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Comparison between effectiveness of convenient physiotherapy with therapeutic ultrasound v/s convenient physiotherapy with taping in the management of jumper's knee in the athletes: A randomize control trial

Girish L Baldha[1], R Arunachalam[2]
[1] Ph.D. Scholar, Department of physiotherapy, Madhav University, aburoad, Rajasthan, India
[2] Professor, Department of physiotherapy, Madhav University, aburoad, Rajasthan, India

Abstract
Title: Comparison between effectiveness of Convenient physiotherapy with therapeutic ultrasound Vs convenient physiotherapy with taping in the management of jumper's knee in the athletes: A randomize control trial.
Background: Jumper's knee is overused injury most commonly occurs in athletes.This is occurs due to atheling activities like jumping, running weight lifting may also leads to this condition. There are many treatments available for the jumper's knee. In this study there is comparison between two different protocol treatments. This study will provide specific effective treatment protocol. In this study there is comparison between convenient physiotherapy with therapeutic ultrasound and convenient physiotherapy with taping.
Objective: 1) To find the effectiveness of convenient physiotherapy treatment with therapeutic ultrasound and convenient physiotherapy treatment with taping. 2) To find out significant effective therapeutic intervention from given treatment
Methods: All participants are divided in to two groups Group A and Group B.Group A get convenient physiotherapy with therapeutic ultrasound and Group B will get convenient physiotherapy with taping. This treatment is given for the 4 weeks and after that using outcome measures the analysis will done. Total numbers of participants are 60.
Conclusion: Comparison between convenient physiotherapy with ultrasound and convenient physiotherapy with taping in the management of jumper's knee shows that convenient physiotherapy with taping is more effective than the convenient physiotherapy with ultrasound.

Keywords: Jumper's knee, therapeutic ultrasound, taping, convenient physiotherapy

Introduction

Tendinopathy is a common musculoskeletal disorder affecting both recreational and elite athletes potentially leading to disability lasting several months [1]. Numerous athletes who run and jump as in volleyball (44%) and basketball (32%). Similar activity occurs in soccer and dancers, who also participate in repetitive kicking, jumping, and landing. A higher prevalence is noted in sports with high impact ballistic loading of the knee extensors [2]. Patellar tendon overuse is also seen in military recruits, accounting for 15% of all of their soft tissue injuries 5 and up to 22% incidence in the overall athletic
Population [3]. Many factors, both intrinsic and extrinsic, contribute to patellar tendinopathy. Intrinsic factors such as strength imbalance, postural alignment, foo structure, reduced ankle dorsiflexion, and lack of muscle strength or flexibility may play a role. However the primary cause appears to relate to the extrinsic factor of overuse [4]. Microtrauma or "overuse" injury develops from repetitive mechanical loading of the tendon through excessive jumping and landing activity [5]. A study of 760 adolescent athletes across 16 different sports revealed a prevalence of 5.8% of athletes with patellar tendon Pain. 22.8% incidence of patellar tendon pain in a sample of 407 elite volleyball players, and Taunton *et al.*, found that 4.8% of 2000 runners had patellar tendon pain [6]. However, multiple histopathologic studies have indicated that the primary pathologic process in most painful tendons is degenerative rather than inflammatory [7]. Based on histopathology, several Authors have suggested that the term "tendinitis" be abandoned in favor of the term "tendinosis", which describes a degenerative tendon condition [8]. Other tissue research has shown the presence of pro-inflammatory chemical agents such as cyclooxygenase, growth factors, and prostaglandin in painful patellar tendons as well as macrophages and lymphocytes in chronic tendinopathy, 24 suggesting that there may be an inflammatory component in patellar tendon pain [8]. The intervention plan for patellar tendon pain should be based on an evidence-based approach which incorporates the clinical judgment of the clinician, the patient's values, and the best available evidence [9].

Statement of problem

There is no significant research on the effect of ultrasound and taping in the management of Jumper's knee.

