Rehabilitation Practice Guidelines for:
Medial Patellofemoral Ligament (MPFL) Reconstruction and Proximal Realignment

Assumptions: Soft tissue healing (4-6 weeks) for VMO advancement (proximal realignment) to graft
Tendon to bone healing (12 weeks) graft to bony attachments

Primary surgery: Reconstruction of the Medial Patellofemoral Ligament using semitendinosus autograft, with VMO advancement and limited lateral release

Secondary surgeries: 1) Distal Realignment
2) Patellar/ Trochlear Chondroplasty

Precautions:
- WBAT with Immobilizer locked in full extension for 4 weeks, progressing to functional brace
- No NMES over the VMO (Protect suture repair if VMO Advancement)
- Perform protected electrical stimulation program at 30 degrees until (patella engaged and taped medially)
- No MVIC test until 12 weeks, No BURST test until 16 weeks (protect graft to bone healing & VMO advancement)

Considerations:
- Hinged knee brace can be used for sitting but is locked during ambulation if lag with SLR exists.
- During MVICs and Burst testing, patella taped or braced medially

Expected # of visits: 24-36

If Pre-Operative PT: Education on post-operative Home exercise program (HEP), physician precautions, and expected return to ADLs, work, and play.

<table>
<thead>
<tr>
<th>Week 1-2</th>
<th>Treatment</th>
<th>Milestones</th>
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</thead>
<tbody>
<tr>
<td>Early Post-op Phase</td>
<td>Initiate physician specific HEP for ROM</td>
<td>Active quadriceps contraction with superior patellar glide expect a quad lag</td>
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<tr>
<td>No restrictions on passive knee ROM</td>
<td>Effusion management: Compression, elevation, AROM ankle pumps, Cryocuff</td>
<td>Full passive knee extension, flexion to 90 degrees</td>
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<tr>
<td>1-3x/week</td>
<td>Regain active quadriceps activation: Quad Sets 100x daily. SLR in immobilizer with quad set</td>
<td>WBAT in immobilizer at 0 degrees (use crutches until safe without, while observing effusion)</td>
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</tbody>
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TOTAL VISITS 1 -3
<table>
<thead>
<tr>
<th>Weeks 3-4</th>
<th>Treatment</th>
<th>Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Post-op Rehabilitation</td>
<td><strong>Progress Flexion AAROM</strong>&lt;br&gt;Maintain/ Improve patellar mobility (clinic and HEP avoiding lateral glide)</td>
<td>SLR without quad lag by week 2&lt;br&gt;PROM knee flexion to 120 degrees&lt;br&gt;Effusion: 1+ or less, near symmetrical Extracapsular edema&lt;br&gt;Normalized gait out of immobilizer with active superior glide by week 4</td>
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<tr>
<td>2-3x/week</td>
<td><strong>Emphasize Extension Strengthening</strong>&lt;br&gt;Multi directional SLR without lag with ankle cuff weights</td>
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<tr>
<td><strong>Ankle and Hip PREs in Open Chain</strong>&lt;br&gt;Side-lying Hip ABD, Clam shell, Hip extension, Ankle Theraband exercises</td>
<td><strong>Prevent lateral scarring</strong>&lt;br&gt;Include ITB stretching in clinic and home, medial tilt patella mobilizations</td>
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<tr>
<td><strong>Modalities</strong> for pain control PRN, Desensitization when healed</td>
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| TOTAL VISITS | 8-12 |

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<thead>
<tr>
<th>Weeks 5-6</th>
<th>Treatment</th>
<th>Milestone</th>
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<tr>
<td>Intermediate Strengthening Phase</td>
<td><strong>Continue to progress ROM</strong>&lt;br&gt;<strong>Quadriceps Strengthening:</strong>&lt;br&gt;OKC: SAQ 0-30, SLR&lt;br&gt;CKC: step ups, leg press through controlled range 0-30 degrees</td>
<td>Full PROM Extension&lt;br&gt;PROM knee flexion to within 10 degrees of contralateral&lt;br&gt;Effusion/ Edema resolving</td>
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<tr>
<td>2-3x/week</td>
<td><strong>Ambulate in immobilizer until SLR (-) Lag</strong>&lt;br&gt;Initiate gait training outside immobilizer</td>
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<tr>
<td><strong>TOTAL VISITS</strong></td>
<td>12-18</td>
<td></td>
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<tr>
<th>Weeks 7-8</th>
<th>Treatment</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>Progressive Stability Phase</td>
<td><strong>Progress Quadriceps strengthening ROM</strong> from 0-60 degrees in open and closed chain, with good tibiofemoral alignment.&lt;br&gt;Begin unilateral <strong>balance</strong> exercise progression</td>
<td>Normal patellar mobility&lt;br&gt;KOS&gt; 60%</td>
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<tr>
<td>2-3x/week</td>
<td><strong>Electrical Stimulation Program:</strong>&lt;br&gt;Each visit progress Kin Com position by 5 degrees during NMES towards 60 degrees</td>
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<tr>
<td><strong>TOTAL VISITS</strong></td>
<td>14-24</td>
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### Weeks 9-12

**Functional Progression Phase**

**Treatment**
- **Progress opening chain strengthening** at appropriate intensity through progressively increased ROM
- Initiate hamstring strengthening PRN at 12 weeks (if graft site)
- **Progress proprioceptive exercises:** (Multi directional contralateral LE reaching, mini lunges, rocker board balance).
- MVIC at 12 weeks at 60 degrees with patella taped medially
- Transfer to fitness facility at 12 weeks if milestones met

**Milestone**
- Full Pain free PROM maintained
- MVIC > 80% **at 12 weeks**
- KOS/ GRS > 80%
- Effusion less than 1+

### Weeks 13-16

**1X WEEKLY + Fitness Facility**

Return to activity phase

**Treatment**
- Recheck strength via BURST test at 16 weeks at 60 degrees with patella taped medially
- Running progression at week 16
- **Initiate sports specific plyometric training, Agilities at 20 weeks with monthly follow ups for HEP and RTS progression.**
- **Monthly rechecks indicated for strength testing**

**Milestone**
- KOS/ GRS > 90%
- Effusion/ Edema Symmetrical
- QI >80% **at 16 weeks** via Burst Testing
- Burst and Hop Test **at 20 weeks** if impairments resolved and strength values met

### Surgery Modified Rehabilitation:

1. **Addition of distal realignment**
   - a. MVIC at 16 weeks, Burst at 20 weeks with patella taped at 60 degrees
   - b. Consider recommended milestones of Proximal-Distal Realignment
2. **Chondroplasty**
   - a. MVICs conducted at position sparring soft tissue repair and pain by compression of patella

### Considerations:

1. No burst until at least 16 weeks post-op.
2. Hop Testing at 20 weeks.
3. Full return to ADL's expected in 5-6 months.
4. Running progression can be initiated when quadriceps index ≥ 80%, ROM is full and patient is ≥ to 16 weeks post-op.
5. Graded Return to sport activities with QI> 90%, KOS >90%, Hop Tests > 90%, full and pain free ROM/ ADLs after 9 months and MD approval.
References:


12/13