A STUDY ON EFFECTIVENESS OF RUSSIAN CURRENT IN JUMPERS KNEE FOR ATHELETS.

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ABSRACT

Background: Jumpers knee is one of the more common tendinopathies affecting athletes with mature skeleton. It occurs in as many as 20% of jumping athletes with regard to bilateral tendinopathy males and females are equally affected.

Objective: To determine the effect of Russian current to reduce and pain and increase quadriceps muscle strength in jumpers knee among athletes.

Methodology: A convenient sample of 30 subjects was solicited from Saveetha medical college and hospital, Chennai. Participants were n=15 and age range 18 to 25 years. Subjects were then allocated in two groups. Group A (experimental group) in this group. Russian current were given for 20 minutes continuously 1 week. Group B (control group) in this group were given conventional physiotherapy alone.

OUT COME MEASURES: Numerical pain rating scale, VISA score

Procedure: Participants completed a questionnaire, which recorded demographic and clinical data related to patellar tendinopathy, and the NPRS and VISA-P scale during the first visit to Physiotherapy department. Each patient was fully informed of the confidentiality of their responses and the voluntary nature of their participation. Written informed consent was obtained from the participants before data collection.

Results: The data obtained was tabulated and statistically analyzed. Due to nature of outcome measures of Pain and Quadriceps strength were calculated and compare pre and post intervention, parametric statistical tests, dependent t sample test and un paired t test were used. P value and statistical significance: The two-tailed P value is less than 0.0001.By conventional criteria; this difference is considered to be extremely statistically significant.

Conclusion: Jumpers knee is an overuse injury, with repeated strain, micro-tears, as well as collagen degeneration, may occur in the tendon. This is known as patellar tendinopathy on Jumpers Knee This study concluded that Russian current was effective to reduction of pain and increased quadriceps strength in jumpers knee among athletes.

Key words: Russian current, jumpers knee

INTRODUCTION

Jumper's knee (patellar tendinopathy, patellar tendinosis, patellar tendinitis) in 1973 Blazina et al first used the term to describe an insertional tendinopathy seen in skeletally mature athletes, Jumper's knee usually affects the attachment of the patellar tendon to the inferior patellar pole. The definition was subsequently widened to include tendinopathy of the attachment of the quadriceps tendon to the superior patellar pole or tendinopathy of the attachment of the patellar tendon to the anterior tuberosity of the tibia. The term jumper's knee implies functional stress overload due to jumping. Patellar tendinopathy, also known as jumper’s knee, is a common and potentially serious condition affecting the knee joint’s patellar tendon. Beginning on the quadriceps muscle (located at the front of the thigh), the patellar tendon extends downward, attaching the rear of the patella (kneecap) and the front of the tibia (shin bone). When the quadriceps muscles contract the tendon is pulled and the leg straightens, enabling motions such as kicking, running, or walking. Jumper’s knee is common in athletes whose sports require rapid jumping or stopping from high speed, and is more common in male athletes than in women. Jumper's knee is believed to be caused by repetitive stress placed on the patellar or quadriceps tendon during jumping. It is an injury specific to athletes, particularly those participating in jumping sports such as basketball, volleyball, or high or long jumping. Jumper's knee is occasionally found in soccer players, and in rare cases, it may be seen in athletes in non-jumping sports such as weight lifting and cycling. Overtraining and playing on

hard surfaces have also been implicated as risk factors. Interestingly, the kneecap tendon experiences greater mechanical load during landing than during jumping, because of the eccentric (off center) muscle contraction of the quadriceps. Therefore, eccentric muscle action during landing, rather than concentric (symmetrical) muscle contraction during jumping, may exert the mechanical and tension loads that lead to injury. The patellar tendon moves every time the knee bends or straightens. Over time, overuse of the knee can cause tiny tears to form within the patellar tendon, which causes jumper's knee. For example, a basketball player who jumps up and down on a parquet floor every day may experience mini-traumas to the patellar tendon that eventually cause painful knee symptoms. Russian current was applied at range of medium frequencies and it was found that as the stimulating frequency increased, there was and it was greater comfort for the patient. This type of current stimulation more effective for voluntary contraction of muscle and relieve pain in jumpers knee for athletes.

Objective: To determine the effect of Russian current to reduce and pain and increase quadriceps muscle strength in jumpers knee among athletes.

METHODOLOGY:

A convenient sample of 30 subjects was solicited from Saveetha medical college and hospital, Chennai. Participants were n=15 and age range 18 to 25 years. Subjects were then allocated in two groups.

- **A** (experimental group) in this group Russian current were given for 20 minutes continuously 1 week.
- **Group B** (control group) in this group were given conventional physiotherapy alone.

SELECTION OF CRITERIA:

Inclusion criteria:

- Clinical diagnosis of patellar tendinopathy with tendinosis.
- Age group between 18 to 25
- pain symptoms at the inferior tendinopole of patella that had persisted for least 3 months or had been recurrent for at least 6 months.