Literature review

Marsha Rutland, Dennis O'Connell *et al,* (2010) has done study on "clinical commentary evidence–supported rehabilitation of patellar tendinopathy" conclude that A variety of rehabilitation techniques are necessary to assist an individual in returning to recreational activities following patellar tendinopathy. A combination of active rest, education, eccentric exercise, progressing the training regime by 10% weekly, and modifying activity have all been found to be effective in tendinopathy treatment [10].

Mark F. Reinking (2016) has done study on "clinical commentary current concepts in the treatment of patellar tendinopathy" conclude that Patellar tendinopathy is a common overuse condition seen among athletes, particularly those who participate in jumping sports. Effective conservative intervention includes relative rest, addressing biomechanical issues, eccentric exercise, stretching, and movement retraining. Counterforce bracing are commonly employed, but have weak or little evidence to support their use [11].

Astrid j de vries, inge van den akker-scheek (2013) has done study on "effect of patellar strap and sports tape on jumper's knee symptoms: protocol of a randomised controlled trial" Conclude that patellar tendon straps or taping can deliver short-term pain relief for athletes who continue to compete in jumping sports [12].

Dimitrios Stasinopoulos and loannis Stasinopoulos (2003) has done study on "comparison of effects of exercise programme, pulsed ultrasound and transverse friction in the treatment of chronic patellar tendinopathy" conclude that Pain from patellar tendinopathy can be reduced by an exercise programme. Transverse friction and pulsed ultrasound seem to be ineffective treatments for patellar tendinopathy [13].

David F gerrard (1998) has done study on "external knee supports in ruby union. Effectiveness of bracing and taping." Concluded that there is no significant prophylactic effect of knee taping and it will not provide any significant stability to knee joint to the players [14].

De Vries A, ZwerverJ, Diercks R, Tak I, *et al*. (2016) done study on "Effect of patellar strap and sports tape on pain in patellar tendinopathy: A randomized controlled trial" They have concluded that patellar strapping and sports taping provide support the knee joint during the playing. And it has significant reduction in pain [15].

De vries A, Van den Akker-scheek *et al*, (2013) done study on " Effect of patellar strap & sports tape on jumper's knee symptoms :Protocol randomized controlled trial." And they have concluded that the participation in there sporting activity is increased after the intervention treatment. And there is reduction in to the pain. Patellar strapping and sports taping provides support to the knee joint and relives the symptoms [16].

Maia fiho AL, Villaverde AB *et al*, (2010) done study on "comparative study of the topical application of aloe Vera gel, therapeutic ultrasound & phonophoresis on the tissue repair in collagenase include rat tendinitis." And they have conclude that therapeutic ultrasound is more effective in tissue repair in collagenase. other than that topical application of aloe Vera gel gives no significant effect in tissue repair [17].

Best TM, Moore B, Jarit P. *et al* (2015) [18] done study on "Sustained acoustic medicine: Wearable long duration ultrasonic therapy for the treatment of tendinopathy." And they have concluded that therapeutic ultrasound is effective in the management of tendinopathy. Long duration ultrasonic therapy will relieve symptoms significantly [18].

Byung-Hyun Park, Jeong-Hwan Seo *et al*, (2013) done study on "Reliability and Validity of the Korean Version VISA-P Questionnaire for Patellar Tendinopathy in Adolescent Elite Volleyball Athletes" And they have concluded that the Korean version VISA-P questionnaire was found to have satisfactory reliability and validity. Thus, it may be useful in assessing the treatment of patellar tendinopathy in Korean athletes in the future [19].

Polly e. Bijur, wendy silver, e. John Gallagher (2001) done study on "Reliability of the Visual Analog Scale for Measurement of Acute Pain." And they have concluded that Reliability of the VAS for acute pain measurement as assessed by the ICC appears to be high. Ninety percent of the pain ratings were reproducible within 9 mm. These data suggest that the VAS is significantly reliable to be used to assess acute pain [20].

