at the "inferior angle" location. In total, the study population consists of 30 participants.

GROUP * SDT FLEXION Crosstabulation			
Count			
		SDT FLEXION	
		mild evidence of abnormality	clearly apparent abnormality
		Total	

GROUP	1	10	5	15
	2	12	3	15
Total		22	8	30

The study presents a crosstabulation or contingency table focusing on the SDT (Step Down Test) Flexion and its severity in two categories: "mild evidence of abnormality" and "clearly apparent abnormality." The participants are divided into two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 10 individuals show "mild evidence of abnormality" in SDT Flexion, while five participants exhibit a more pronounced abnormality, categorized as "clearly apparent abnormality." In Group 2, also comprising 15 participants, 12 individuals demonstrate "mild evidence of abnormality" in SDT Flexion, and three participants exhibit "clearly apparent abnormality." The "Total" row and column provide the combined counts for both groups and both categories of SDT Flexion. Across both groups, there are a total of 22 participants with "mild evidence of abnormality" in SDT Flexion, and eight participants exhibit a more pronounced "clearly apparent abnormality."

GROUP * DYSKINESIS PRESENT Crosstabulation				
Count				
		DYSKINESIS PRESENT		
		dysrhythmia	medial border	inferior angle
GROUP	1	9	3	3
	2	8	4	3
Total		17	7	6

The provided crosstabulation or contingency table focuses on the presence of dyskinesia in three different locations: dysrhythmia, medial border, and inferior angle, for two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 9 individuals have dyskinesia in the "dysrhythmia" location, 3 participants exhibit dyskinesia at the "medial border" location, and another 3 participants show dyskinesia at the "inferior angle" location. In Group 2, also comprising 15 participants, 8 individuals have dyskinesia in the "dysrhythmia" location, 4 participants display dyskinesia at the "medial border" location, and another 3 participants demonstrate dyskinesia at the "inferior angle" location. The "Total" row and column provide the combined counts for both groups and all dyskinesia locations. Across both groups, there are a total of 17 participants with dyskinesia in the "dysrhythmia" location, 7 participants with dyskinesia at the "medial border" location, and 6 participants with dyskinesia at the "inferior angle" location.

GROUP * SDT ABDUCTION Crosstabulation				
Count				
		SDT ABDUCTION		Total
		mild evidence of abnormality	clearly apparent abnormality	
GROUP	1	6	9	15
	2	7	8	15
Total		13	17	30

The provided crosstabulation or contingency table focuses on the SDT (Step Down Test) Abduction and its severity in two categories: "mild evidence of abnormality" and "clearly apparent abnormality." The participants are divided into two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 6 individuals show "mild evidence of abnormality" in SDT Abduction, while 9 participants exhibit a more pronounced abnormality, categorized as "clearly apparent abnormality." In Group 2, also comprising 15 participants, 7 individuals demonstrate "mild evidence of abnormality" in SDT Abduction, and 8 participants exhibit "clearly apparent abnormality." The "Total" row and column provide the combined counts for both groups and both categories of SDT Abduction. Across both groups, there are a total of 13 participants with "mild evidence of abnormality" in SDT Abduction, and 17 participants exhibit a more pronounced "clearly apparent abnormality."

GROUP * DYSKINESIS PRESENT Crosstabulation				
Count				
		DYSKINESIS PRESENT		Total
		dysrhythmia	medial border	
GROUP	1	15	0	15
	2	12	3	15
Total		27	3	30

The crosstabulation or contingency table provided focuses on the presence of dyskinesia in two different locations: dysrhythmia and medial border, for two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, all 15 individuals have dyskinesia in the "dysrhythmia" location, and there are no participants with dyskinesia at the "medial border" location (i.e., 0). In Group 2, also comprising 15 participants, 12 individuals have dyskinesia in the "dysrhythmia" location, and 3 participants display dyskinesia at the "medial

border" location. The "Total" row and column provide the combined counts for both groups and both dyskinesia locations. Across both groups, there are a total of 27 participants with dyskinesia in the "dysrhythmia" location, and 3 participants with dyskinesia at the "medial border" location.

