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### RESEARCH ARTICLE

#### EFFECTIVENESS OF KINESIOTAPING IN TREATING PAIN OF MUSCULAR INJURIES.

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#### Manuscript Info

##### Manuscript History

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#### Abstract

**Background:** Muscular injuries are more common for sports person. The various types of muscle injuries are categorized as strains, contusions (bruises), avulsions (detachment injuries), exercise-induced injury or delayed-onset soreness and disease of the muscle. Kinesiotaping method is a definitive rehabilitative taping technique that is designed to facilitate the body's natural healing process while providing support and stability to muscles and joints without restricting the body's range of motion.

**Objective:** The purpose of the study is to know the effectiveness of kinesiotaping in treating pain of muscular injuries.

**Inclusion criteria:** Strain with

1. Pain
2. Edema
3. Hematoma
4. Tenderness
5. Acute conditions
6. Age 14-40yrs

**Exclusion criteria:**

1. Post-surgical interventions
2. Open wounds
3. Skin disorders
4. Non musculo-skeletal conditions
5. Diabetic
6. Thyroid conditions
7. Allergic to taping
8. Vascular disorders
9. Recent history of any other injury at the site of taping
10. Chronic

**Materials and methodology:**

**Methodology:** Selected patients for the study have been divided into 2 groups namely (control) group A where only (standard treatment) cryotherapy is given and (experimental) group B where kinesiotaping is done along with (standard treatment) cryotherapy.

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**Introduction:-**

Skeletal muscle tissue has the largest mass in the human body, accounting for 45% of the total Weight<sup>1</sup>. Muscle injuries are very common in sports, Athletic muscle injuries present a Heterogeneous group of muscle disorders which have traditionally been difficult to define and categorize. Since muscles exist in many different sizes and shapes with a complex functional and anatomical organization, development of a universally applicable terminology and classification is challenging. Thigh muscle injuries present the most common diagnosis in track and field athletes (16%), 8–10 but have also been documented in team sports like rugby (10.4%), 11 basketball (17.7%) 12 and American football (46%/22% practice/games). In our country most of the sport injuries are common in cricket, badminton, kabaddi, foot ball and some more physical games. Muscle injuries can be caused by bruising, stretching or laceration. The current classification divides such injuries into mild, moderate and severe. The signs and symptoms of grade I lesions are edema and discomfort; grade II, loss of function, gaps and possible ecchymosis; and grade III, complete rupture, severe pain and extensive hematoma<sup>2</sup>.

Cryotherapy is a term used to describe cold as a therapeutic modality. Cryotherapy is widely used as the primary tool in managing inflammation associated with acute athletic injuries. It is typically used during the acute inflammatory response to decrease metabolism, which is believed to reduce secondary hypoxic injury and secondary enzymatic injury (collectively referred to as secondary injury), and to decrease local blood flow by limiting the normal vasodilation associated with inflammation. In addition, cryotherapy can reduce pain and muscle spasm, and some evidences suggests that it can curb edema formation<sup>3</sup>.

Using cold as a means of physical treatment is a practice that has been studied and utilized since the age of the ancient Egyptians 4000 years ago, who noted that the application of cold was effective in minimizing the pain of trauma and in decreasing inflammation<sup>4</sup>.

Cryotherapy in the form of icing and immersion in ice baths has traditionally been used to treat tissue injuries. The rationale for using these treatments centers around providing pain relief, reducing tissue metabolism, and altering vascular responses to minimize edema. By reducing the metabolic rate of tissues with in and around the injury site, cryotherapy may protect the healthy by stander cells from the ischemic environment in the immediate period after injury, there by reducing the risk of secondary cell injury or death<sup>5</sup>.

Kinesio tape (KT) is an elastic therapeutic tape used for treating sports injuries and a variety of other disorders. Taping has long been used for the prevention and treatment of sports injuries to provide protection and support to the joint or muscle during movement. Taping can improve proprioception, which is believed to play a role in preventing acute injury and in the evolution of chronic injury. Developed by Japanese chiropractor, Dr Kenso Kase, in the 1970's, KT has become increasingly popular amongst athletes and practitioners alike. The profile of KT was raised after it was seen on athletes at the 2008 Olympic Games. It is claimed that KT supports injured muscles and joints and helps relieve pain by lifting the skin and allowing improved blood and lymph flow<sup>6</sup>.