Methodology

Method

- **Design:** Randomize control trial
- **Setting:** Ahmadabad
- **Sampling method:** Convenient sampling
- **Sample size:** 60

Inclusion criteria

- Patient diagnosed with the jumper's knee.
- Age between 20 – 30.
- Athletes

Exclusion criteria

- Unstable knee joint.
- Allergy to the taping material.
- Patient with the cardiopulmonary disease.
- Recent knee joint injury

Procedure

- Patients who fulfill the Inclusion criteria will included in to the study.
- After singing inform consult forms Patients are allocated in to two groups. That is
- Group: A and Group: B
- Group allocation will be done randomly and patients are blind about the allocation.
- After the allocation of the group:
- Group A will get convenient physiotherapy & Theraputic

Ultrasound

- Group B will get convenient physiotherapy & Taping (McConnell tapping)
- This intervention is given for the 4 weeks.
- Each candidate should fill the VISA scale before starting the intervention and it will be reassessed at the end of the 4 weeks.
- VAS scale is taken before and after the sporting activities.
- After collecting all the data will analysis.

Table 1

Week	Convenient physiotherapy	Stretching	Ultrasound
1	▪ Around the world eccentric ▪ lowing leg rice(4 ways) ▪ Eccentric squats on total ▪ gym/shuttle on decline board	▪ Hip flexors ▪ Quadriceps ▪ Calf stretching ▪ before and after intervention	1 MHZn Continuous 10 minutes
2	Same as above with progression	As Above	As Above
3	Same as above with progression	As Above	As Above
4	Same as above with progression	As Above	As Above

Result

Score in convenient physiotherapy with ultrasound

Table 2

	VAS before intervention	VAS after intervention	VAS before intervention	VAS after intervention
SD	1.119	0.6497	14.16	8.770

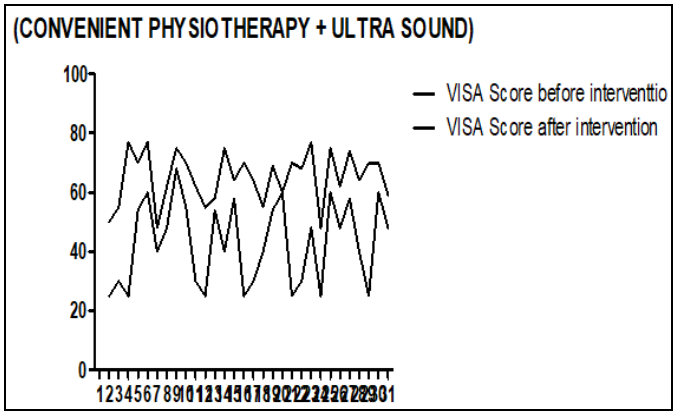

Fig 1

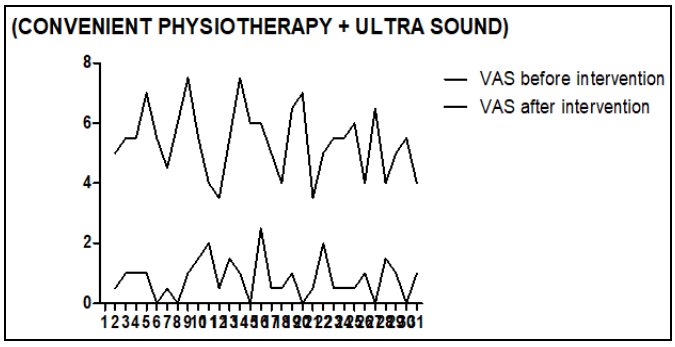

Fig 2

Table 2: Score in convenient physiotherapy with taping

	VAS before intervention	VAS after intervention	VAS before intervention	VAS after intervention
SD	1.094	0.5826	10.85	9.489