EXCLUSION CRITERIA:

- other simultaneous knee injuries, such as quadriceps tendinopathy.
- total or partial tendon rupture,
- OsgoodSchlatter disease,
- inflammatory conditions, and previous surgery.
- Tumour
- Recent fracture and dislocations

OUT COME MEASURES:

Numerical Pain Rating Scale (NPRS)

- VISA (Victorian Institute of Sport Assessment Scale)

PROCEDURE:

- Participants completed a questionnaire, which recorded demographic and clinical data related to patellar tendinopathy, and the NPRS and VISA scale during the first visit to Physiotherapy department..Each patient was fully informed of the confidentiality of their responses and the voluntary nature of their participation.

Written informed consent was obtained from the participants before data collection. Patient position supine lying with supported pillow under the affected knee joint. Russian current frequency of 2500 HZ, pulse rate : 50 to 70 Hz, pulse duration 150 – 175 us for 15 minutes of treatment was given. Control group B Patient position in supine position with supported knee, Interferential therapy 1 – 100 Hz given for 15 minutes continuously one week. Both groups are assessed by using pain and disability scales. The data from both the group were analyzed and compared using statistically procedure

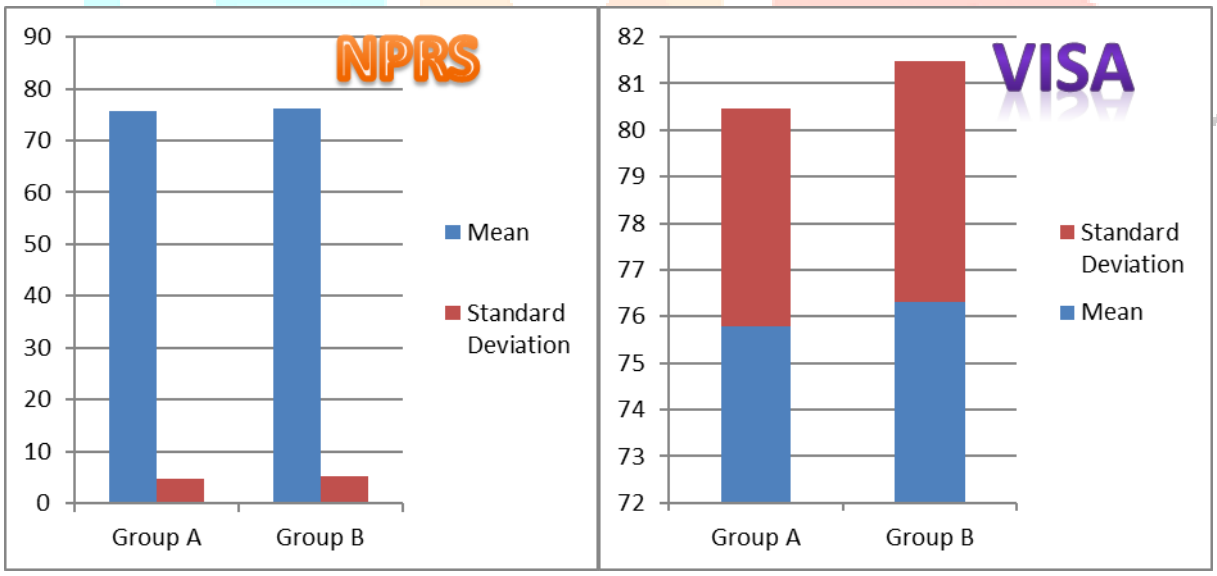
- **Duration:** 1 session per day / 10 days continuously.
- **STUDY DESIGN:** Randomized clinical trial, Experimental design.

RESULTS:

The comparative mean values, mean difference, standard deviation and unpaired t value between pre and post intervention value of pain and increased activity for jumpers knee among athletes.The data obtained was tabulated and statistically analyzed. Due to nature of outcome measures of Pain and disability were calculated and compare pre and post intervention, parametric statistical tests, dependent t sample test and un paired t test were used.