**Methodology:-****Study design:**

Pre-test and post-test of experimental design.

**Sampling technique:**

Simple random sampling method – lottery method

**Sample size:**

30 persons

1. Group A: Persons treated with cryotherapy – 15
2. Group B: Persons treated with cryotherapy and kinesiotaping – 15

**Study set-up**

1. VAPMS College Out Patient Department, Bakkannapalem, Visakhapatnam.
2. 11B physiotherapy Out Patient Department, King George Hospital, Visakhapatnam.

**Duration of the study:**

15 months Measuring Tool: Visual Analogue scale (0 - No pain, 10- worst pain)

**Study procedure****For Group: A**

Muscle is evaluated properly and the muscle injured is clearly demarcated, Cold packs are canvas bags containing silicate gel, Cold packs are available in various sizes and shapes to contour the area to be treated, these packs are stored in a special refrigerator unit or in a household freezer. storage temperature is maintained at  $-5^{\circ}\text{C}$  for at least two hours before use. These packs are reusable, do not reduce the skin temperature as quickly as ice bags, the patients who do not like the cold therapy can tolerate them, cold packs can easily mold to the body part and they do not open easily as ice packs. These are carried in a special cold pack carrier, After removal of cold pack from refrigerator or cold pack carrier, it is applied on top of the muscle to be treated. Checked at frequent intervals, for hygienic reasons, a layer of towel is placed between the pack and the skin surface. Patient is not allowed to lie on the top of the cold pack. Applied a wet towel first to the skin and then apply the cold pack and cover it with another towel or a sheet to insulate the area. The towel is made wet with the room temperature water and made the initial contact more comfortable for the patient. A strap is placed to secure the cold pack so that the area is well supported. Cold packs are applied 10min for each subject. After the removal of cold pack from the treatment area, they are refreeze for at least two hours before the next use of them. For the longer use, the pack is replaced with another cold pack when they are needed for continuous subjects are present for treatment.

**For Group: B**

In this Group subjects are evaluated thoroughly with the muscle injured and the site of injury, and have got their treatment for 10min cryotherapy followed by 10min kinesiotaping, The same way cryotherapy stated above has been used for this group too. In addition to cryotherapy as stated above kinesiotaping has been done. After cryotherapy the subjects area to be treated is washed, made dry and shaved the skin in a downward direction, skin is wiped thoroughly with towels so that the oils will be removed for better adhesion, adhesive spray is sprayed for skin protection and better tape adhesion. Had the subject in a position which caused minimal fatigue, the joints are placed in a functional position, with a minimal stress on the injured structure, tape is applied in the direction of insertion to origin of the muscle with an 25-30% stretch of the tape only 3 methods of tape application is followed here "Y" "I" "X".

"Y" STRIP APPLICATION<sup>7</sup>: with the skin properly prepared, base applied with no tension, and muscle on a stretch and then kinesiotape is applied. The muscle to be taped is surrounded by laying down one of the two tails of the "Y" strip. Tension is applied evenly along the tail, the tape is followed behind with a finger or thumb and rubbed the tape onto the skin to initiate glue adhesion. When the tail of the tape is approximately one to two inches from the end, stopped tension and layed the end with no tension again, rubbed the applied tape strip to initiate glue adhesion prior to moving the muscle from its current stretched position, the muscle is placed in a second stretched position and second tail of the "Y" strip is applied.

"I" STRIP APPLICATION<sup>7</sup>: This follows the basic principles of Y technique, instead of surrounding the muscle belly, the kinesio strip is applied directly over the area of injury or pain.

"X" STRIP APPLICATION<sup>7</sup>: This also follows the same principles of "Y" and "I" applications, in this the length of the X strip is measured with the muscle on a stretch, when this is used for a two joint muscle it is maximally stretched, the stretch is added to the middle 1/3 of the X strip, placed over the muscle belly, and the tails are laid down with no tension.

Tape is not left more than 24hrs, tape is removed carefully, pushing the skin away from the tape while pulling the tape along the long axis of the limb. The tape is removed from top to down.