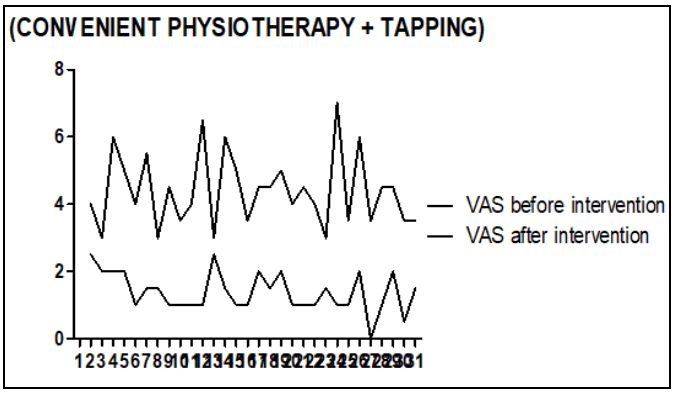

Fig 3

Comparison between convenient physiotherapy with ultrasound vs. convenient physiotherapy with taping.

Table 3

	VAS after intervention in convenient physiotherapy with ultrasound	VISA after intervention in convenient physiotherapy with ultrasound	VAS after intervention in convenient physiotherapy with taping	VISA after intervention in convenient physiotherapy with taping
SD	0.8683	8.770	10.17	9.489

Discussion

The aim of the study was to find the effectiveness between convenient physiotherapy with ultrasound and convenient physiotherapy with taping in the management of jumper's knee (patellar tendinopathy). There is no study done on effectiveness between convenient physiotherapy with ultrasound and convenient physiotherapy with taping. Marsha Rutland, Dennis O'Connell *et al*, in 2010 proposed evidence based physiotherapy management in patellar tendinopathy. They have found that a variety of rehabilitation techniques are necessary to assist an individual in returning to recreational activities following patellar tendinopathy. A combination of active rest, education, eccentric exercise, progressing the training regime by 10% weekly, and modifying activity have all been found to be effective in tendinopathy

Treatment. Mark F. Reinking in 2016 proposed clinical

Commentary current concepts in the treatment of patellar tendinopathy. They have found that effective conservative intervention includes relative rest, addressing biomechanical issues, eccentric exercise, stretching, and movement retraining. Other interventions including TFM and counterforce bracing are commonly employed, but have weak or little evidence to support their use. Astrid j de vries, inge Van den akker-scheek in 2013 proposed effect of patellar strap and sports tape on jumper's knee symptoms. They have found That patellar strapping is not give any significant effect on symptoms. Patellar strap and sports tape provides support to the knee joint during sporting activities. Dimitrios Stasinopoulos and loannis Stasinopoulos in 2004 proposed effects of exercise programmer and pulsed ultrasound and transverse friction in the treatment of chronic patellar tendinopathy. They have found that exercise program is significantly effective in the management of patellar tendinopathy. But pulse ultrasound is more effective than the transverse friction in the management chronic patellar tendinopathy. This study shows that convenient physiotherapy with ultrasound and convenient physiotherapy with taping is significantly effective in the management of jumper's knee. Comparison between convenient physiotherapy with ultrasound and convenient physiotherapy with taping in the management of jumper's knee shows that convenient physiotherapy with
taping is more effective than the convenient physiotherapy with ultrasound.

Limitations

- We need to relay on the patient response in the effect of treatment in symptoms management.
- We cannot apply the result in all population.

Future reconditions

- This study done with more sample size.
- Further study is done on the specific effect of ultrasound in the management of patellar tendinopathy.
- Further study should be done on the specific effect of Taping in the management of patellar tendinopathy.