GROUP * SDT FLEXION Crosstabulation				
Count				
		SDT FLEXION		Total
		normal motion	mild evidence of abnormality	
GROUP	1	13	2	15
	2	8	7	15
Total		21	9	30

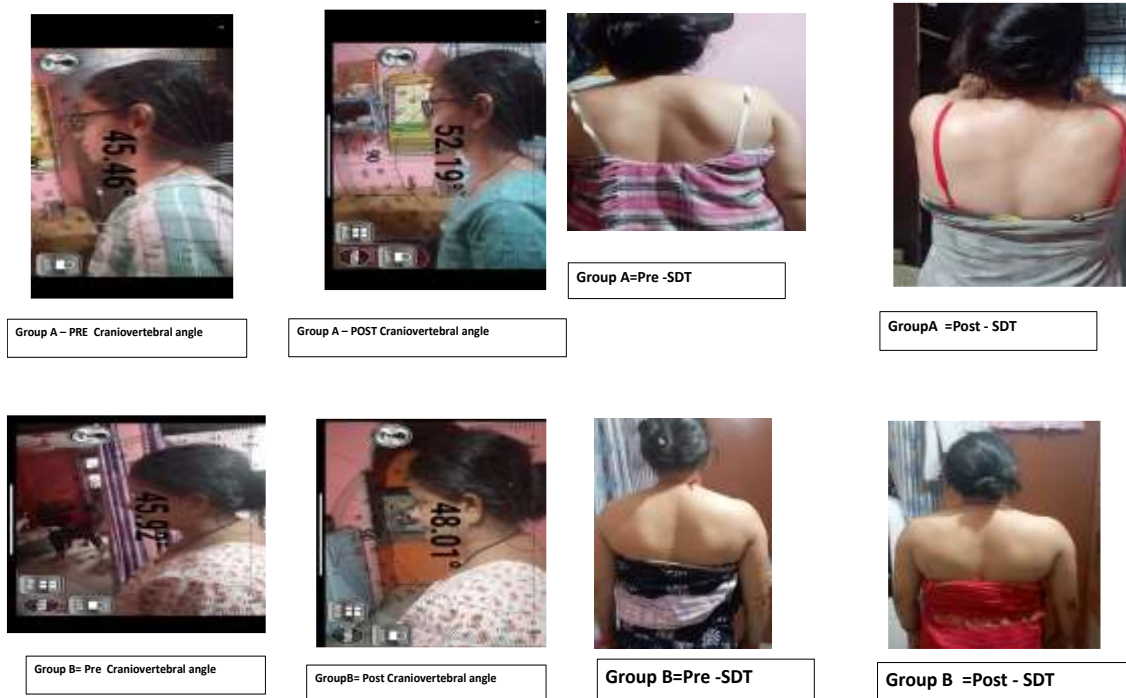
The provided crosstabulation or contingency table focuses on the SDT (Step Down Test) Flexion and its severity in two categories: "normal motion" and "mild evidence of abnormality." The participants are divided into two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 13 individuals have "normal motion" in SDT Flexion, while 2 participants show "mild evidence of abnormality." In Group 2, also comprising 15 participants, 8 individuals have "normal motion" in SDT Flexion, and 7 participants display "mild evidence of abnormality." The "Total" row and column provide the combined counts for both groups and both categories of SDT Flexion. Across both groups, there are a total of 21 participants with "normal motion" in SDT Flexion, and 9 participants exhibit a "mild evidence of abnormality."

GROUP * DYSKINESIS PRESENT Crosstabulation					
Count					
		DYSKINESIS PRESENT			Total
		dysrhythmia	medial border	inferior angle	
GROUP	1	14	0	1	15
	2	9	4	2	15
Total		23	4	3	30

The crosstabulation or contingency table provided focuses on the presence of dyskinesia in three different locations: dysrhythmia, medial border, and inferior angle, for two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 14 individuals have dyskinesia in the "dysrhythmia" location, and there are no participants with dyskinesia at the "medial border" location (i.e., 0). Additionally, one participant shows dyskinesia at the "inferior angle" location. In Group 2, also comprising 15 participants, 9 individuals have dyskinesia in the "dysrhythmia" location, 4 participants display dyskinesia at the "medial border" location, and 2 participants exhibit dyskinesia at the "inferior angle" location. The "Total" row and column provide the combined counts for both groups and all dyskinesia locations. Across both groups, there are a total of 23 participants with dyskinesia in the "dysrhythmia" location, 4 participants with dyskinesia at the "medial border" location, and 3 participants with dyskinesia at the "inferior angle" location.

GROUP * SDT ABDUCTION Crosstabulation					
Count					
		SDT ABDUCTION			Total
		normal motion	mild evidence of abnormality	clearly apparent abnormality	
GROUP	1	7	8	0	15
	2	2	12	1	15
Total		9	20	1	30

The crosstabulation or contingency table provided focuses on the SDT (Step Down Test) Abduction and its severity in three categories: "normal motion," "mild evidence of abnormality," and "clearly apparent abnormality." The participants are divided into two groups: Group 1 and Group 2. In Group 1, consisting of 15 participants, 7 individuals have "normal motion" in SDT Abduction, 8 participants show "mild evidence of abnormality," and there are no participants with a "clearly apparent abnormality" (i.e., 0). In Group 2, also comprising 15 participants, 2 individuals have "normal motion" in SDT Abduction, 12 participants display "mild evidence of abnormality," and one participant exhibits a "clearly apparent abnormality." The "Total" row and column provide the combined counts for both groups and all categories of SDT Abduction. Across both groups, there are a total of 9 participants with "normal motion" in SDT Abduction, 20 participants with "mild evidence of abnormality," and one participant with a "clearly apparent abnormality."



