


# COMPARISON OF PATELLAR MOBILIZATION AND TAPING IN PATIENT WITH PATELLOFEMORAL PAIN SYNDROME

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## ABSTRACT

**Background of the Study:** To compare patellar taping and mobilization plus conventional therapy for reducing knee pain in patients with patellofemoral pain syndrome (PFPS).

**Methodology:** Controlled trial with 50 participants divided into two groups who received different treatments for 6 weeks: Group A had patellar taping and iliotibial band stretching, while Group B had patellar mobilization and quadriceps strengthening. Participants received three treatment sessions weekly for six weeks. The VAS was used to conduct pre and post-test pain evaluations for groups A and B.

**Results:** Knee pain decreased in PFPS patients receiving patellar taping (Group A)

or mobilization (Group B) using VAS ( $p < 0.05$ ). All treatments are effective for PFPS. The VAS scores after 6 weeks of post A and post B treatments assessed. After 6 weeks of taping, mean =  $0.76 \pm 0.83$ . After 6 weeks, mean and SD =  $1.20 \pm 1.12$  from patellar mobilization. No significant difference between means ( $p = 0.12$ ,  $\alpha \leq 0.05$ ). Insignificance.

**Conclusion:** The result of the study indicated that after 6 weeks of treatment for both patellar taping and patellar mobilization were effective in decreasing pain in PFPS.

**Keywords:** Syndrome, mobilization, taping, visual analogue scale, pain, rehabilitation.

## Introduction

Patellofemoral pain syndrome is familial musculoskeletal disorder of the knee joint in an adolescents and young adult in 25% of general population globally<sup>1</sup>. It is characterized by anterolateral knee pain related to abnormalities in the patellofemoral joint<sup>2</sup>. PFPS most common between the ages of 15 and 30 among females<sup>3</sup>. Symptoms of PFPS may aggravated by some activities like running, squatting, climbing causes extra load on knee which causes excessive foot pronation a weak vastus medialis obliques (VMO)<sup>4</sup>. Females were more affected than male with patellofemoral pain syndrome which effects their activity of daily living<sup>5</sup>. Dis-alignment femoro-tibial bone, muscle weakness, overuse of the joint, patellar prior traumatic injury (fracture, dislocation) is considered as the causative factor in PFPS. Patellar taping, patellar mobilization,

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stretching of the lower extremity muscles are the best option for the treatment of PFPS<sup>7</sup>. The common presentation of PFPS is pain on the back of the patella which is associated with the knee positions resulting as an excessive mechanical stress on knee cap or patella<sup>8</sup>. PFPS can be treated conservatively and non-conservatively. Conservative treatment can be done through analgesics, braces or physical therapy which includes quadriceps strengthening, taping, manual mobilization and use of electro modalities for pain management<sup>9</sup>. Low association of Foot pronation present in patients of PFPS<sup>10</sup>. If foot pronation presented in PFPS patients it can be corrected through orthoses, studies showed beneficial effect of foot orthoses for excessive foot pronation in PFPS<sup>11</sup>. Knee braces were also a best choice for the correction of mal alignments of biomechanical forces on knee due to PFPS<sup>12</sup>. Biomechanical corrections in patients of PFPS can be corrected through close chain kinetic strengthening exercises<sup>13</sup>. Mobilization is considered as a best choice for any pain management, patellar mobilization had remarkable effect on pain reduction in patellofemoral syndrome through superior patellar mobilization which causes strengthening of VMO through increased knee extension<sup>14,15</sup>. Multiple types of taping protocols were existed for the treatment of PFPS, whose aim is to correct the biomechanics of lower limb. The McConnell patellofemoral joint taping technique commonly used for PFPS. Different evidence supports the beneficial effects of taping on PFPS<sup>16</sup>. Orthoses and other physical therapy interventions plays an important role in the management of PFPS<sup>17</sup>. The study was aimed to compare the efficacy of patellar taping and mobilization conjunct with conventional therapy in decreasing pain of knee joint in subject with patellofemoral pain syndrome (PFPS).

### Methodology

A randomized control trial study was conducted in which diagnosed patients of patellofemoral pain syndrome were included. Total 50 participants were divided in to two groups. Participants of Group A Patellar were treated with taping technique along with iliotibial band stretching, (n=25) and Group B participants were received patellar mobilization technique with quadriceps Strengthening exercise, (n=25). Both groups were treated for 6 weeks. All Participants received three treatments sessions per week for 6 weeks totaling 18 sessions and, VAS was considered as measuring tool to check the efficacy of treatment in both groups. The pre & post- assessment of each participant of two groups were done through visual analogue scale.