References

1. Kettunen JA, Kvist M, Alanen E, *et al*. Long-term prognosis for jumper's knee in male athletes. Am J Sports Med. 2002; 30(5):689-92.
2. Ferretti A, Conteduca F, Camerucci E, Morelli F. Patellar tendinosis: A follow-up study of surgical treatment. J Bone Joint Surg. 2002; 84A (12): 2179-85.
3. Lian OB, Engebretsen L, Bahr R. Prevalence of jumper's knee among elite athletes from different sports.Am J Sports Med. 2005; 33(4):561-67.
4. Cook JL, Khan KM, Maffulli N, *et al*. Overuse tendinosis, not tendinitis. Part 2: applying the new approach to patellar tendinopathy. The Phys and Sportsmedicine. 2000; 28(6):1-11.
5. Almekinders LC, Temple JD. Etiology, diagnosis, and treatment of tendonitis: an analysis of the literature.Med Sci Sports Exerc. 1998; 30(8):1183-90.
6. Mark F. Reinking, current concepts in the treatment of patellar tendinopathy. The International Journal of Sports Physical Therapy. 2016; 11:6.
7. Alfredson H, Lorentzon R. Chronic tendon pain: no signs of chemical inflammation but high concentrations of the neurotransmitter glutamate. Implications for treatment? Curr Drug Targets. 2002; 3(1):43-54.
8. Khan KM, Cook JL, Kannus P, Maffulli N, Bonar SF.Time to abandon the tendinitis myth. Br Med J. 2002; 324(7338):626-627.
9. Stanish WD, Rubinovich RM, Curwin S. Eccentric exercise in chronic tendinitis Clin Orthop Relat Res. 1986; 208:65-8.
10. Marsha Rutland, Dennis O'Connell, *et al*. clinical commentary evidence– supported rehabilitation of patellar tendinopathy. North American Journal of Sports Physical Therapy. 2010; 5(3).
11. Mark F. Reinking clinical commentary current concepts in the treatment of patellar tendinopathy.The International Journal of Sports Physical Therapy, 2016.
12. Astrid J, vries DE. inge van den akker-scheek effect of patellar strap and sports tape on jumper's knee symptoms: protocol of a randomised controlled trial. Journal of Physiotherapy, 2013, 59.
13. Dimitrios Stasinopoulos and loannis Stasinopoulos comparison of effects of exercise programme, pulsed ultrasound and transverse friction in the treatment of chronic patellar tendinopathy. Clinical Rehabilitation. 2004; 18:347-352.
14. David F. gerrard external knee supports in ruby union. Effectiveness of bracing and taping. Sports Medicine, 1998.
15. De Vries A, Zwerver J, Diercks R, Tak I, van Berkel S, van Cingel R, *et al*. Effect of patellar strap and sports tape on pain in patellar tendinopathy: A randomized controlled trial. Journal medical science and sports. 2016; 26(10):1217-24. Dio:10.1111/sms.12556.
16. De vries A, Van den Akker-scheek, *et al*. Effect of patellar strap & sports tape on jumper's knee symptoms: Protocol randomized controlled trial. Journal of physiotherapy. 2013; 59(4):270. Dio: 10.1016/s1863-9553(13)70204-2.
17. Maia fiho AL, Villaverde AB, *et al*. coparative study of the topical application of aloeveragel, therapeutic ultrasound &phonophoresis on the tissue repair in collagenase include rat tendinitis. Ultrasound med Bio. 2010; 36(10):1682-90. Journal of ultrasound medbio.2010. Dio: 10:1016.
18. Best TM, Moore B, Jarit P, *et al*. Sustained acoustic medicine: Wearable long duration ultrasonic therapy for the treatment of tendinopathy. Journal of sport medicine. 2015; 43(4):366-74. Dio: 10.1080/009.
19. Byung-Hyun Park, Jeong-Hwan Seo, *et al*. Reliability and Validity of the Korean Version VISA-P Questionnaire for Patellar Tendinopathy in Adolescent Elite Volleyball Athletes. Ann Rehabil Med. 2013; 37(5):698-705.
20. Polly E, Bijur wendy silver E. John gallagher Reliability of the Visual Analog Scale for Measurement of Acute Pain. Academic emergency medicine, 2001; 8:12.