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Effect of cyriax physiotherapy on pain and functional disability in badminton players with tennis elbow

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Abstract
Background: The purpose of this study was to find the effect of cyriax physiotherapy on pain and functional disability in badminton players with tennis elbow. A sample size of 30 among which were male and female both participants included. Samples have received session for three times a week for four weeks. Pre and post intervention readings were taken using PRTEE. There was significant difference between pre and post intervention. However statistical comparison of pre and post values have showed significant improvement.
Aim: effect of cyriax physiotherapy on pain and functional disability in badminton players with tennis elbow.
Material and Method: The pre and post study had 30 professional badminton players. . Badminton players both male and female with age group of 20 to 40 yrs of age, playing as professional badminton player and having tennis elbow according to PRTEE (Patient rated tennis elbow evaluation) value were included. Whereas recent surgeries, elbow fracture, Hypermobile joint were excluded. Materials required were PRTEE (patient rated tennis elbow evaluation) scale, chair and pillow.
Result: After cyriax physiotherapy there was significant decrease in PRTEE scale on pain and functional disability.
Conclusion: On the basis of statistical analysis we conclude that intervention of cyriax physiotherapy is effective in improving value of PRTEE outcome measure. So, we conclude that cyriax physiotherapy might be effective treatment to reduce pain of tennis elbow in badminton players and improve their performance.

Keywords: badminton player, tennis elbow, cyriax physiotherapy, mill's manipulation, PRTEE (Patient rated tennis elbow evaluation)

Introduction

Badminton is one of the most widely played sports in the world. It is an individual, noncontact sport which requires combination of jumps, lunges, quick changes in direction. It refers to a sport that is played with racket in which a shuttlecock is volleyed across the net [1].

Pain over the lateral epicondyle, which is exacerbation by work or recreational activities that involves gripping action of the hand, such as holding tools, shaking hands, and lifting a kettle, usually signals that the individuals has a condition termed lateral epicondylalgia, epicondylitis, or what is more commonly known as tennis elbow . This condition was first named by Morris (1882) who called it lawn tennis arm [2].

Tennis elbow is a syndrome characterized by an insidious onset of elbow pain brought on by wrist extension with pronation or supination and aggravated by gripping [3].

The syndrome of persistent disabling pain in the elbow, predominantly in the radio humeral joint, is called as tennis elbow, lateral epicondylitis, or lateral epicondylalgia [2].

It is very common in individuals whose jobs necessitate frequent rotary motion of the forearm (e.g players and carpenters). It is commonly due to more quick, monotonous, cyclic eccentric contractions and wrist griping activities. In tennis elbow, microscopic and macroscopic lesions can be found in the Extensor Carpi Radialis Brevis (ECRB) [2].

The commonly affected arm is the dominant arm, with a prevalence of 1–3% in the general population, but the incidence rapidly increases to 19% between 30-60 years of age and seems to be more severe and long-standing in women [2].

The average period of an episode of lateral epicondylitis ranges between 6 months and 2 years. The main clinical presentation and the chief complaints tennis elbow are decreased grip strength, decreased functional activities, and increased pain, which may have significant impact on activities of daily living [2].

Althogh the sign and symptoms of tennis elbow are clear, to date no ideal treatment has emerged. A myriad of conservative treatment have been used with a same aim to reduce pain and improve function. A common intervention is cyriax physiotherapy [3].

Cyriax and cyriax claimed substantial success in treating tennis elbow with cyriax physiotherapy. Cyriax physiotherapy is a combination of DTF (deep transverse friction) followed by mill's manipulation. Patient must follow the protocol three times a week for four weeks [3].

Deep transverse friction (DTF) is also known as deep friction massage, is a specific type of connective tissue massage applied precisely to the soft tissue structures such as tendons [3].

Deep transverse friction be performed only at the exact site of the lesion, with the depth of friction tolerable to the patient. It must be applied transversely to the specific tissue involved. The therapist's fingers and patient's skin must move as a

single unit [3].

It is defined as a passive movement performed at the end of range-that is, once all the slack has been taken up-and is a minimal amplitude, high velocity thrust [5].

Mill's manipulation is the commonest technique used by physiotherapists [6]. It is convinced that manipulation should be performed directly following deep transverse friction massage so long as the patient features a complete choice of elbow extension passively [6]. If passive elbow extension is limited, the manipulative thrust will affect the elbow joint, rather than the common extensor tendon, possibly causing traumatic arthritis [7, 8].

In this study players will receive conventional exercises along with cyriax physiotherapy.

Various studies have showed the beneficial effect of cyriax on pain in patient with tennis elbow. In one study done by Ashish J Prabhakar *et al*. Supported the finding that Cyriax physiotherapy was more effective than taping technique in reducing pain and functional performance in patients with tennis elbow [4].

In another study done by Amit v. Nagrale *et al*. found that Cyriax physiotherapy provided a superior benefit in terms of pain, pain-free grip, and functional status when compared to a treatment regimen consisting of phonophoresis with supervised exercise and static stretching [5].

