Tibial Plateau or Distal Femoral Fracture
Rehab Protocol
Edited: May, 2015
<table>
<thead>
<tr>
<th>TIMELINE</th>
<th>GOALS</th>
<th>EXERCISES/METHODS</th>
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<tbody>
<tr>
<td>Early Post-operative-Day 1-week 4</td>
<td>Control swelling, inflammation Obtain terminal knee extension/ hyperextension Obtain SLR without lag Initiate regaining knee flexion</td>
<td>Limit hamstring strengthening and gastrocsoleus strengthening to therabands only. <strong>Extension:</strong> Heel prop, calf (with ext) and GENTLE hamstring and gastroc stretches, Quad sets (electrical stimulation prn), 3 way SLR with brace, superior patellar mobs <strong>Flexion:</strong> inferior patellar mobs, passive knee flexion, wall slides, seated knee flexion stretches passively</td>
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<tr>
<td>TTWB Brace 0-90</td>
<td></td>
<td>Scar mobilization once incision is healed.</td>
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Milestones to reach by end of week 4:
- Full knee extension
- SLR without quad lag
- 90 degrees of knee flexion

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<tr>
<th>Weeks 4-6</th>
<th>Quad control in open kinetic chain</th>
<th>Continue as above. Initiate biking with minimal resistance, aquatic program once incision has healed, core stability</th>
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<td><strong>Weight Bearing:</strong> Toe touch</td>
<td><strong>Knee flexion:</strong> Plus 10 degrees per week until full ROM</td>
<td><strong>Weight Bearing:</strong> Initiate partial weight bearing by week 7 and increase 25% every 3 days. Able to initiate one crutch gait training by week 8. <strong>Brace:</strong> Remove for sleep by 8 weeks. Wean crutches and full weight bearing by week 8-10.</td>
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<th>Weeks 6-10</th>
<th>Begin to normalize gait weeks 6-8 Knee flexion 100 degrees to full ROM Normalized gait Quad control with functional movements including step up/down, squat, partial lunge (not to exceed 60 degrees)</th>
<th>Closed chain quad strengthening (squats, SAQs, TKEs, step ups and downs) with brace from 0 to 30 degrees. Gait drills with brace Sit and reach Hip and core strengthening Upper body circuit training, Stair master, slide board, Stationary bike with resistance</th>
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Milestones to reach by end of week 10:
- Pain free initiation of weight bearing
- Full knee extension ROM
- Flexion greater than 110°
- Min to no swelling

**BRACING**
- Immobilizer for 2 weeks
- IROM 0-90 for 4 weeks

**ROM RESTRICTIONS**
- 0-90 for 4 weeks

**WEIGHT BEARING**
- TTWB for 6 weeks Progression should only occur after 6 week xrays confirm bone healing
  - 25-50% Week 7
  - 50-75% Week 8
  - 100% Week 9+

**OTHER RESTRICTIONS AND KEY CONSIDERATIONS**
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| Weeks 10-16 | Normalize gait  
Single leg stance balance | Balance drills with brace  
Lunges, static squat holds with RNT/dynamic,  
Single leg stance static and dynamic balance  
Cord training, drills, ladder  
Core training  
Elliptical  
Alter G |
| Weeks 16-24 | Good dynamic neuromuscular control and no pain with multiplanar activities  
Initiation of impact activities when 65% strength is reached compared to uninvolved | Single leg squat,  
single leg deadlift,  
Bosu squats  
Running prep: double line hops, single line hops, straight up/down hops, ½ speed running on treadmill with 1:1 run/rest ratio,  
trampoline bounding,  
shuttle jumps,  
slideboard/fitter,  
plyometric progression,  
single plane sport specific training |
| See footnote for complicated fracture | | |
| Weeks 24+ | Sports specific progression and training  
Control when landing from sagittal, frontal, and transverse planes | Initiate return to running program  
Movement control exercises  
Specific balance and proprioceptive drills  
Return to sport testing |

*Hold initiation of Week 16-24 progression until Week 20 for complicated/slow healing fractures.*
# Return to Play Criteria

**Pre-RTP Criteria before testing can commence**

- Full AROM
- Resolution of pain
- No/Trace joint effusion present
- MMT grossly 5/5 strength in LE
- LEFS: ≥ 75/80 (95%)
- Lysholm Knee Rating: ≥ 95%
- 1RM SL Leg Press ≥ 90% contralateral side
- 1RM SL Hamstring Curl ≥ 90% contralateral side

**Lower Limb Symmetry Index (LSI):**

\[ \text{LSI} \% = \frac{\text{mean score of 3 trials on injured limb}}{\text{mean score of 3 trials on uninjured limb}} \times 100 \]

- SL Hop: ≥ 90%
- SL Triple Hop: ≥ 90%
- SL 6 meter Timed Hop: ≥ 90%
- SL Cross-over Hop: ≥ 90%
- Overall Score: ≥ 90%

**Vail Sports Tests:**

- Passing Score ≥ 46/54 (85%)

**Tuck Jump Assessment (TJA):**

- Perfect score on the TJA or improvement of 20 percentage points from the initial score

**Single Leg Squat: No Errors in Form (Errors listed right):**

- Arm strategy: removal of hand off the waist
- Trunk alignment: leaning in any direction
- Pelvis plane: loss of horizontal plane
- Knee position: tibial tuberosity medial to second toe or tibial tuberosity medial to medial border of foot
- Steady stance: subject stepped down on non-tested limb, or foot wavered from side-to-side

**Modified Star Balance Excursion Test (Y Balance Test):**

\[ \text{SEBT} \% = \left( \frac{\text{mean score of 3 trials in anterior distance} + \text{mean score of 3 trials in posterior lateral distance} + \text{mean score of 3 trials in posterior medial distance}}{\text{leg length of stance limb}} \right) \times 100. \text{ Passing Score} \geq 94\% \]

**Core Testing: (ongoing research):** ≥ 90% of all standard timed tests:

- Right Single Leg Bridge: Men 95 seconds; Females 75 seconds
- Left Single Leg Bridge: Men 99 seconds; Females 78 seconds
- Flexor Endurance Test: Men 136 seconds; Females 134 seconds
- Extensor Endurance Test: Males 160 seconds; Females 185 seconds
- Lower Abdominal Muscle Testing: Males 5/5; Females ≥ 4/5

(75°=3/5, 60°=3+/5, 45°=4-/5, 30°=4/5, 15°=4+/5, 0°=5/5)

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## RTP Instructions

RTP evaluation can progress throughout treatment as appropriate

### Pre-RTP

Complete all testing in Pre-RTP section. Only continue on when able to pass

### Session 1

- LSI, Vail Sports, TJA

### Session 2

- Single leg squat, Y Balance, Core Testing