**Parameters:**

1. No of sessions: 7 per subject
2. Treatment time: 10min for Group A; 20min for Group B
3. Frequency of treatment: once in a day
4. Total Duration: 70min for each subject in Group A, 140min for each subject in group B

## Materials and methodology:-

### Material:

Kinesiotape, Scissors, Towels, Cold pack and it's carrier, adhesive spray, water, freezer.

### Methodology:

Selected patients for the study have been divided into 2 groups namely (control) group A where only (standard treatment) cryotherapy is given and (experimental) group B where kinesiotaping is done along with (standard treatment) cryotherapy.

### Duration of the study:

15 months.

### Duration of treatment:

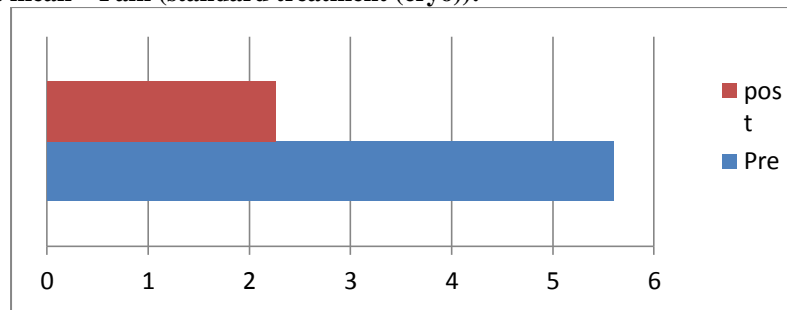
Group A - 10 min; Group B - 20 min (10 min cryotherapy and 10 min taping)

### Statistic analysis:

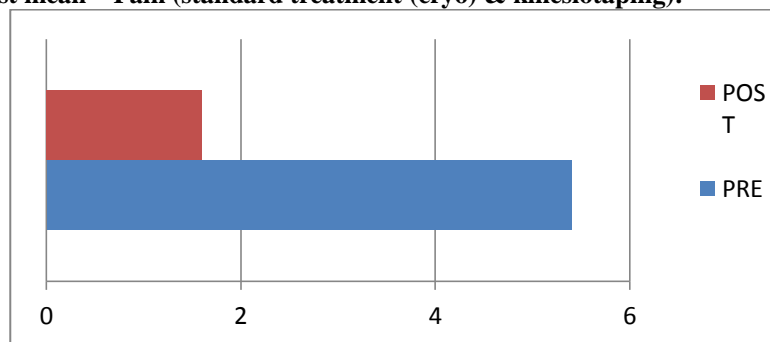
In this study, statistics used to compare Group A and Group B are unpaired "t" test and to know the improvement within the groups is analysed using paired "t" test.

### Data Presentation

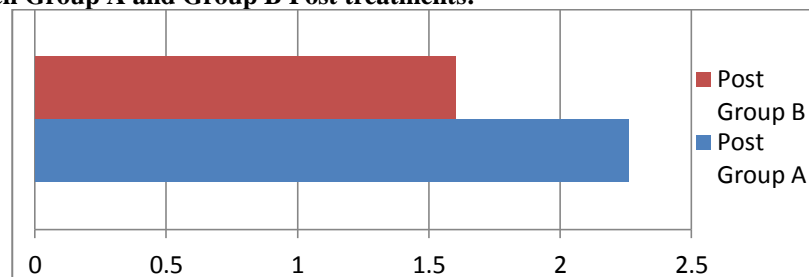
#### Group A Pre and Post mean – Pain (standard treatment (cryo)):



#### Group B Pre and Post mean – Pain (standard treatment (cryo) & kinesiotaping):



#### Pain Mean between Group A and Group B Post treatments:



**Result:-**

The results are showing that there is no effect of kinesiotaping in treating pain of muscular injuries. Hence null hypothesis is accepted and alternate hypothesis is rejected.

**Conclusion:-**

This study was conducted to reduce the pain in muscular injuries.

Pain intensity was measured using VAS in 30 muscle injury patients with pain. The values were recorded before the treatment on day 1 and after the treatment on day 7. There is a significant improvement in the pain levels of both the groups.

This study concludes that for patients with muscle injuries, kinesiotaping do not result in a greater decrease in the pain. Making a firm conclusion on treatment effectiveness is difficult because of insufficient data, less number of subjects, selection criteria and treatment bias.

There is no significant effect of kinesiotaping in treating pain of muscular injuries.

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