

“Comparative Study Of Postural Taping And Cryotherapy Along With Exercises In Jumper’s Knee In Recreational Volleyball Players”

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Abstract

Background: - In jumper’s knee the athletes complain of anterior knee pain most commonly happens in the jumping athlete. Jumping athletes repetitively load the extensor tendon apparatus during take off and landing and functional overload that cause to patellar tendinopathy. History, Palpation, and observation can be used to reproduce the symptoms and diagnose the same. The treatment of the jumper’s knee includes rest, ice, electrotherapeutic modalities, massage, taping, anti-inflammatory medications.

Aims and Objectives:- To study and compare the effect of Postural Taping and Cryotherapy along with Exercise on Recreational Volleyball Players.

Methods: Volleyball Players with Jumper’s knee were allotted in two groups. A and B by simple random sampling with Chit method. Group A -21 players were treated by Postural taping (Kinesiology Taping) along with Exercise (Squats and Lunges) before going on the field and in group B -21 players were treated by Cryotherapy along with Exercise (Squats and Lunges) before going on the field. Both the group received Treatment for 3 week and 7 session (Day 15) was followed. Both the group received exercise for 15 repetition and 3 sets each. Group B received cryotherapy for 15 minutes along with Exercise (Squats and Lunges). Both the group were assessed by on the basis of history, on observation and on palpation. Pain was assessed by NPRS and Range was taken by goniometer and Visa-P Questionnaire was told to fill prior going on the field and after the treatment.

Results: Patient reported that immediately reduction of pain, increase range of motion in Postural taping Group a compare to Cryotherapy Group.

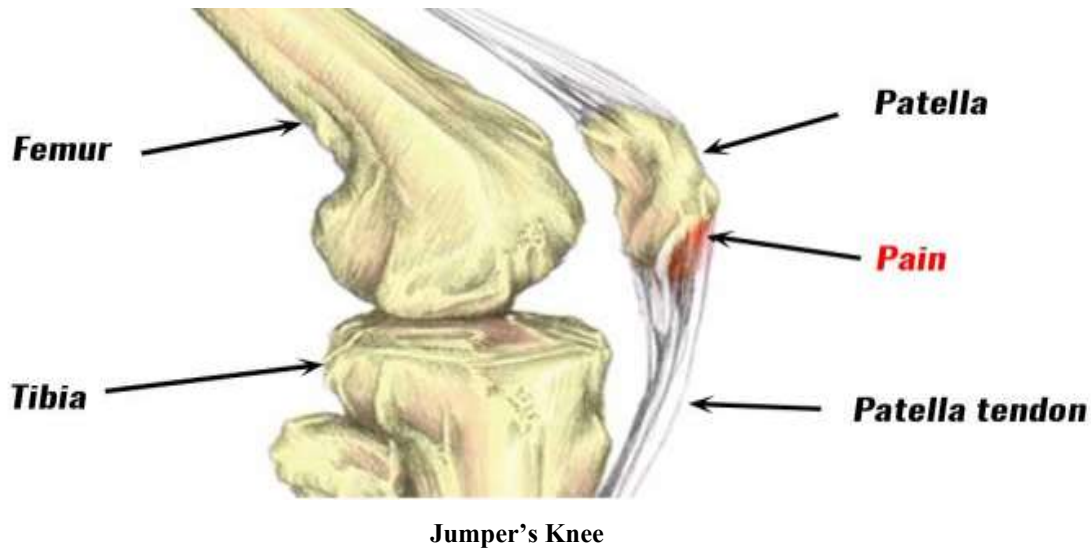
Conclusion: It can be concluded statistically both Postural taping and Cryotherapy along with Exercises shows reduction in pain, increase range of motion and increase in Visa-P Questionnaire but clinically Postural taping along with Exercise shows more reduction in pain, increase range of motion and increase in Visa-P Questionnaire compare to Cryotherapy along with Exercise.

Keywords: Postural taping, Jumper’s knee, Cryotherapy, Squats in Jumper’s knee , Lunges.

