

ORIGINAL RESEARCH**A controlled trial to evaluate the effect of mobilization & exercises in ankle injury**¹Dr. Megha Dinkar Gawali (PT), ²Dr. Renuka Pal (PT), ³Dr. Jafar Khan (PT)¹MPTTh Scholar, ²Associate Professor, ³Dean & HOD, Pacific College of Physiotherapy, Pacific Medical University Udaipur, Rajasthan, India**Corresponding Author**

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ABSTRACT

Introduction: The ankle joint is a hinged synovial joint created by the talus, tibia, and fibula bones articulating. There are many joints in the foot and they play a role in multiple functions during activity. It is the most flexible and stronger in nature joint. It is a shock-attenuating structure during the starting portion of the stance phase of walking and it becomes rigid at the level of push-off at time of end stage of the stance phase. When you roll, twist, or flip your ankle in an odd way, you sprain it. This can stretch or tear the tight bands of tissue (ligaments) that connect your ankle bones. **Methodology:** This is a study that states the effectiveness of mobilization and exercises in ankle injuries. The sample size is 15 people between the ages of 18 and 50, and the outcome measures are VAS and Goniometry. **Results:** The results showed a significant improvement in pain and activities of daily living from day 0 to 30th day and 30th day to 67th day (end of 9th week) in Participants. **Discussion & Conclusion:** Treatment protocols significantly improved patients, with a greater improvement observed in Participants.

Keywords: Ankle Injury, Mobilization, Dorsiflexion, Plantarflexion, Range Of Motion (ROM)

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INTRODUCTION

The ankle joint, also known as the talocrural joint, is a synovial joint that connects the bones of the leg, the fibula and tibia, with the talus of the foot. It is a complex hinge joint composed of two articulations.

It is often described as a tenon and mortise joint, as the tibia and fibula act as a mortise and form a notch in which the body of the talus fits, acting as the tenon.

The main action of the ankle joint is to allow dorsiflexion and plantar flexion of the foot, as well as some degree of pronation and supination with subtalar and midtarsal joints. The joint also acts as a shock absorber as the heel strikes the ground during the first phases of gait.

Mobilization is a manual therapy treatment that promotes movement in stiffened tissue and immobilized joints. Mobilization with movement (MWM) is the concurrent application of sustained accessory mobilization applied by a therapist and an active physiological movement to end range applied by the patient. Passive end-of-range overpressure, or stretching, is then delivered without pain as a barrier

AIM

The purpose of this study is to assess the effectiveness of mobilization and exercises in ankle injuries.

OBJECTIVES OF THE STUDY

1. Determine the amount of discomfort in patients who have ankle sprains.
2. The purpose of this study was to see how mobilization and exercises affected pain and range of motion ankle sprain patients.
3. To evaluate the effectiveness of mobilization and exercises in ankle injury

METHODOLOGY

In the current study, participants with Ankle injuries will be chosen: patients will get exercises and mobilization. As a result, the current study is a randomized controlled experiment.

CONSENT AND ETHICAL ISSUES

The intended study requested ethical approval to be carried out at the Pacific College of Physiotherapy in Udaipur.

STUDY POPULATION

All adults with Ankle Sprain, aged 18 to 50 were included in the study.

Participants were drawn from Udaipur and its neighboring cities' hospitals, rehabilitation facilities, and neighborhoods.

SAMPLE SIZE

The sample size constitutes 15 patients, from pacific medical college and hospital

15 - Treatment with Mobilization & Exercises.

SAMPLING TECHNIQUE

The samples of the study will be selected by using randomized sampling technique.

INCLUSION CRITERIA

- Mean age of 18 to 50 years.
- Patients having acute ankle sprain
- The study includes both male and female.
- Willingness to participate in the study

EXCLUSION CRITERIA

- Malignancy
- Any open wounds around the ankle joint
- Patients with knee dorsiflexion deformity are also excluded.
- Patients with a psychological problem and non-co-operative patients are excluded.

PROCEDURE

Exercises: 10 repetitions of each exercise, thrice daily.

Towel Curls

Standing Calf Stretch

Knee motions

Towel stretch

MOBILIZATION

The patient will be laying supine, with the leg supported on the table and the heel over the edge.

The leg is in external rotation, and the ankle joint is stabilized in dorsiflexion by applying pressure to the plantar surface of the patient's foot from the thigh.