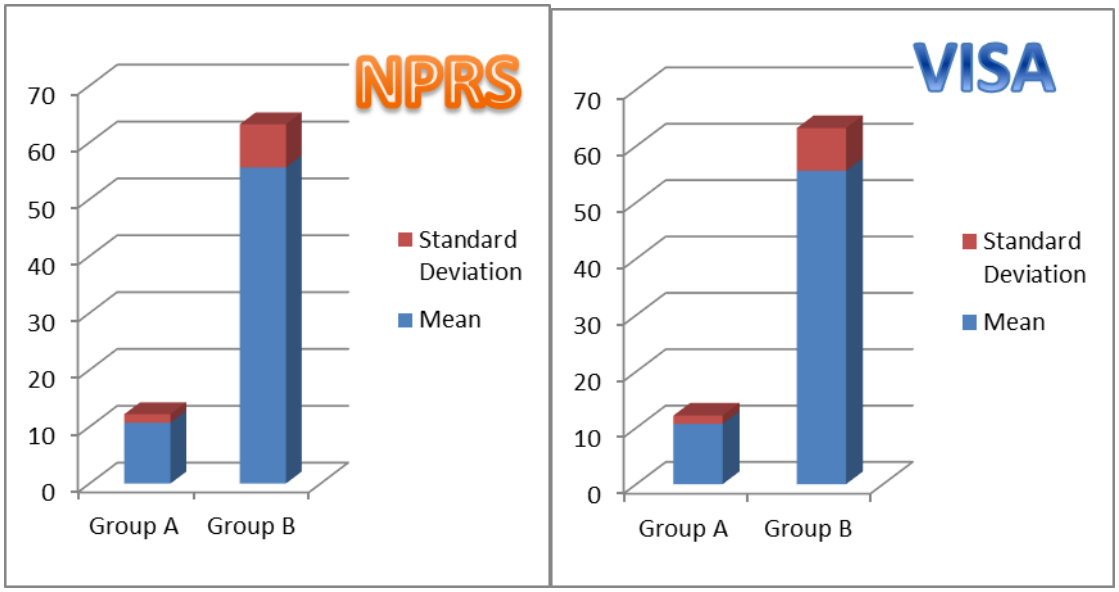
Pre Intervention:

		NPRS (Pain)		VISA(Disability)	
s.no	Statistical measurement	Group A	Group B	Group A	Group B
1.	Mean	8.4	8.2	75.8	76.3
2.	Standard Deviation	0.50	0.41	4.65	5.17



Post Intervention:

		NPRS (Pain)		VISA(Disability)	
s.no	Statistical measurement	Group A	Group B	Group A	Group B
1.	Mean	0.25	5.8	10.7	55.6
2.	Standard Deviation	0.93	1.08	1.48	7.57



Discussion:

This study was designed to know the effectiveness of Russian current in the treatment of jumpers knee by comparing with conventional physiotherapy alone while analyzing the outcome measurement, both groups show significant improvement . Statistical analysis of data in pre and post intervention of pain NPRS values shows that extremely statistically significant Group A than Group B. Many of the athletes in our study developed symptoms before the age of 20 years. Thus young athletes participating intensely in high risk sports may be at risk of suffering what has the potential to become a debilitating condition. Our data indicate that jumper's knee is prevalent in basketball and football players. The predominance of basketball players in this study may reflect the type of athletes treated at the clinic from which the population was sampled. Basketball is known to be a high risk sport for jumper's knee.' Incidence rates of over- use injuries of the knee joint, including jumper's knee, in professional basketball players have previously been reported to account for about 15% of all injuries in this population. Previous papers have reported a high incidence of jumper's knee among soccer players.

The mean NPRS score in group A pre-treatment was 8.4 ± 0.50 that reduced and VISA score 75.8 ± 4.65 at the end of the intervention, In group B, the mean NPRS score of 8.2 ± 0.41 pre-treatment reduced VISA score 75.8 ± 4.65 post treatment with mean difference of 37.9 ± 22.35. Between group comparison was statistically significant ($p < 0.001$).

Within each group a statistically significant decrease in pain, increase in functional ability and muscle strength was noted. In group A, the mean NPRS score post-treatment with mean difference of 0.25 ± 0.93 and VISA score shows that 10.7 ± 1.48 In group B, the mean NPRS score with mean difference of 5.8 ± 1.08 and VISA score. 55.6 ± 7.57 . Between group comparison of pain and disability scores revealed statistical significance in the Group A. The NPRS two-tailed P value is less than 0.0001 by conventional criteria, this difference is considered to be extremely statistically significant in Group A. The mean of Group One minus Group Two equals -5.5500 .95% confidence interval of this difference: From -6.3038 to -4.7962. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. The mean of Group One minus Group Two equals -44.9000. 95% confidence interval of this difference: From -48.9795 to -40.8205. This result concluded that experimental group A is very effective treatment for jumper's knee among athletes.

LIMITATIONS AND RECOMENDATIONS:

Small sample study with short duration of the study. Long term follow up to study the retention of strength gains was needed which was not done due to time constraint. Also, therapist blinding to the intervention groups was not done. In future research to recommend the EMG Biofeed back is added to give provision of the strengthen the muscle group.

CONCLUSION:

Jumpers knee is an overuse injury, with repeated strain, micro-tears, as well as collagen degeneration, may occur in the tendon. This is known as patellar tendinopathy or Jumpers Knee This study concluded that Russian current was effective to

reduction of pain and increased increasing sport activity and thereby improving the functional ability in jumper's knee among athletes.

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