INTRODUCTION

Jumper Knee also known as Patellar Tendinopathy or Quadriceps Tendinitis.¹ The athletes complain of anterior knee pain must localized to the infrapatellar region, although the pain may be suprapatellar involving the quadriceps tendon or in the region of the distal patellar tendon at its insertion onto the tibial tuberosity.² Symptoms occurs are pain and inflammation of patellar tendon.³ Jumping athletes repetitively load the extensor tendon apparatus during takeoff and landing and functional overload

that cause to patellar tendinopathy. The takeoff technique result in a valgus position of the right leg, a greater flexion angle of the knee, and greater external rotation of the tibia relative to the femur which can lead to patellar tendinopathy in volleyball players.⁴



Postural Taping (Kinesiology Taping):-

Kinesio Taping helps in reducing pain, increase the range of motion and decrease inflammation. The kinesiology tape may be used to decrease symptoms associated with patellar tendinopathy. The U-strip technique is a technique in which tape is placed over the patellar tendon. Tape is applied to reduce pain and improve blood and lymphatic flow mechanically lifting skin over the tendon and decreasing the pressure on pain receptor in Volleyball Player.

Exercise:- Closed kinematic exercises such as lunges, leg press, and squats are used for strengthening of Quadriceps muscles. Eccentric exercises that are commonly recommended for the treatment of patellar tendon are squatting and lunge.

Cryotherapy:-

Cold pack is widely used in the treatment of recent injuries. Soft Tissues injuries of all kind are almost universally treated by cold in the early stages. During the time inflammatory changes occurs in well recognized sequence the severity depends on the injury. The amount of pain was be related to the rate of the oedema and chemical irritation occurs. Cooling was diminish the rate of swelling and production of irritants and so alleviate the pain.⁷

METHOD:

Subjects were recruited after Ethical clearance from the Institution. The study included 42 subjects between the age of 18-25 yrs and was randomly assigned into two groups of 21 in each Group.

Group A was treated by Postural Taping along with Exercise before on the field and Group B was treated Cryotherapy along with Exercise before going the field. All subjects were evaluated on basis of history, on observation and on palpation. The outcome measures were NPRS, Goniometer, Visa-P Questionnaire assessed Pre treatment on Day 1 and Post treatment on Day 15.

Inclusion Criteria:

1. Volleyball players (18-25 Year)
2. Both Gender (Males and Females)
3. Subjects who are willing to participate in study.
4. Player who had played at least for 6 months.

Exclusion Criteria:

1. Player who have open wound.
2. Player who had any kind of skin allergy.
3. Player who had any history of recent surgery.

Interventions included following techniques:

1. Postural taping along with exercise (Group A) : In this group, patient treated with Postural taping along with Exercise before going the field .

With their knee extended, the patient is in a supine or long sitting position. The hair around the knee joint was asked to be washed and trimmed by the patient. We looked into the patient's tape allergy. The Kinesio tape needs to be measured and cut to the same length as the lateral to medial femoral condyle. Tear the Kinesio tape's paper backing in the middle, exposing the middle third of the tape's length. Place the tape strip's centre above the patella's inferior pole. Wrap tape around the inferior pole of the patella with moderate downward pressure and tension of 25% to 50%. Kinesio tape is applied to the patella after the patient flexes their knee to about 90 degrees Then with 15% to 25% tension, Kinesio tape is wrapped around the patella in the direction of the vastus medialis and the lateralis.



Patient treated with Postural taping

This is followed up with the following Exercise: -

- 1) Squats:-3Sets of 15 Repetitions¹⁰



2) Lunges:- 3 Sets of 15 Repetitions¹⁰



2. Cryotherapy along with exercise (Group B):-

Cryotherapy was applied for 15 minutes over the superior aspect of the patella on the affected knee. ¹ Then followed by Exercise Squats and Lunges



Patient treated with Cryotherapy

DESIGN AND STUDY SETTING

This is an experimental study conducted on recreational volleyball players having jumper's knee. The study was conducted in the year 2022, at Dr. D. Y. Patil College of Physiotherapy OPD, Dr. D. Y. Patil Vidyapeeth, Pune. The proposal of this research topic was scrutinized from administrative and ethical issues.