#### Inclusion Criteria:

Male and female between the ages 25 to 35 years, Participants who had knee pain either unilaterally or bilaterally at least for past 3 months were included.

#### Exclusion Criteria:

Participants who had any history of fracture, traumatic pain, past surgical history and known arthritic disease were excluded from the study.

#### Data Analysis:

SPSS version 23.0 was used for analysis of data. Frequencies and percentages were calculated for categorical variables. The t-test was used for pre and post assessment.

### Results

	N	Age of Participants			
		Minimum Age	Maximum Age	Mean Age	Std. Deviation
Age	50	25	35	29.76	2.973
Valid N (list wise)	50				

#### Demographic

**Table-1:** The mean age 29.76 were reported among 50 participants where minimum age was 25 years and maximum age was 35 years.

		Group		Total
		Group A	Group B	
Affected Knee	Right	11	14	25
		44.0%	56.0%	50.0%
	Left	14	11	25
		56.0%	44.0%	50.0%
Total		25	25	50
		100.0%	100.0%	100.0%

*Affected Knee of both groups*

**Table-2:** In group A out of 25 participants 11(44.0%) were found to had right knee affected while 14(56.0%) reported on left side. Unlike group A in group B 11(44.0%) participants had left knee affected and 14(56.0%) had right affected knee.

		Group		Total
		Group A	Group B	
Body Mass Index	Underweight	1	0	1
		4.0%	0.0%	2.0%
	Normal	8	15	23
		32.0%	60.0%	46.0%
	Overweight	7	6	13
	28.0%	24.0%	26.0%	
	Obese	9	4	13
		36.0%	16.0%	26.0%
Total		25	25	50
		100.0%	100.0%	100.0%

*Body Mass Index*

**Table-3:** In group A most of the participants were fall under obese category of BMI with the percentage of 36.0% (9), while in group B majority of participants were reported in normal category of BMI with the percentage of 60.0% (15).

			Post- VAS (Group A) PATELLAR TAPING		
			Mild	No pain	Total
Pre- VAS	Mild	Count	2	2	4
		% within Post- VAS	14.3%	18.2%	16.0%
	Moderate	Count	9	8	17
		% within Post- VAS	64.3%	72.7%	68.0%
	No pain	Count	1	0	1
		% within Post- VAS	7.1%	0.0%	4.0%
	Severe	Count	2	1	3
		% within Post- VAS	14.3%	9.1%	12.0%
Total		Count	14	11	25
		% within Post- VAS	100.0%	100.0%	100.0%

*Pre & Post VAS comparison of Group A*

**Table-4:** In patellar taping group total 4 respondent were had mild pain in Pre-VAS after treatment 2 respondents reported no pain while 2 still fall in category of mild pain. Out of 25 participants 17

were had moderate pain in pre assessment which significantly reduced to categories of mild pain (9) and no pain (8) after treatment. Out of 25 respondents in group A 3 participants reported to had severe pain before treatment which in turn reduced to mild (2) and no pain (1) category of VAS in post treatment assessment.

		Post- VAS (Group B) PATELAR MOBILIZATION			Total
		Mild	Moderate	No pain	
Mild	Count	4	0	2	6
	% within Post- VAS	22.2%	0.0%	33.3%	24.0%
Pre- VAS Moderate	Count	12	1	3	16
	% within Post- VAS	66.7%	100.0%	50.0%	64.0%
Severe	Count	2	0	1	3
	% within Post- VAS	11.1%	0.0%	16.7%	12.0%
Total	Count	18	1	6	25
	% within Post- VAS	100.0%	100.0%	100.0%	100.0%

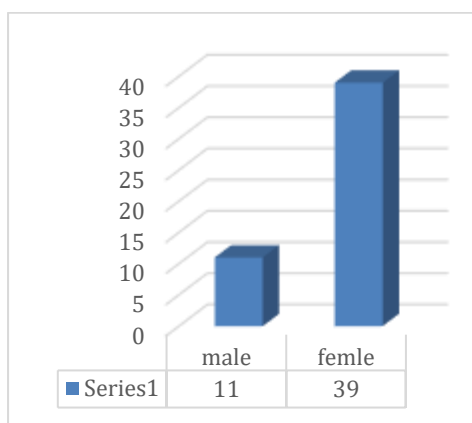
*Pre & Post VAS comparison of Group B*

**Table-5:** Out of 25 participants 0 reported no pain, 6 reported mild pain, 16 had moderate pain and 3 claimed to have severe pain respectively in pre assessment, after treatment 6 reported no pain, 18 fall under category of mild pain, only 1 reported to had moderate pain while no respondent claimed to have severe pain.