The calcaneus is grabbed, and the talus is secured to the table.

DATA ANALYSIS

The study's goal was to see how an intervention affected ankle pain severity, and impairment. The study included two outcome measures: Goniometry, and Visual Analog Scale (VAS)

RESULT

The subjects of the study, clinical considerations, data analysis and interpretation, and the effectiveness of mobilization and exercises in ankle injury are all covered in this chapter. The acquired data was assembled, analyzed, and interpreted as follows: -

Section A: Subject Distribution Based on Demographic Variables

Section-B: Evaluation of patient's pain levels with Visual Analogue Scale(VAS)in ankle injury patients

Section C: Evaluation of patient's pain levels with Goniometry in ankle injury patients.

SECTION A

Data on demographic characteristics of patients with ankle injuries participants

Table 1: Shows the frequency and percentage distribution of demographic data among participants

Sr. No.	Demographic Variables	Participants (n=15)		
		Frequency	Percentage %	
1.	Sex	Male	8	53.3 %
		Female	7	46.7 %
2.	Age	18-27 Years	2	15.7%
		28-37 Years	4	26.7 %
		38-47 Years	7	46.7%
		48 Years and above	2	26.7 %
3.	Education	No Formal Education	2	13.3 %
		Primary Education	2	13.3%
		Sec.& high sec. Education	2	13.3%
		Graduation and above	9	60.0%
4.	Occupation	Unemployed	2	12.1%
		Employee	8	53.3%
		Business	5	34.6%
5.	Family Income in RS	Rs. 5000 – 10000	0	0%
		Rs. 10001 – 15000	0	0%
		Rs. 15001 –	9	60.0%

		20000			
		Rs. 20001 – Above			6
6.	Area	Rural			6
		Urban			9
					40.0%
					40.0%
					60.0%

Table 1 displays the frequency and percentage distribution of demographic factors among the group. A maximum of 7(46.7%) participants were between the ages of 38 and 47, while 4 (26.7%) were between the ages of 28 and 37. This shows that the majority of the participants were young. The data also show that the bulk of participants were male 8 (53.3%), with only 7(46.7%) females.

The data in the preceding table also shows that the majority of participants had no formal education.

There are 2(13.3%) and 9(60.0%) graduates. Furthermore, 2 (12.1%), 8 (53.3%), and 5 (36.7%) of participants are jobless, employees, or company owners. Moving on to monthly family income, 9(60.0%) of participants had income between \$15,001 and 20,000, with the remaining proportion of participants having income of 20,000 or more, which was reported at 6 (40.0%). The majority of participants are from cities. 9(60.0%) and 6 (40.0%) are from rural areas.

SECTION-B

Evaluation of patients pain levels with (VAS) VISUAL ANALOGUE SCALE in ankle injury patients

No. of Participants- 15

VISUAL ANALOGUE SCALE

VAS Score PRE Treatment	Participants	
	Frequency	Percentage (%)
Mild pain (0-3)	0	0 %
Moderate pain (4-6)	7	46.7 %
Severe pain (7-10)	8	53.3 %

Table 1. Frequency and percentage distribution of Pain score Pre-Treatment

VAS Score POST Treatment	Participants	
	Frequency	Percentage (%)
Mild pain (0-3)	10	75.00 %
Moderate pain (4-6)	5	25.00 %
Severe pain (7-10)	0	00.0 %