Tables and Graphs

Table 1: Distribution of Age in Group A

Age	18-19	20-21	22-23	24-25
Total number	3	9	9	0

Graph 1:

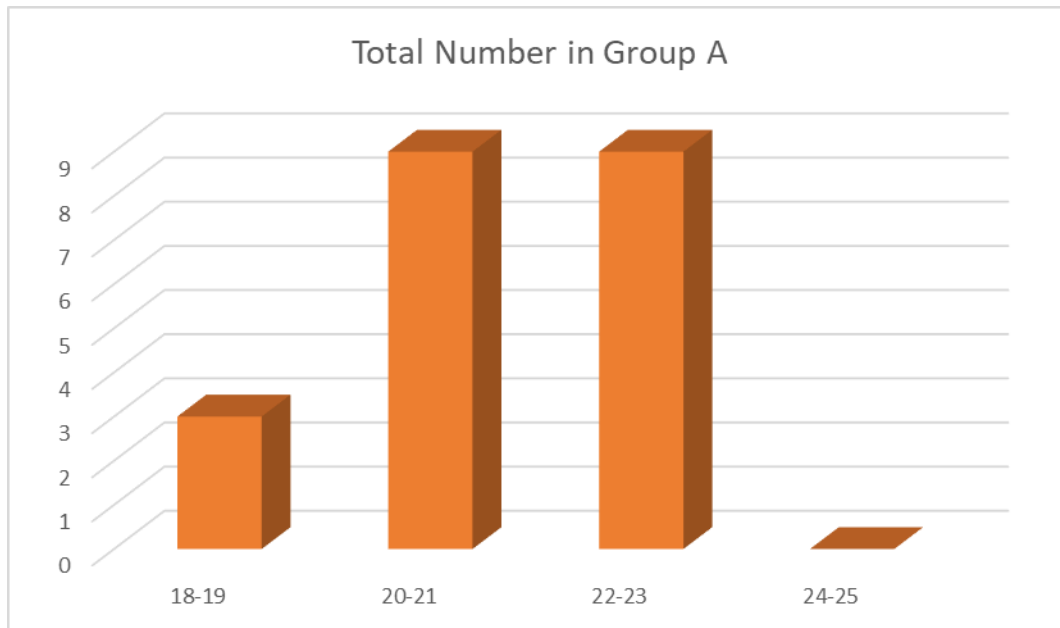


Table 2: Distribution of Age in Group B

Age	18-19	20-21	22-23	24-25
Total number	3	3	14	1

Graph 2:

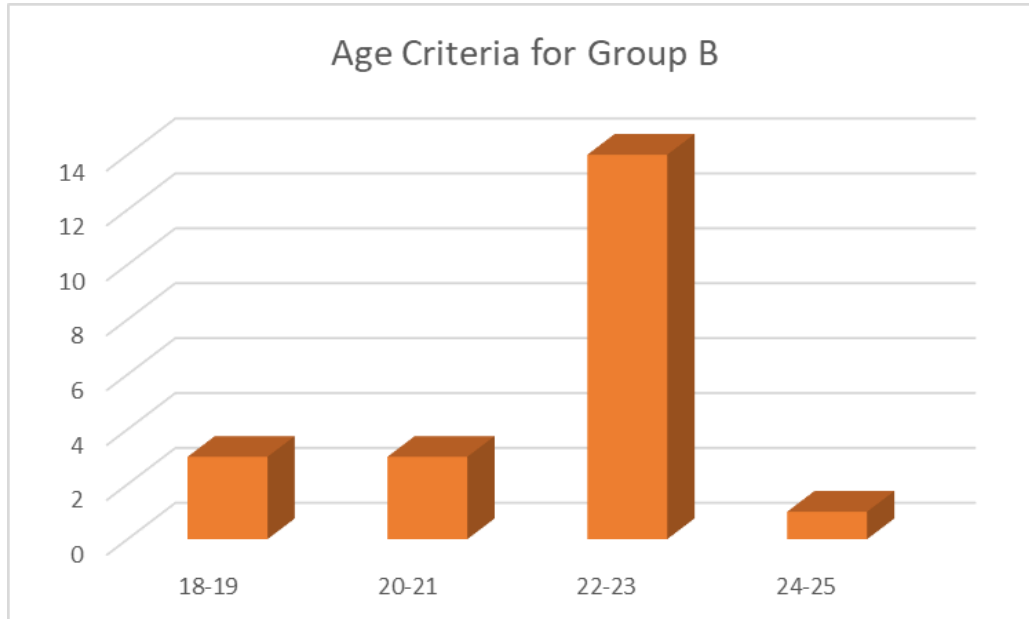


Table 3: Comparison of pre and post test Pain (NPRS) score between Taping and Cryotherapy group

Pain (NPRS) score	Taping (n=21)		Cryotherapy (n=21)		MW test Z Value	P Value
	Mean	SD	Mean	SD		
Pre test	5.62	1.627	5.62	2.109	0.19	0.85
Post test	2.57	1.076	3.86	1.711	2.61	0.009

