

A Comparative Study to Assess the Effectiveness of Open and Closed Kinetic Chain Exercises in Patello Femoral Pain Syndrome

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Abstract:

Objective: Patello- femoral knee pain is a common complaint of athletes and non-athletes of both genders. The prevalence of PFPS has been shown to be as high as one in four in the athletic population. In a study of 83 runners treated for knee complaints 57.5% were diagnosed with PFPS

Methodology: STUDY DESIGN: A controlled laboratory study, STUDY DURATION: four weeks, SETTING: YMCA College of physical education, Chennai., SAMPLE SIZE: 26 samples.

Procedure: The sports population in the YMCA College of physical education and Ullagaram cricket club was screened for patellofemoral dysfunction using the patellofemoral functional scale. The eligible 26 subjects (17 males and 9 females) were selected according to inclusion and exclusion criteria and informed consent form was obtained the subjects after explanation about PFPS, the subjects were separated into two groups namely A and B.

Conclusion: As the closed kinetic exercise had a marginal significant better results while compared to that of the open kinetic exercises, both are significant in treating PFPS

I. INTRODUCTION

Patello- femoral knee pain is a common complaint of athletes and non-athletes of both genders. The prevalence of PFPS has been shown to be as high as one in four in the athletic population. In a study of 83 runners treated for knee complaints 57.5% were diagnosed with PFPS. The female to male ratio was found to be 3:2. The most common cause of PFPS are: misalignment with maltracking of patella, chondromalacia patella, patellar tendonitis, fat pad impingement and overuse syndrome, decreased hamstrings flexibility, increased Q angle.

The anatomical and biomechanical factors producing abnormal tracking of the patella with knee motion are believed to be the principal cause for this anterior knee pain. Patellofemoral pain syndrome frequently becomes a chronic problem, forcing the patient to stop the sports and other similar activities.

There exists many numbers of the studies that gives various treatment procedures for the management of patellofemoral pain syndrome. Many published studies have shown that the conservative management, especially the quadriceps strengthening exercise i.e open kinetic chain exercise are advocated.

II. PURPOSE OF THE STUDY

To compare the effectiveness of open and closed kinetic chain exercise in patellafemoral pain syndrome.

III. OPERATIONAL DEFINITIONS

Patellofemoral Pain Syndrome: A term used to encompass a number of conditions that are associated with patellofemoral joint dysfunction, subluxating or dislocating patelle and vastus medialis oblique muscle insufficiency.

Open Kinetic Chain Exercise: A type of exercise in which the distal segment is not fixed. But it is free to move in space.

IV. METHODOLOGY

Study Design: A controlled laboratory study

Study Duration: four weeks

Study Setting: YMCA College of physical education, Chennai.

Sample Size: 26 samples

Inclusion Criteria:

- Unilateral patellafemoral pain syndrome
- Anterior knee pain
- Age group 17-35 years
- Both genders
- Pain on direct compression on patella against the femoral condyles
- Pain on resisted knee extension
- Pain with isometric quadriceps contraction against suprapatellar resistance with knee in slight flexion.

Exclusion Criteria:

- Recent fractures
- Ligament injury
- Osteoarthritis
- Limb length discrepancy
- Deformity
- Muscular deficits
- Bilateral knee pain

V. PROCEDURE

The sports population in the YMCA College of physical education and Ullagaram cricket club was screened for patellofemoral dysfunction using the patellofemoral functional scale. The eligible 26 subjects (17 males and 9 females) were selected according to inclusion and exclusion criteria and informed consent form was obtained the subjects after explanation about PFPS, the subjects were separated into two groups namely A and B.

GROUP A: Received OPEN KINETIC CHAIN exercises

GROUP B Received CLOSED KINETIC CHAIN exercises

VI. TREATMENT

Prior to the beginning of the open kinetic and closed chain exercises program, a 10 repetition maximum (10 RM) was determined.

In open kinetic chain exercise protocol, each exercise was held isometrically for account of 6 seconds with a 3 sec rest between repetitions. Each exercise in closed kinetic chain exercise protocol was performed dynamically with a 3 sec rest between repetitions.

VII. RESULTS

At the end of the analysis it can be concluded that there is a marginal significant differences that can be detected between the methods of open kinetic chain and closed chain.

VII. CONCLUSION

As the closed kinetic exercise had a marginal significant better results while compared to that of the open kinetic exercises, both are significant in treating PFPS. The traditional way of strengthening quadriceps cannot be replaced by closed kinetic exercises. Thus both open and closed kinetic chain exercises should be combined in the rehab protocol.

VIII. LIMITATIONS

- No control group was included in the study.
- The sample size of the study was small.

IX. SUGESTIONS

- A similar study can be done in progress in persons involved in a specific sports.
- A comparison between male and female can be done.
- A further study can be done to compare the long term follow up of the clinical outcomes.
- The long term effects of this comparative exercise program should be studied.

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