Material and Method

Study design- Pre-post study (quasi experimental study)

Study setting- badminton club in and around pune city.

Sample size- 30.

Target population-professional badminton players.

Outcome measure-PRTEE (Patient rated tennis elbow evaluation)

Inclusion criteria- age group 20 to 40 yr, both male and female, professional badminton players, pain on lateral side of elbow, pain on following test 1)mill's test 2)cozen's test

Exclusion criteria-previous operation on elbow, elbow fracture, Hypermobile joint.

Procedure

- Ethical clearance was taken from the Modern College of Physiotherapy.
- Consent was taken from participants.
- Samples were collected according to inclusion and exclusion criteria.
- Pre intervention value was obtained by PRTEE (patient rated tennis elbow evaluation).
- Therapist has explained all procedure to participant and then therapist will perform treatment.
- Complete treatment is 20 minutes.
- Treatment period is 3 times a week for 4 weeks.
- After last session of treatment post values was taken.

Procedure of deep transverse friction-

Position of the patient-the patient sits with elbow bent to right angle and full supination .the physiotherapist places one hand at the patient's wrist and holds the forearm in supination.

The pad of the index finger, middle finger or thumb is placed directly over the involved site, the remaining fingers should be used to provide further stabilization of the therapist hand, no lubrication is used, the patient's skin must move along with therapists fingers.

Beginning with light pressure, the therapist moves the skin over the site of the lesion back and forth in a direction perpendicular to the normal orientation of the fibres of the involved part.

The massage is given for 2 minutes than stopped for 1-2 minutes than repeated of 2 minutes, working up to 12-15minutes, followed by manipulation.

Patient must follow the protocol three times a week for four weeks [4].

Procedure of Mill's Manipulation

Position of patient-patient sits upright with the arm abducted to horizontal and so far medially rotated that the olecranon faces upwards. The physiotherapist stands behind patient, the patient forearm fully pronated and the wrist flexed.

The physiotherapist now places his left hand on olecranon, thus extending on the elbow, while the tension is strongly maintained; he suddenly forces full extension at the elbow with his left hand with a smart jerk. This is carried out once each visit, immediately after friction [4].

Result

30 professional badminton players were taken according to the inclusion and exclusion criteria to participate in this study. The entire participants treated with cyriax physiotherapy consecutive 4 weeks.

Table 1: Comparison of PRTEE score pre and post intervention of pain

	Mean	Std. Deviation	Mean differences	P value
Pre	19.96	5.44	15.1±4.08	0.001 (S)
Post	4.86	4.68		

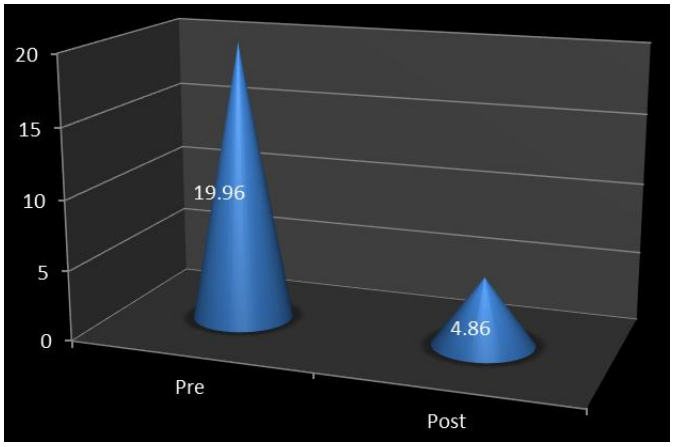

Fig 1: Comparison of Prtee Score Pre and Post Intervention of Pain

Interpretation

The intensity of pain perceived by participants was measured using PRTEE .The pre intervention values for PRTEE were19.96+5.44.The post intervention values were 4.86+4.68.The mean difference of pre and post on PRTEE score 15.1±4.08.on comparing the pre and post intervention values of PRTEE in participants with cyriax intervention, it was observed that the difference was highly significant

(p<0.001).

Table 2: Pre and post comparison of specific activities

	Mean	Std. Deviation	Mean differences	P value
Pre	21.4	5.32	17.83±3.85	0.001 (S)
Post	3.56	3.84		

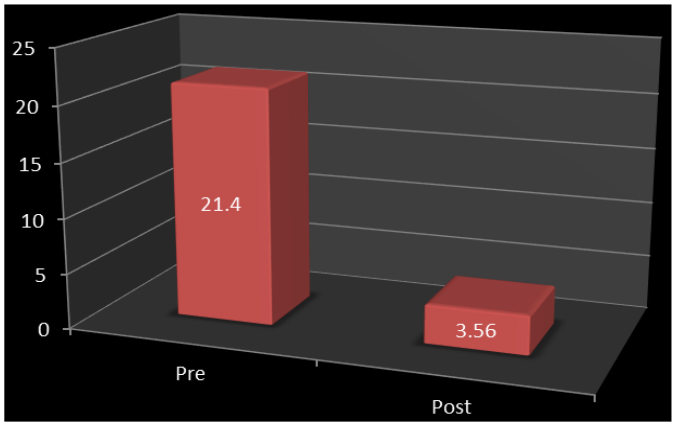

Fig 2: Comparison of Pre and Post Values of Specific Activities

Interpretation

The values of specific activities perceived by participants was measured using PRTEE .The pre intervention values for PRTEE were 21.4+5.32.The post intervention values were3.56+3.84.The mean difference of pre and post on PRTEE score17.83+3.85.on comparing the pre and post intervention values of PRTEE in participants with cyriax intervention, it was observed that the difference was highly significant (p<0.001).