Graph 3

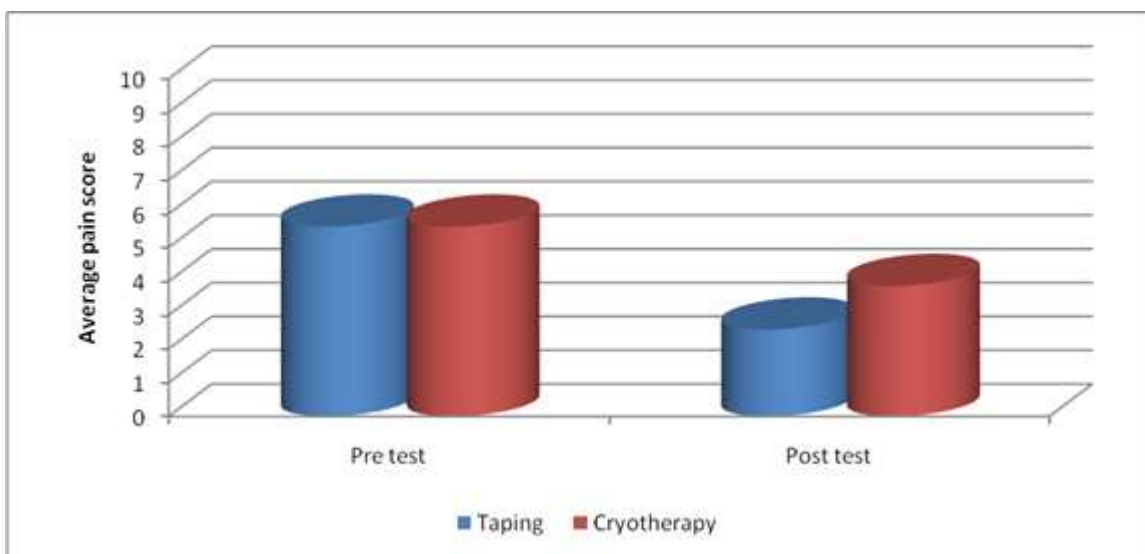


Table 4: Comparison of pre and post test Range of motion between Taping and Cryotherapy group

Range of motion	Taping (n=21)		Cryotherapy (n=21)		t Value	P Value
	Mean	SD	Mean	SD		
Pre test	109.33	7.241	110.14	7.761	0.35	0.73
Post test	119.81	5.382	118.71	7.424	0.55	0.59

