

# Effect of Tensor Fascia Lata Stretching in Lateral Knee Pain Post Total Knee Replacement

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**Abstract:** Post TKR (Total knee replacement) multiple causes for development of pain around knee joint-infection instability, malrotation, instability, weak extensor mechanism, soft tissue tightness, impingement. The ITB/TFL provides dynamic lateral stabilization of the patella & an internal rotator of hip. TFL/ITB complex tightness may contribute to the development of PFPS. A tight TFL through its attachment into the ITB, will cause lateral tracking of the patella, particularly at 20° of knee flexion. An over-tight ITB is not favourable, as this can cause lateral knee pain. Hence, keeping your TFL as flexible as possible, decreasing the pull it has on the ITB, will decrease your chance of lateral knee pain caused by ITB tightness. 20 post operative T.K.R., divided into 10 in each group according to criteria and received tfl stretching and conventional treatment. pre and post treatment pain & function were measured by vas & hfks-high flexion knee scale. within and between group analysis shows  $p < 0.05$ , significance in both groups for pain and function. tfl stretching exercises showed improvement in pain and physical function and useful adjunct exercise therapy in person having a lateral knee pain and prevention of itbs in post operative t.k.r.

**Keywords:** TFL, T.K.R, ITBS, PFPS

## 1. Introduction

The ITB/TFL (iliotibial band /tensor fascia lata) and gluteus maximus, provides dynamic lateral stabilization of the patella. Since the TFL muscle is a lateral stabilizer of patella and an internal rotator of hip, and TFL/ITB complex tightness may contribute to the development of PFPS (patellofemoral pain syndrome)<sup>(1)</sup>

TFL merges into your iliotibial band . ITB then inserts into just below the outside of your knee joint. When the TFL muscle is in spasm it is pulling hard on your ITB and you feel pain at the insertion point on the outside of your knee.<sup>(2)</sup>

A tight TFL through its attachment into the ITB, will cause lateral tracking of the patella, particularly at 20° of knee flexion when the band is at its shortest. An over-tight ITB is not favourable, as this can cause lateral knee pain.

Post TKR (Total knee replacement) multiple causes for development of pain around knee -joint-infection instability, malrotation of component ,patellofemoral instability, problem in extensor mechanism, soft tissue tightness ,impingement and patellar clunk syndrome.<sup>(3)</sup>

Multiple choice of treatment options are available for soft tissue dysfunctions-ice, massage, corticosteroids, stretching and bracing. Static stretch of TFL is effective in gaining of flexibility.

Multiple choice of treatments are available for tightness of TFL/ITB Muscle in runners/athletes. In post TKR Lateral knee pain is easily seen problem which can be treated with conservative orthopaedic management like local corticosteroids ,ice application and local application.

Tight of TFL/ITBS which also contribute to lateral knee pain. So the need of study is to see the effect of TFL stretching in lateral knee pain post T.K.R.

### 1.1 Aim and Objectives:

#### Aim

To see the effect of TFL stretching on lateral knee pain post TKR

#### Objectives

- To see the effect of stretching of TFL on pain
- To see the effect of stretching of TFL on knee function.
- To compare the effectiveness of TFL muscle stretching exercises and conventional treatment with conventional physiotherapy treatment.

### 1.2 Hypothesis

#### Null Hypothesis:-

There will be no significant effect of TFL stretching on lateral knee pain post TKR.

#### Experiment Hypothesis:-

There will be significant effect of TFL stretching on lateral knee pain post TKR.

## 2. Materials & Method

#### Materials

- Assessment Form
- Consent Form
- Examination Table
- Study design:-An Experimental study
- Study Setting- All the patients were referred from Orthopaedic Knee replacement surgeon.

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- Sample Size:-20,divided into 2 group according to selection criteria
- Goup-A-Conventional treatment + T.F.L. stretching
- Goup-B-Conventional treatment
- Sample design:-convenience sampling.

**Inclusion Criteria:**

- Age : 50-65 years ,both male and females
- Operated primarily with high flexion knee prosthesis by single surgeon,
- Minimal post. op. duration 6wks,
- ROM  $\geq$  0-100°flexion,
- Full active knee extension ,
- Positive ober’s test,
- Pain on lateral knee joint/lat part of thigh,
- Who receive a local injection at local site.

**Exclusion:**

- Revision &Infected T.K.R.,
- Malalignment of joint ,
- Patellar clunk syndrome,
- Patellofemoral instability ,
- Low back pain radiating upto knee joint.,
- Postural abnormalities e.g. kyphosis, scoliosis.

**Method**

- Group-A-Conventional treatment + T.F.L.stretching
- Group-B-Conventional treatment

**Group-A-**

- Conventional treatment <sup>(4,5)</sup>
- S.Q.E, Ankle-pump-15-20 repetition, twice in a day
- S.L.R.,
- Passive and active knee bending,
- Strengthening exercises of quadriceps, hamstring & abductor muscles.
- Stretching to calf, and hamstring muscles -3 repetition,
- Gait training &stair training.
- T.F.L. stretching for 30 sec hold /3 repetitions/4 times in a wk/4wk. <sup>(6)</sup>
- With the patient lying in the lateral position, support the knee and flex it to 90 degrees. Then extend and abduct the hip.
- The examiner must continue to stabilize at the hip to ensure there is no movement