DISCUSSION

In my study, in both the groups show improvement in the craniovertebral angle (CVA), pain level, quality of life and in scapular dyskinesia among full time housewives. But The experimental Group (Group A) Proprioceptive neuromuscular facilitation (PNF) with conventional protocol give better result as compared to Control Group (Group B) in which only Conventional protocol use. Proprioceptive neuromuscular facilitation stretching technique show effect to improve the range of motion and increase the level of performance in athlete after exercise In this author said that proper protocol must be followed to get better and effective results (60). Proprioceptive neuromuscular facilitation use neck flexion and neck extension pattern to improve the forward head posture and neck disability index among those adults who have forward head posture in this study shows that neck pattern has effective result on range of motion of the neck joint. The protocol of the proprioceptive neuromuscular facilitation neck pattern needs to give 3 times in a week for 4 weeks to get better and effective result (58). one of the study in 2020 stated that effective result Of proprioceptive neuromuscular facilitation among computer operator tertiary care hospital in their Group A in which they used Proprioceptive neuromuscular facilitation neck pattern with neck isometric as compared to Group B in which they provide neck isometrics with conventional protocol. Both groups decrease the craniovertebral angle, neck disability. 3 times in a week for 4 week of proprioceptive neuromuscular facilitation protocol show better result (35) (58) (60). Proprioceptive neuromuscular facilitation involve different patterns of movement or diagonal pattern that are multiaxial or multidirectional. In one of the study shows that equal effect of proprioceptive neuromuscular facilitation (PNF) and muscle energy technique (MET) in chronic neck pain By decreasing equal pain level (72). Exercise protocol based on the proprioceptive neuromuscular facilitation (PNF) technique show effective result at improving their function of myofascial pain syndrome (MPS) (73). Proprioceptive neuromuscular facilitation use rhythmic stabilization on scapular pattern on affected side with conventional exercise protocol Give to Group A and Group B provide only conventional exercise. Group A shows give better result as compared to Group B by showing effectiveness significant by decreasing pain level, improve craniovertebral angle, improve scapular dyskinesia improve stability. This proprioceptive neuromuscular facilitation technique of rhythmic stabilization should form integral part of physiotherapy management (61). The level of pain decreased by isometric exercises due to increased level endorphins which occur usually after training. The strong muscle contractions occur which activates muscles stretch receptor which causes endogenous opioids to be released and also causes the release of beta-endorphins from the pituitary gland, these secretions may cause decrease pain (72). In recent 2023 study show that Effect of scapular proprioceptive neuromuscular facilitation technique on scapular dyskinesia Both groups A (experimental group) or B (control group) show positive effect to improve the VAS rating, Scapular dysrhythmia or winging of scapula. But Group A in which scapular Proprioceptive neuromuscular facilitation with conventional protocol found to be significantly better as compared to control protocol where only conventional protocol was provided (63). Scapular PNF technique of rhythmic stabilization use autogenic inhibition and reciprocal inhibition to release tighten muscle and to strengthen weaken muscle (61). Level of pain fall down by isometric exercises due to

increased level of endorphins which occur usually after training. The strong muscle contractions occur which activates muscles stretch receptor which causes endogenous opioids to be released and also causes the release of beta-endorphins from the pituitary gland, the secretions of this hormones may cause decrease pain level (72). Heat pack used to control pain or manage the pain level. Due to prolonged muscle contraction during exercise protocol ischemia associated within muscle cause muscle spasm so heat pack used to decrease the muscles spasm by improving muscle spasm (35)(72). My study Group A experimental group get better result as compared to the similar study which was conducted the previous year I was used in my study Proprioceptive neuromuscular facilitation neck pattern, scapular pattern Together With conventional protocol while the previous studies only use either neck or scapular pattern proprioceptive neuromuscular facilitation With conventional provide to their Group A (35) (58) (61) (63). According to the previous studies results that conventional exercises protocol was effective in pain, forward head posture, scapular Dyskinesis, quality. But as compared to Proprioception Neuromuscular Facilitation it is less effective (35)(58)(61)(63) (67)

LIMITATIONS OF THE STUDY:

1}The sample size included in the study could have been more.

CONCLUSION

The study concluded that proprioceptive neuromuscular facilitation (PNF) neck, scapular pattern with conventional protocols more effective to decrease pain, increase craniovertebral angle, correction in scapular dyskinesis and improve the quality of life than only conventional protocol among the fulltime housewives.

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