Table 3: Pre and post comparison of usual activities

	Mean	Std. Deviation	Mean differences	P value
Pre	19.2	3.57	15.03±3.38	0.001 (S)
Post	4.16	2.82		

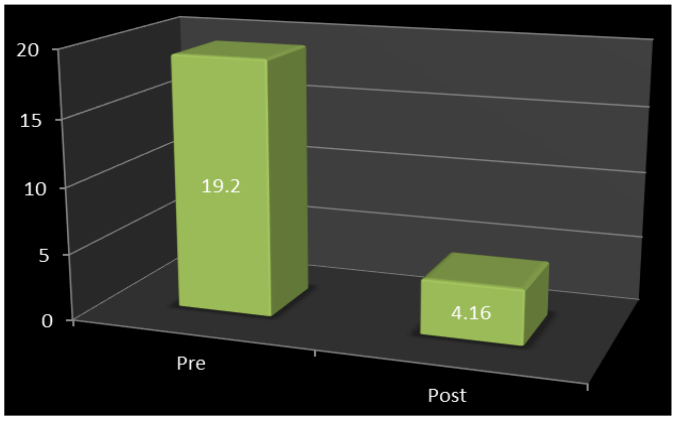

Fig 3: Comparison of Pre and Post Values of Usual Activities

Interpretation

The values of usual activities perceived by participants was measured using PRTEE .The pre intervention values for PRTEE were19.2+3.57.The post intervention values were4.16+2.82.The mean difference of pre and post on PRTEE score 15.03+3.38on comparing the pre and post intervention values of PRTEE in participants with cyriax intervention, it was observed that the difference was highly significant (p<0.001)

Discussion

The present study was done to find the effect of cyriax physiotherapy on pain and functional disability in badminton players with tennis elbow.In this study total 30 patients both males and females were included with cyriax physiotherapy.

In this study we found that cyriax physiotherapy are effective in improving pain and functional disability in badminton player with tennis elbow comparing pre and post values of PRTEE.

Pre intervention and post intervention data analysis showed a significant difference.

Mill's manipulation is performed immediately after DTF, where it is done to elongate the scared tissue by rupturing adhesions within the teno-osseous junction making the area mobile and painfree [5, 8].

It is a common clinical observation that application of DTF leads to immediate pain relief. The patient experiences numbing effect during the session and reassessment immediately after the application of DTF shows reduction in pain and increase in strength and mobility [9]. Several theories have been put forth to explain the pain relieving effect of DTF. According to Cyriax and Cyriax, DTF also leads to increased destruction of pain provoking metabolites such as Lewis's substances [10]. Another mechanism by which reduction in pain may be achieved is through diffused noxious inhibitory controls, a pain suppression mechanism that releases endogenous opiates.

Our results are in contact with Cyriax physiotherapy to a treatment regimen consisting of phonophoresis with supervised exercise and static stretching were identified. The results of this study demonstrate that both the Cyriax and phonophoresis with supervised exercise and static stretching groups experienced significant improvements in pain, pain-free grip strength, and function following 12 treatment sessions. The Cyriax physiotherapy group experienced greater outcomes for all variables in comparison to those receiving phonophoresis with supervised exercise and static stretching.

The present study was focused on finding the effect of cyriax physiotherapy improvement in tennis elbow after the intervention of deep transverse friction with mill's manipulation in particularly in professional badminton players. Previous studies were done to examine the effect of cyriax physiotherapy including phonophoresis with exercise and stretching on normal healthy people. They reported a significant increase in post intervention.

Even in the study of Comparison of Effectiveness of Supervised Exercise Program and Cyriax Physiotherapy in Patients with Tennis Elbow (Lateral Epicondylitis):A Randomized Clinical Trial Rajadurai Viswas Rejeeshkumar Ramachandran and PayalKorde Anantkumar *et al*. Both the supervised exercise program and Cyriax physiotherapy were found to be significantly effective in reduction of pain and in the improvement of functional status. The supervised exercise programme resulted in greater improvement in comparison to those who received Cyriax physiotherapy.

Conclusion

On the basis of statistical analysis we conclude that intervention of cyriax physiotherapy is effective in improving value of PRTEE outcome measure.

So, we conclude that cyriax physiotherapy might be effective treatment to reduce pain of tennis elbow in badminton players and improve there performance.

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