Table 2. Frequency and percentage distribution of Pain score Post-Treatment

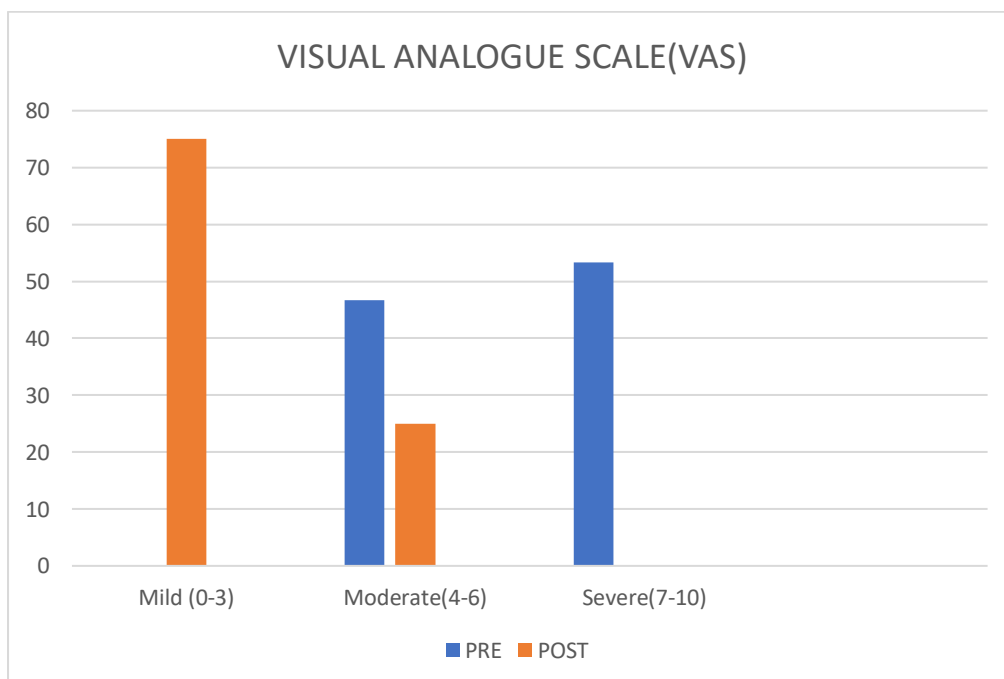


Figure 1. Represents comparison between Pre & Post pain score

This graph up top compares the VAS score between Pre and Post Treatment at three distinct degrees of pain. Pre treatment 0%, 46.7%, 53.3% participants experienced mild, moderate and severe pain respectively.

SECTION C

Evaluation of patients pain levels with Goniometry in ankle injury patients.

ANKLE DORSIFLEXION RANGE

Goniometry Score (dorsiflexion) PRE	Participants	
	Frequency	Percentage (%)
0-5degree	3	20.00%
5-15 degree	12	80.0%
15 and above	0	0%

Table 3. Frequency and percentage distribution of goniometry score Pre-Treatment (dorsiflexion)

Goniometry Score (dorsiflexion) POST	Participants	
	Frequency	Percentage (%)
0-5degree	0	0.00%
5-15 degree	9	60.0%
15 and above	6	40.0%

Table 4. Frequency and percentage distribution of goniometry score Post-Treatment (dorsiflexion)

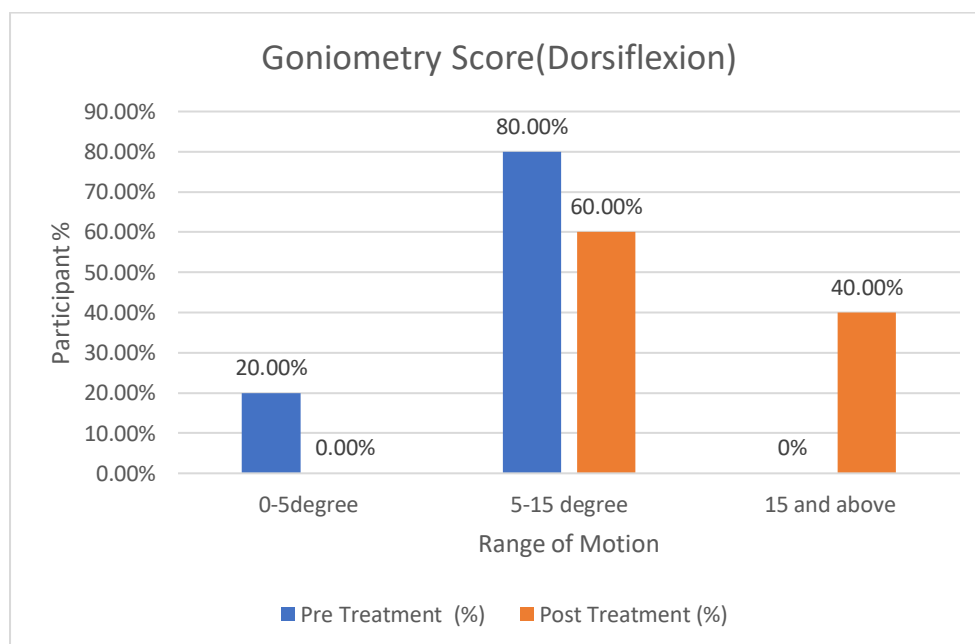


Figure 2. Represents comparison between Pre & Post Dorsiflexion range of motion

This graph up top compares the Dorsiflexion range of motion between Pre and Post Treatment at distinct degrees. Pre-treatment 20%, 80.0%, 0% participants had ROM of 0–5 degree, 5-15 degree & 15 degree and above respectively. Post-treatment 0%, 9%, 6% participants had ROM of 0–5 degree, 5-15 degree & 15 degree and above respectively.

