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## Effectiveness of MDT approach following total knee replacement: A case report

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### Abstract

A 57-year-old female, housewife by occupation had a history of left sided knee pain for the past 14 years. Patient came to orthopaedic physiotherapy department with a chief complain of pain in her left knee with an associated complain of difficulty in moving her left knee joint for 1 year. Her medical reports revealed that she is a known case of Total knee replacement post-operative one year due to knee osteoarthritis. MDT approach with a group of seven exercises were given to the patient as she was presented with directional preference at both knee flexion and extension in the end range. Her functional assessment was taken from day one to every week up to four weeks. Exercises were done by her two times a day (10 sec. hold, 5 repetitions each/day) and measurement by NPRS and KOOS score was taken on a weekly basis.

**Keywords:** Rehabilitation, total knee replacement, osteoarthritis, MDT

### Introduction

In this era, everyone heard a story of arthritis with severe pain and limitation of function due to it. As with a big hope to recover from all these symptoms and frustration due to unable to do the activities of daily living, the surgical option becomes common in the overall world <sup>[1]</sup>. Studies on the effect of specific approaches on knee function and pain such as mechanical diagnosis and therapy (MDT) were seen effective results on various conditions of the spine as well as the extremities especially the knee. In spite of predicting the exact medical diagnosis of pain and limitation of function <sup>[2]</sup>,

Previous studies done on the consideration of the mechanical factor and directional preference exercises are proven to be effective for it. But as per our knowledge, there might be no single study available by considering non-mechanical factor i.e. trauma or surgery <sup>[3]</sup>. Thus the present study aims to find out the effectiveness of McKenzie approach on the patient underwent with postoperative stiffness of knee in a patient who underwent with total knee arthroplasty before one year with the symptoms of pain and limitation of functions.

### Case report

A 57 yrs Old female Mrs. Sarla Rathi, retired teacher stays at Loni, Dist. Ahmednagar, came to the orthopedic physiotherapy department at PMT hospital, Loni. She came with the chief complain of pain in her left knee with an associated complain of difficulty in moving her left knee joint for 1 year. Her medical reports revealed that she is a known case of Total knee replacement post-operative one year due to knee osteoarthritis. She came for physiotherapy treatment by a reference of a physician.

### Patient history

After surgery, the patient was much more satisfied as she had better relief from pain and functional limitations, her knee didn't even allow her to walk before surgery. After her surgery, she followed physiotherapy protocol for four months and optimize better functional independence. But after four months of surgery, she got busy with her family problems and was unable to continue with the exercises. Now, from last 3 months, she got experiencing severe pain in her left knee which was gradual on onset, dull aching type, quantity of pain was 7 on VAS (visual analogue scale), worsen after getting up from sitting and lying, with stair climbing, walking for more than ten minutes and relieves with cry therapy application or medicines.

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**Functional assessment**

The functional assessment was taken on the first day, one week, second week, third week and fourth week of treatment.

**KOOS (knee injury osteoarthritis score)**

The KOOS is a modification of the Western Ontario and McMaster Universities Osteoarthritis Index. The KOOS comprises 41 questions distributed among 5 different subscales. The pain and function subscales have 9 and 17 items, respectively, each scored on a 5-point scale. KOOS subscales are converted to a 0-100 scale, with higher scores indicating less pain and greater function. The KOOS has good psychometric properties and is commonly used to evaluate health status in knee OA [4].

**Intervention**

McKenzie approach with a group of six exercises described in Appendix 1 was given to the patient as she has directional preference present at both knee flexion and extension at the end range. Thus, exercises were given to her and she was coming on a weekly basis for follow up. Her functional assessment was taken from day one to every week up to four weeks. Exercises were done by her two times a day (10 sec. hold, 5 repetitions each/day)

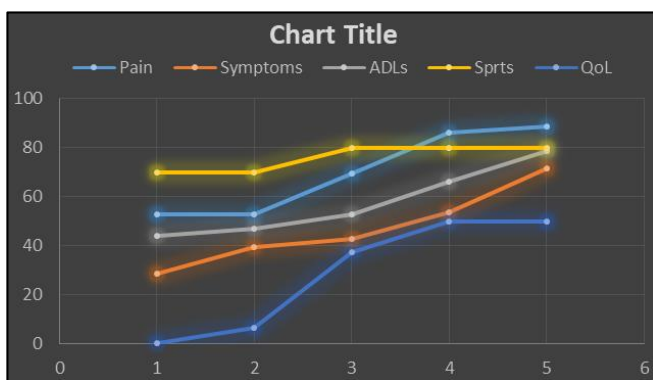
**Result and Interpretation**

**KOOS score**

Initially on day 1 of treatment, the KOOS score was less in the beginning. The result showed that there is significant improvement in the pain, symptoms, ADLs, and quality of life after 4-week management protocol of MDT approach on post TKR patient.

**Table 1:** Interpretation of KOOS score

Koos activities	1st day	1st week	2nd week	3rd week	4th week
Pain	52.78	52.78	69.44	86.11	88.89
Symptoms	28.57	39.29	42.86	53.57	71.43
ADLs	44.12	47.06	52.94	66.18	78.47
Sports/recreations	70	70	80	80	80
Quality of life	0	6.25	37.5	50	50



**Fig 1:** Graphical representation of interpretation of KOOS score

**Discussion**

The results of the study showed that a four-week's session of MDT approach self-exercise protocol may be useful in improvement of the knee pain and overall functions in patient underwent total knee replacement surgery with no any presence of other surgical complications.

The MDT approach is not to make a specific structural diagnosis, but to see if repeated movements in a specific

direction can alter baseline findings [5], as occurred in this case. The speed with which baseline findings changed, in terms of symptom response and range of movement, this patient should be classified as derangement, and the positive directional preference exercises pursued as the direction of management.

We cannot determine which anatomical structure may have been involved in the initial symptoms and mechanical disruption; however, intraarticular inclusions have the potential to become displaced within the knee joint and cause 'derangement' type pathologies, such as observed in this case report [5].

The findings of the present study suggest that this may be a fruitful direction for more analysis in patients with lower extremity problems. Since there is hardly any study with similar study design and interventions present on the effect of MDT on post TKR patient. Thus, the present case report supports that McKenzie exercises play a major role in reducing pain and significant improvement in the pain, symptoms, ADLs, and quality of life by the continuation of MDT exercise protocol from day 1 to 4 weeks.in patient underwent with TKR without any history of other surgical complications.

**Conclusion**

The results of this study suggest that McKenzie exercises play a major role in reducing pain and significant improvement in the pain, symptoms, ADLs, and quality of life in patient underwent with TKR without any history of other surgical complications

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