Graph 4

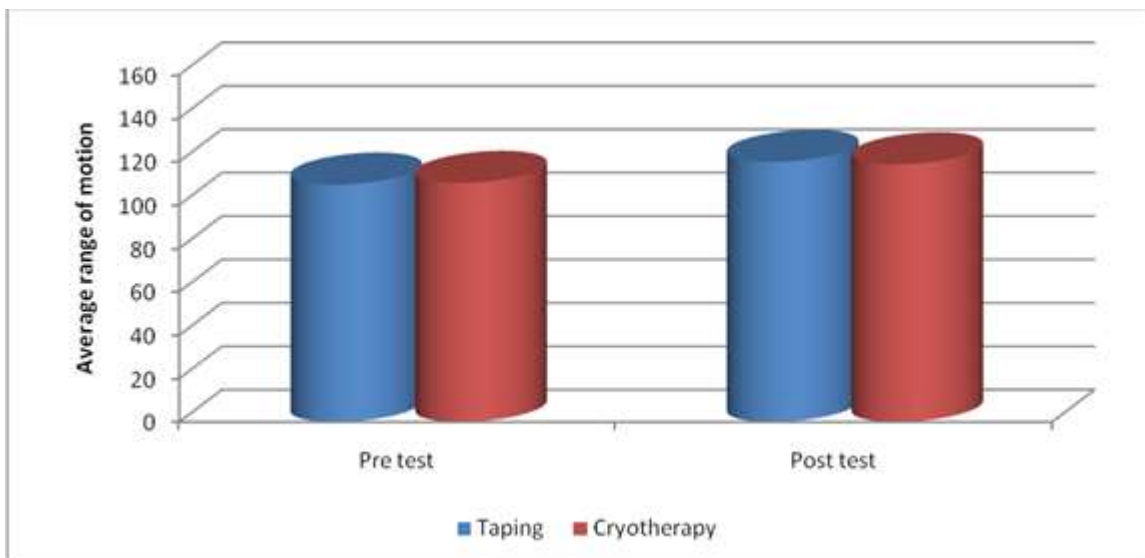
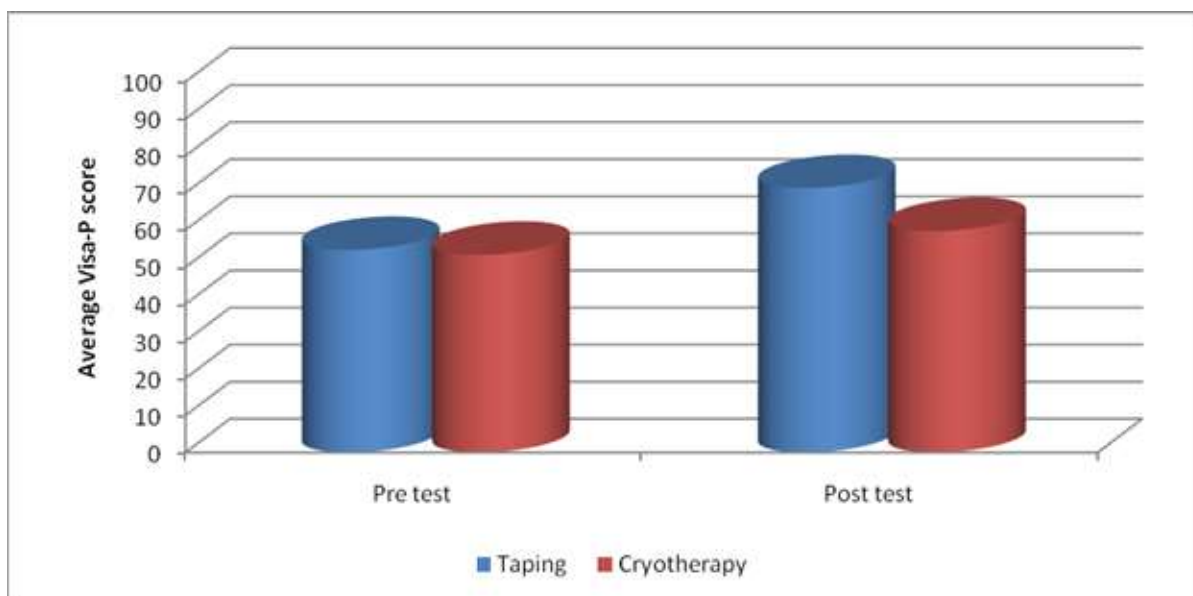


Table 5: Comparison of pre and post test Visa-P score between Taping and Cryotherapy group

Graph 5



RESULTS

- Table 1 Graph 1 represents Age distribution of the patient in the Group A. In Postural Group, the age 18-19 was 3 and in the age 20-21 was 9 and in the age 22-23 was 9.
- Table 2 Graph 2 represent Age distribution of the patient in the Group B. In Cryotherapy, the age 18-19 was 3 and in the age 20-21 was 3 and in the age 22-23 was 14 and in the age 24-25 was 1.
- Table 3 Graph 3 represents gender Distribution of the patients in the two groups studied. 50% of male and 50% of the female were there in Dry Needling group while 50% of male and 50% of the female were there in Percussor therapy group.
- Table 3 and graph 3 This Graph shows the values of Pretreatment and Post treatment of the NPRS scale of Group A and Group B . The Pretreatment Group value of Group A Mean was 5.62 with SD was 1.627 with Z test was 0.19 with P value was 0.85 and for Group B Mean 5.62 with SD was 2.109 with Z test was 0.19 with P value was 0.85 after the Posttreatment Group A mean was 2.57 with SD was 1.076 with Z test was 2.61 with P value was 0.009 for Group B Mean was 3.86 with SD was 1.711 with Z test was 2.61 with P value was 0.009 There was significant reduction in Pain in both the groups but there was more reduction in pain in Group A then in Group B
- Table 4 Graph 4 This Graph shows the values of Pretreatment and Post treatment of the Range of Motion scale of Group A and Group B The Pretreatment Group value of Group A Mean was 109.33 with SD was 7.241 with T value was 0.35 and P value was 0.73 and Pretreatment value of Group B was Mean was 110.14 with SD was 7.761 and T value was 0.35 and P value 0.73 and Post treatment Group A was Mean 119.81 and SD was 5.382 and t value was 0.55 with P value was 0.59 and Group B Mean was 118.71 with SD was 7.424 and t value was 0.55 with P value was 0.59. There was significant increase in Range of Motion in both the groups but there was more Increase in Range of Motion in Group A then in Group B
- Table 5 and Graph 5 This Graph shows the values of Pretreatment and Post treatment of the Visa-P Questionnaire of Group A) and Group B The Pretreatment Group value of Group A was mean was 54.62 with SD was 9.505 with Z test was 0.58 with P value 0.56 and Group B was Mean was 53.29 with SD was 8.597 with Z test was 0.58 with P value 0.56 and Post treatment for Group A was mean was 71.29 with SD was 8.026 with Z test was 3.05 with P value 0.002 and for Group B was Mean was 59.71 with SD was 11.581 with Z test 3.05 with P value 0.002. There was significant increase in Visa-P questionnaire in both the groups but there was more increase in Visa-P Questionnaire in Group A then in Group B