ANKLE PLANTARFLEXION RANGE

Goniometry Score (Plantar flexion) PRE	Participants	
	Frequency	Percentage (%)
0-10 degree	0	0%
11-20 degree	5	33.3%
21-30 degree	9	60.00%
31-40 degree	1	6.6%
41 degree and above	0	0%

Table 5. Frequency and percentage distribution of goniometry score Pre-Treatment (Plantar flexion)

Goniometry Score (Plantar flexion) POST	Participants	
	Frequency	Percentage (%)
0-10 degree	0	0%
11-20 degree	0	0%

21-30 degree	2	13.3%
31-40 degree	6	40.0%
41 degree and above	7	46.7%

Table 6. Frequency and percentage distribution of Goniometry score Post-Treatment (Plantar flexion)

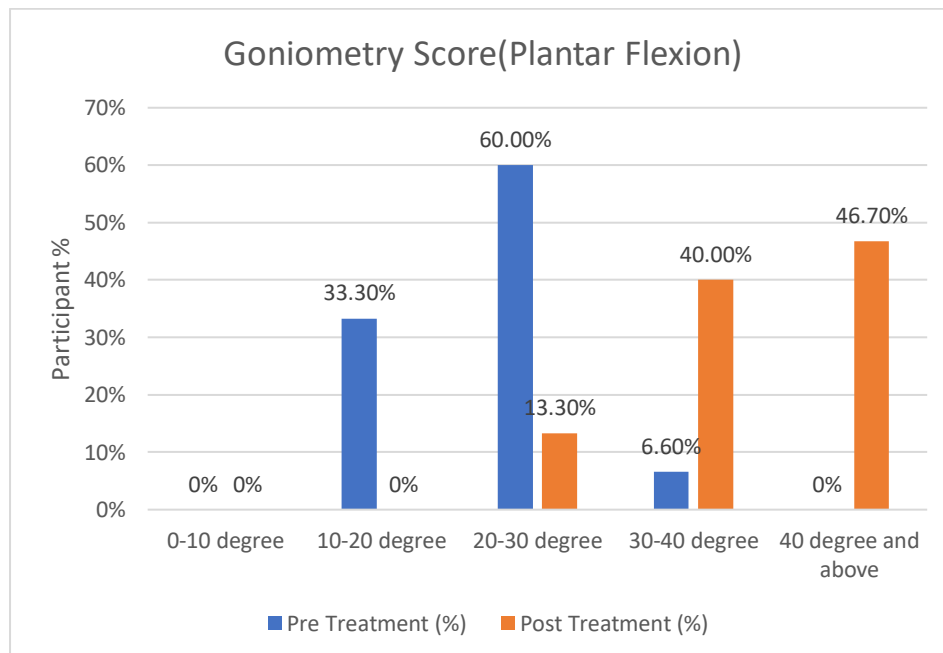


Figure 3. Represents comparison between Pre & Post Plantar flexion range of motion

This graph up top compares the Plantarflexion range of motion between Pre and Post Treatment at distinct degrees. Pre-treatment 0%, 33.3%, 60%, 6.6%, 0% participants had ROM of 0-10 degree, 11-20 degree, 21-30 degree, 31-40 degree and 41 degree above respectively. Post-treatment 0%, 0%, 13.3%, 40%, 46.7% participants had ROM of 0-10 degree, 11-20 degree, 21-30 degree, 31-40 degree and 41 above degree respectively.

DISCUSSION & CONCLUSION

The current investigation revealed that mobilisation combined with exercises can be useful in treating ankle discomfort. On the ninth week of treatment, there were significant differences in pain intensity of the participants. Although participants had pain reduction, they experienced a significant drop in pain severity.

Studies testing the effectiveness of mobilization & exercises in alleviating ankle discomfort have revealed considerable improvements.

In terms of range of motion (ROM), participants showed statistically significant improvements at the end of the treatment in active ankle range of motion.

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