

## MPFL Reconstruction with TTO Protocol

	<b>Phase I: Weeks 0-2</b>	<b>Phase II: Weeks 3-6</b>	<b>Phase III: Weeks 7-8</b>
Weight-Bearing and Immobilization	<ul style="list-style-type: none"> <li>• Heel-touch weight bearing with crutches and brace locked in full extension</li> <li>• Brace 0° - 45° at all times other than for hygiene</li> </ul>	<ul style="list-style-type: none"> <li>• Heel-touch weight bearing with crutches and brace locked in full extension</li> <li>• Brace 0° - 90° during day but may be removed at night for sleeping</li> </ul>	<ul style="list-style-type: none"> <li>• Wean crutches and advance weight bearing 25-50% per week to full weight by 8 weeks</li> <li>• Discontinue brace when excellent quadriceps strength and control, no extension lag, and normalized gait pattern</li> </ul>
Aerobic	<ul style="list-style-type: none"> <li>• None</li> </ul>		<ul style="list-style-type: none"> <li>• Stationary bike (low resistance, elevated seat height initially, and normalize height as ROM allows)</li> </ul>
Range of Motion (ROM) and Strengthening	<ul style="list-style-type: none"> <li>• No active knee extension <ul style="list-style-type: none"> <li>▸ Passive extension only from 0° - 45° in brace</li> <li>▸ May do active knee flexion</li> </ul> </li> <li>• Heel slides</li> <li>• Patellar mobilization</li> <li>• Ankle pumps</li> <li>• Quadriceps sets</li> </ul>	<ul style="list-style-type: none"> <li>• Continue Phase I exercises</li> <li>• No active knee extension <ul style="list-style-type: none"> <li>▸ Passive extension only from 0° - 90° in brace</li> <li>▸ May do active knee flexion</li> </ul> </li> <li>• Straight leg raise with brace locked in full extension</li> <li>• Focus on regaining full extension</li> <li>• Begin floor-based core, hip, pelvic, and gluteal exercises</li> <li>• Advanced quadriceps sets and patellar mobilization</li> </ul>	<ul style="list-style-type: none"> <li>• Continue Phase II exercises</li> <li>• Advance PROM → AAROM → AROM with goal of full ROM by 8 weeks</li> <li>• Advance straight leg raises</li> <li>• Advance core, hip, pelvic, and gluteal exercises</li> <li>• Begin closed-chain quadriceps exercises</li> <li>• Begin balance and proprioception exercises</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Modalities as needed to reduce pain and swelling and to improve muscle recruitment</li> <li>• Home Exercise Program (HEP) guided by Physical Therapist</li> </ul>		
Goals	<ul style="list-style-type: none"> <li>• Pain control</li> <li>• Swelling control</li> <li>• Protect tissue healing</li> <li>• Minimize joint stiffness</li> </ul>	<ul style="list-style-type: none"> <li>• Pain control</li> <li>• Swelling control</li> <li>• Protect tissue healing</li> <li>• Advance ROM</li> </ul>	<ul style="list-style-type: none"> <li>• Full ROM</li> <li>• Normalize gait pattern</li> <li>• Begin balance and proprioception</li> </ul>

	<b>Phase IV: Weeks 9-16</b>	<b>Phase V: Months 4+</b>
Weight-Bearing and Immobilization	<ul style="list-style-type: none"> <li>• WBAT</li> <li>• No knee brace</li> </ul>	
Aerobic	<ul style="list-style-type: none"> <li>• Advance stationary bike after week 12</li> <li>• May begin swimming and elliptical machine at 14 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• Begin walk-jog-run progression</li> <li>• Progress impact activities (start) with pool or Alter-G if available)</li> </ul>
Range of Motion (ROM) and Strengthening	<ul style="list-style-type: none"> <li>• Continue Phase III exercises</li> <li>• Progress flexibility and strengthening</li> <li>• Progress closed chain exercises</li> <li>• Progress functional balance exercises</li> <li>• Progress core, hip, pelvic, and gluteal program</li> </ul>	<ul style="list-style-type: none"> <li>• Continue Phase IV exercises</li> <li>• Progress flexibility and strengthening</li> <li>• Maximize single-leg dynamic and static balance exercises</li> <li>• Progress core, hip, pelvic, and gluteal program</li> <li>• Progress from closed chain to open chain exercises as tolerated if pain-free</li> <li>• Transition to home exercises program</li> <li>• Work toward passing leg press test and single leg hop test</li> <li>• Advance to agility, plyometric, and sport-specific programs after passing above tests</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Modalities as needed to reduce pain and swelling and to improve muscle recruitment</li> <li>• Home Exercise Program (HEP) guided by Physical Therapist</li> </ul>	
Goals	<ul style="list-style-type: none"> <li>• Progress flexibility, strengthening, closed chain exercises, balance, proprioception, and core/hip program</li> </ul>	<ul style="list-style-type: none"> <li>• Progress strengthening and balance</li> <li>• Work toward passing leg press and single leg hop tests</li> <li>• Progress to home exercises program</li> <li>• Progress dynamic/sport-related activity as noted above</li> </ul>