	Group A		P-value	Group B		P-value
	Pre	Post		Pre	Post	
No pain	1 4.00%	11 44.0%	0.000	0 0.00%	6 24.0%	0.000
Mild	4 16.00%	14 56.0%		6 24.00%	18 72.0%	
Moderate	17 68.00%	0 0.0%		16 64.00%	1 4.0%	
Severe	3 12.00%	0 0.0%		3 12.00%	0 0.0%	

*Pre & Post VAS comparison of Both Group*

**Table-6:** Final results showed a statically significant reduction in pain among both groups participants through pre and post analysis of pain by VAS.



*Figure-1: Out of 50 participants 11 were males and 39 were females*

## Discussions

According to this present result that there is significant improvement in pain and in patient with Patellofemoral Pain Syndrome (PFPS) at the end of 6 weeks in both groups via patellar mobilization along quadriceps strengthening exercise group A, Patellar taping with iliotibial band stretching group B. Both of the two treatment groups obtained successfully outcomes as measured by significant reduction in VAS at the two ends of two follow up. There is significant difference in intensity of pain as per VAS between two groups. In this study efforts were made to compare the effectiveness of patellar mobilization along quadriceps strengthening exercise versus patellar taping with iliotibial band stretching in the treatment of Patellofemoral Pain Syndrome (PFPS). Fatimah et al<sup>18</sup> concluded in their study that female was more affected than male, same results were found in present study. (Fig-1). In present study it was concluded that effect of patellar mobilization in comparison to taping had no significant difference on pain unlike result was concluded in systematic review in which they concluded that reduction in pain through patellar mobilization had significant value<sup>19</sup>. Alarab A, etal<sup>20</sup> reported a case study of 32-year-old female suffering from patellofemoral pain syndrome. Patient received a treatment of patellar mobilization along with isometric knee exercises. Results showed magnificent decrease in pain using VAS as a measuring tool. Same result was observed in present study in which mobilization technique showed significant reduction in pain. In present study it was stated that females are more likely to had patellofemoral pain in comparison to male likewise results were concluded in other studies too in which they stated that more patients of patellofemoral pain were females<sup>21,22</sup>. Benjamin, et.al reported in their meta-analysis that young adults were more effected with patellofemoral pain. In present study mean age was reported as 29<sup>7</sup>. BMI had significant effect on the treatment of patellofemoral pain syndrome. Ferreira.et.al<sup>24</sup> and Arrebola.et.al<sup>25</sup> stated that increased BMI had significant effect on body composition which ultimately affect the treatment of patellofemoral pain. In present study it was concluded that pre and post comparison of VAS on pain in both groups had highly significant value unlike result was noted in another study in which they stated that participants who had patellar mobilization in comparison to taping had more significant value<sup>24</sup>. Systemic review was done by Logan CA etal<sup>27</sup> in which they reviewed 5 RCTs where they concluded that taping had significant effect along with traditional exercise therapy in reduction of pain in PFPS same result was observed in present study.

## Conclusion

The result of the study indicated that after 6 weeks of treatment for both patellar taping and patellar mobilization were effective in decreasing pain in PFPS.

## Limitations

In present study we did not focus on the severity of patellofemoral pain which might had significant effect on treatment. Also, the sample size was limited.

### AUTHORS' CONTRIBUTION:

The following authors have made substantial contributions to the manuscript as under:

**Conception or Design:** Rabia Khan, Shahnila Anum

**Acquisition, Analysis or Interpretation of Data:** Rabia Khan, Ghousia Shahid

**Manuscript Writing & Approval:** Rabia Khan, Ghousia Shahid, Farhan Ishaque, Muhammad Usman, Sobia Hassan  
All authors acknowledge their accountability for all facets of the research, ensuring that any concerns regarding the accuracy or integrity of the work are duly investigated and resolved.

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**ETHICS STATEMENTS:** The study has been approved.

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