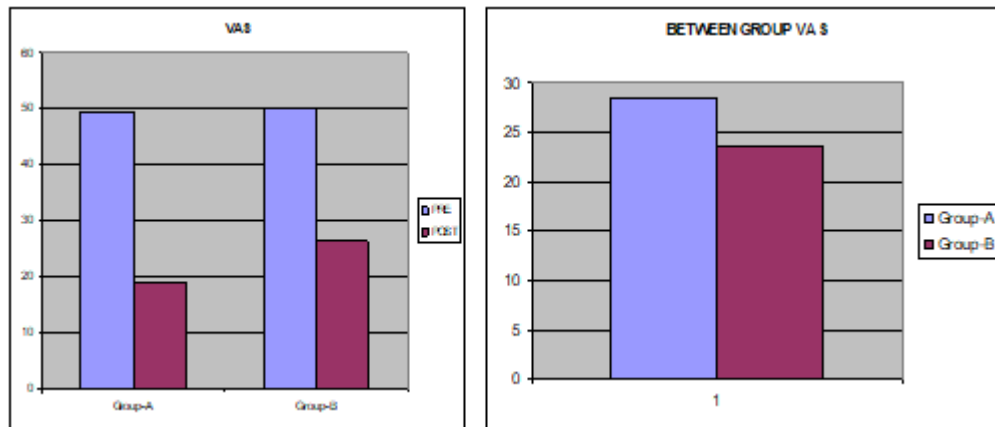
**Outcome Measures:**

Pre and post treatment pain was measured by VAS, function was assessed by HFKS-High flexion knee scale .

**3. Result**

Data analysis was done using SPSS software version 16 and Microsoft Office Excel 2007. Within group VAS and the HFKS-High flexion knee scale were analyzed by Wilcoxon Signed Ranks Test and between group Mann-Whitney Test.

Bar Diagram of VAS



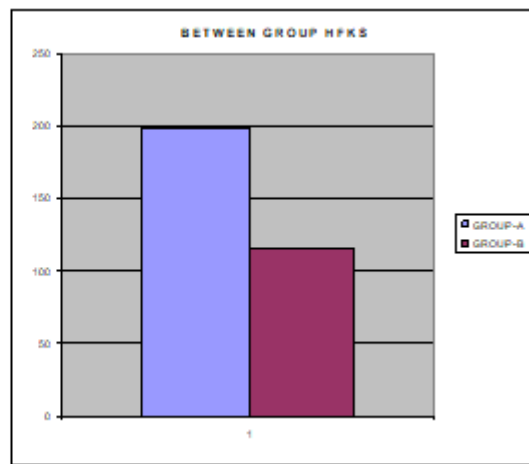
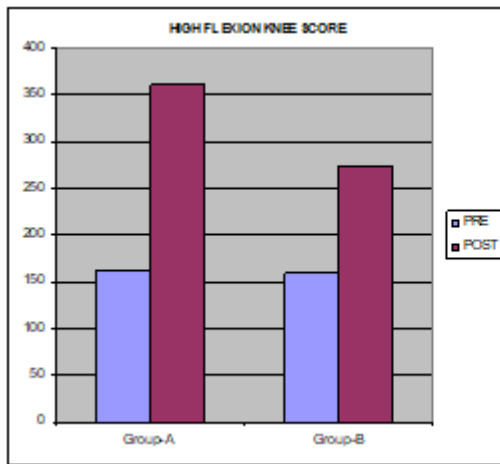
**Table-VAS**

	VAS MEAN±SD	Z-VALUE	P-VALUE
GROUP-A	4.95±1.012	2.821	<0.005
GROUP-B	5±1.081	2.814	<0.005
BETWEEN	2.6050±0.8394	1.194	>0.05

**Table –HFKS**

	HFKS MEAN±SD	Z-Value	P-Value
GROUP-A	16±0.6324	2.814	<0.005
GROUP-B	15±0.316	2.825	<0.005
BETWEEN	15.75±4.677	3.805	<0.005

Bar diagram of high flexion knee score



#### 4. Discussion

- In above mentioned statistical within group analysis for pain shows group –A and group –B significant difference. but between group analysis shows nonsignificant difference.
- Statistical within group analysis for high knee flexion knee score shows group –A and group –B significant difference and between group analysis shows significant difference.
- Thus, Null hypothesis was rejected and Alternate hypothesis holds true and it was found that there were significant effect of TFL stretching on lateral knee pain post TKR.
- Cortisone knee injections provide more targeted, rapid and powerful relief from inflammation than traditional oral anti-inflammatories - steroids are also used for knee pain relief in both group. <sup>(10)</sup>
- Static stretching increased flexibility , So it reducing tension on lateral femoral condyle and reduce a symptoms of ITBS.-Patellofemoral Disorders: An Overview by Dr. Beth Shubin Stein.
- Nizar MN, Barrett J, Katz J, Baron JN at al -Overly tight muscles and soft tissues that support the knee, including the *hamstring muscles* and the *iliotibial (IT) band* (the connective tissue that runs down the outer side of the thigh to the patella) can also lead to the condition. <sup>(8)</sup>
- Hence, keeping your TFL as flexible as possible, decreasing the pull it has on the ITB, will decrease your chance of lateral knee pain caused by ITB tightness. <sup>(9)</sup>
- TFL affects either the femur or the lower leg. ITB receives part of insertion of the TFL and gluteus maximus muscle, in essence creating its role as a force transmitter from hip to knee.
- A recent study in clinical journal of sports medicine by cookingham CL et al-active stretching and strengthening is important factor in ITBS/TFL pain.

#### 5. Limitations

- Long term follow up was not conducted
- Small sample size

#### 6. Future Recommendation

- 1) I can conduct this study by additional effect of electromodality along with stretching
- 2) I can conduct this study with comparing different stretching techniques.

#### 7. Conclusion

TFL stretching exercises showed improvement in pain and physical function and useful adjunct exercise therapy in person having a lateral knee pain and prevention of ITBS in post operative T.K.R.

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