

## Role of Physiotherapy in the Management of Medial Collateral Ligament Injuries of Knee joints

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### Abstract

**Background:** Knee joint is one of the most important joint of our body. It has various ligaments which are frequently injured among them medial collateral ligament (MCL) is common. Surgical reconstruction of MCL injury is not free from risks. Physiotherapy might be useful in injuries of MCL. Hence the present study was planned to observe impact of physiotherapy in MCL injury cases. **Materials & Methods:** A total of 55 patients suffering from MCL injuries participated in the study. Lysholm scale was used for assessment of subjective feelings. Exercises advised were Isometric Quadriceps exercise, Active knee extension and strengthening exercises to quadriceps and hamstrings. **Results:** When control and experimental groups were compared after calculating the mean score according to lysholm scoring scale, proportion of patients in control group had symptoms in daily activities while in experimental group patients had symptoms in vigorous activities. **Conclusion:** It can be concluded that conservative management like exercises has very good effect in the management of MCL injuries of knee joint.

**Keywords:** Knee joint injury, Lysholm scale, MCL

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### Introduction

Knee joint is one of the most important joint of our body. It has various ligaments notably important are medial collateral ligament (MCL) and anterior cruciate ligament (ACL). It is a primary functional unit in walking, climbing and sitting activities. The stability of the joint is maintained by a number of factors. The cruciate ligaments maintain anteroposterior stability. The collateral ligaments maintain side to side stability.

The knee joint is the most frequently injured joint. The medial collateral ligament (MCL) can be injured with a valgus strain and external rotation of the tibia when the foot is planted on the ground. Often more than one ligament is damaged as the result of a single injury.

A diagnosis of functional disorder is used all too often to excuse our ignorance and nowhere is this better seen than in soft tissue injuries around a joint where the objective signs may be

few and easily missed. It is of course, true that the pain of a ligament injury may provoke over-reaction on the part of the patient and this can obscure the significance of the physical signs but taking a full history of the mechanism of the injury and meticulous clinical examination should prevent mistaken diagnosis.

Several studies compared the outcome of varying types of operative management against some form of conservative approach.<sup>1,2,3</sup> However, they are open to criticism as they make no attempt to detail the format or content of the physiotherapy employed. Other researchers have examined the outcome of various types of conservative management and show disagreement over the results of non-operated patients<sup>4,5,6</sup>.

In this background the present study was conducted to find out the effect of rehabilitation program on MCL injuries of the knee joint.

## Materials and Methods

It was a prospective study. It was carried out at physiotherapy department of Government Medical College and Hospital (GMCH) Nagpur during the period of 2003 to 2005. All those patients with knee problems diagnosed for MCL injury referred to physiotherapy department from surgical and orthopedic department of the institute were included in this study. Written informed consent was taken from all the 55 patients who were included in this study. They were explained the nature of injury they had sustained and the nature of treatment designed for study group.

Patients with injured knee joints were examined as per proforma using various tests to confirm the diagnosis and evaluation done as per Lysholm score on 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup> week (Lysholm scoring scale). All the patients were divided into control and experiment groups. The Lysholm score was used to rate the subjective complaints of the patients, the score consists of eight items related to knee function. Each item as well as the total score, was analyzed separately. A total score of 95- 100 points was considered normal function, a score of 84-94 points indicated symptoms in vigorous activities and score below 84 points indicated symptoms in daily activities.<sup>7,8</sup>

For control group in moderate protection phase, isometric quadriceps exercise, active knee extension and strengthening exercises to quadriceps and hamstrings were advised (Repetition- 30, 10 RM multiply 3 times per day). In minimum protection phase, along with exercises included in the moderate protection phase strengthening exercises progression were done according to patients ability like Partial squats, Lunges, Squatting, Cycling and Jogging. While in return to activity phase, continued all the above mentioned exercises in moderate and minimum protection phase and precautions to be taken while doing daily routine activities were explained<sup>9,10</sup>.

In experiment Group, patients were advised to use elastic knee support. In moderate protection phase, Multiple angle isometric, Close chain strengthening, LE flexibility exercises, Endurance training, Proprioceptive training, Stabilization exercises and Walk/ jog program at the end of this phase were advised<sup>11</sup>. In

minimum protection phase, LE flexibility continued, Advance PRE strengthening, Advance closed chain exercise, Advance endurance training, Progress running program, full speed jog, and figure eight running and cutting sprints were performed<sup>11</sup>. In Return to activity phase, Flexibility and strengthening continued and advanced as appropriate. Advance agility Advance drills, running drills and drills specific to sport or occupation were advised. Protective bracing prior to return work was also determined<sup>11</sup>.

## Results

A total of 55 patients were included in the study in which 25 were included into control and 30 into study groups. The effect on limp (5 points) was graded as under according to Lysholm scoring scale. 5- None, 3-Slight or periodic, 0-severe and constant. The effect on pain (during walking, running and jumping) was graded as under according to Lysholm scoring scale. 30 – none, 25- inconstant and slight during severe exertion, 20- marked on giving way, 15- marked during severe exertion, 10- marked on or after walking more than 2km, 5- marked on or after walking less than 2km, 0-constant and severe. The effect on swelling (during walking, running and jumping) was graded as under according to Lysholm scoring scale. 10 – none, 7- with giving way, 5- on severe exertion, 2- on ordinary exertion, 0-constant. Along with these points Lysholm scoring scale included scores related to support, stair climbing, squatting, Instability (during walking, running & Jumping) and Atrophy of thigh. When control and experimental groups were compared after calculating the mean score according to Lysholm scoring scale, proportion of patients in control group had symptoms in daily activities while in experimental group patients had symptoms in vigorous activities.

## Discussion

In the present study, conservative rehabilitation program was used and it was found that the patients had symptoms in vigorous activities only. These results are consistent with the results of the studies conducted by M Giguere (1992)<sup>12</sup> and Peterson Laprel (1997)<sup>13</sup>. Their study was about the functional treatment

of the medial collateral ligament in combined injuries of the knee. They used functional treatment method. Authors reported good results after functional treatment of the MCL in combined injuries of the knee. Their patients returned back to competitive levels. Sanderberg et al in 1987<sup>14</sup> conducted a study of operative versus non-operative treatment of recent injuries to the ligaments of the knee. Primary repair and conservative treatment was given in the study. But after the study they were not able to find any significant difference after primary repair or conservative treatment.

In the present study no pain in daily activities in experiment group was observed. They had symptoms in vigorous activities which can be explained with the fact that most of the study subjects were not involved in athletic activities and hence vigorous activities were never a part of their regime. So it can be said that patients in the present study thus have attended the pre-injury status after treatment. But the symptoms observed in vigorous activities indicate that the patients need long term continuation of rehabilitation exercise program. Moreover, they were also instructed to avoid activities which could lead to recurrence of injury which may require surgical management.

## Conclusion

From the present study it can be concluded that conservative management like exercises has very good effect in the management of MCL injuries of knee joint. Pain can be reduced substantially by using that conservative management. But symptoms appear when the patients are involved in vigorous activities which can be explained with the fact that most of the participants were non athletes and so vigorous activity was never a part of their regime. These patients need long term continuation of rehabilitation exercise program and they should also avoid vigorous activities which can lead to worsening of their injuries.

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