Guidelines for RTS after lateral patella dislocation of PF Surgery *

*Initiation after surgery follows temporal healing of involved structures.

• No complaints of pain or knee instability

• Full knee ROM / no new effusion

• Test for CORE strength and endurance

• Test for dynamic balance activities (e.g., SEBT)

• LSI > 85% on hop tests (+) pivoting/jumping sports

• Adequate performance in physical therapy with sport specific drills (simulate the intensity and body movement patterns of the athlete’s given sport/activity)

• Athlete demonstrates a psychological readiness


Therapeutic treatment progression for Safe Return to Sport

Functional progression to higher level activities involve the following key components:

• Quadriceps strength > 85% LSI with quadriceps strength measures
  ~ Dynamometry
  ~ Circumferential thigh girth
~ Single leg squat/step/hop activities

- Restoration of normal gait pattern and speed
  - attention to sagittal plane knee control with loading response and frontal plane hip control

- Core stability progressions
  - Bridging exercises, commonly used to strengthen CORE musculature, with advancing levels of difficulty. Core exercise may be performed either by repetitions or by holding the bridge position to the onset of fatigue.

- Postural limb stability / proprioceptive control

- Squat re-training progression (per control and symptoms)
  - Static to dynamic
  - 2 → 1 leg
  - Increasing squat depth

- Increasing exercise intensity (per control and symptoms):
  - Increased external load (strength, power)
  - Increased speed of movement (agility, power)
  - Increased duration/repetitions (endurance)
  - Increased task complexity and directional challenge (coordination)

- Sport-specific training

The advanced training phase involves examination of complex body movement patterns (Monson, et al., 2012). This helps to reduce the risk of re-injury and minimize the chance of future pain in that joint. This phase is often left off or abbreviated within structured therapy settings. A foundation of basic function, with primary impairments
resolved, is necessary for mastery of more complex movement patterns. It is critical that patients receive instruction on normal and abnormal kinematics, and ideally learn to detect and correct their own faulty movement patterns when present (i.e., dynamic valgus knee with partial squatting). Specific attention must be paid to not only the movement patterns and postures demonstrated with specific therapy exercises, but also the patterns of muscular activation used to achieve the task. This is critical, as PF pain patients exhibit dysfunctional gluteal muscle activation and/or recruitment (Brindle et al. 2003; Cowan et al. 2009; Souza et al. 2009). The degree to which these observations are true for the patella instability group has not been studied.

Although the use of functional tests is advocated in return to play after in PF injury and surgery, their use has been studied most as a testing tool after anterior cruciate ligament reconstruction (Fitzgerald et al. 2000; Thomeé et al. 2012). The applicability of functional testing as an assessment for return to sport after patellofemoral problems is less studied.

**Physical performance testing elements.**

<table>
<thead>
<tr>
<th>Domain Tested</th>
<th>Test Activity</th>
<th>Recorded Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropometric Data</td>
<td>Knee ROM</td>
<td>Degrees of motion</td>
</tr>
<tr>
<td></td>
<td>Joint line circumference</td>
<td>Centimeters around the joint line</td>
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<tr>
<td>Core Stability</td>
<td>Thigh circumference</td>
<td>Centimeters around the thigh (15 cm proximal to suprapatellar border)</td>
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<tr>
<td>Prone plank timed hold</td>
<td>Seconds held, maintaining ideal alignment (out of maximum of 60 seconds)</td>
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</tr>
<tr>
<td>Side plank timed hold</td>
<td>Seconds held, maintaining ideal alignment (out of maximum of 60 seconds)</td>
<td></td>
</tr>
<tr>
<td>Single leg bridge</td>
<td>Maximum repetitions to muscle fatigue</td>
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<tr>
<td>repetitons to fatigue</td>
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<tr>
<td>Balance</td>
<td>Single limb balance with eyes closed</td>
<td>Seconds held (out of maximum of 60 seconds)</td>
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<tr>
<td>Single limb stand and reach</td>
<td>Centimeters reached with opposite arm of stance limb</td>
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<tr>
<td>Star excursion balance test</td>
<td>Centimeters reached with opposite toe from stance limb</td>
<td></td>
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<tr>
<td>Lower Extremity Muscle Strength</td>
<td>Single limb maximum depth squat</td>
<td>Maximum knee flexion angle reached at depth of squat</td>
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<tr>
<td>Retro step-up/down</td>
<td>Maximum step height successfully completed (inches)</td>
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<tr>
<td>Lower Extremity Muscle Endurance</td>
<td>2 minute single leg repeated squat test</td>
<td>Maximum number of squats completed to 60° knee flexion at 60 bpm tempo x 2 minutes, preserving ideal trunk and limb alignment (max value = 60 squats)</td>
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<tr>
<td>Lower Extremity</td>
<td>Power</td>
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<td>----------------</td>
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<tr>
<td>Single limb hop for distance</td>
<td>Maximum distance hopped in centimeters/meters</td>
<td></td>
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<tr>
<td>6 meter timed hop</td>
<td>Maximum speed recorded in seconds</td>
<td></td>
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<tr>
<td>Triple cross-over hop for distance</td>
<td>Maximum distance hopped in centimeters/meters</td>
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</tbody>
</table>

**References**