DISCUSSION

- This study was done to check the effect of Postural Taping and Cryotherapy along with exercise in volleyball player in participants with Jumper's Knee. There were a Total of 42 samples, divided into 2 groups both male and female volleyball players were included in the study. Group A in which Postural taping with exercise was done for 15 days.

Group B in which cryotherapy along with exercise was given for 15 days. Jumper's Knee also known as Patellar Tendinopathy or Quadriceps Tendinitis. The athletes complain of anterior knee pain. Symptoms occurs in Jumper's knee are pain and inflammation of patellar tendon. Jumping athletes repetitively load the extensor tendon apparatus during takeoff and landing and functional overload that cause to patellar tendinopathy. Kinesio Taping helps in reducing pain, increase the range of motion and decrease inflammation The kinesiology tape may be used to decrease symptoms associated with patellar tendinopathy The U-strip technique is a technique in which tape is placed over the patellar tendon. Tape is applied to reduce pain and improve blood and lymphatic flow mechanically lifting skin over the tendon and decreasing the pressure on pain receptor in Volleyball Player. Cryotherapy reduces the amount of pain was be related to the rate of the oedema and chemical irritation occurs. Cooling was diminish the rate of swelling and production of irritants and so alleviate the pain. In Group A , participants were applied with Postural taping (Kinesiology tape) along with Exercise for checking the effect of Jumper's knee using Pain (NPRS), Range of Motion (Goniometry) and Visa-P Questionnaire. It showed reduction in pain , increase in Range of motion and increase in Visa-P Questionnaire in individual of group A . The application of Postural taping along with exercise shows statistically improvement in reduction of pain, increase range of motion and increase in Visa-p questionnaire.

In group B , participants were applied with Cryotherapy along with Exercise for checking the Effect of Jumper's knee using Pain (NPRS), Range of Motion (Goniometry) and Visa-P Questionnaire. It shows that there is reduction in pain and increase Range of Motion and increase in Visa-P Questionnaire in individual of Group B . The application of Cryotherapy along with Exercise statistically shows improvement in reduction in pain, increase range of motion and increase in Visa-P Questionnaire. In both Group A and in Group B, Group A shows a greater reduction in Pain and increased Range of Motion with a higher Visa-P questionnaire than Group B. Tamura K, Resnick PB, Hamelin BP, Oba Y, Hetzler RK, Stickley CD(2020). They conducted a study on the effect of Kinesio-tape® on pain and vertical jump performance in active individuals with patellar tendinopathy. *Journal of Bodywork and Movement Therapies*. This study shows that the use of the Kinesiology Tape with a tendon corrective strip and muscle facilitative strip was effective for decreasing pain associated with patellar tendinopathy during jump landing. Mutlu S, Yilmaz E A randomised controlled trial examined the impact of the length of time that ice was applied to soft tissue injuries on symptoms, edema, joint mobility, and patient satisfaction. *Emergency Nursing Journal*.(2020) This study shows that the cold application could be applied between 15 minutes and 30 minutes to reduce pain.

CONCLUSION

Thus, the study concluded that both Postural Taping and Cryotherapy along with Exercise are effective in reduction in pain, increase in Range of Motion and increase in Visa-P Questionnaire. But Postural Taping along with Exercise showed better effects than Cryotherapy along with Exercises in improving range of motion, improving score of Visa-P Questionnaire and decreasing pain.

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