

# **Rehabilitation Protocol for MPFL Reconstruction**

This protocol is intended as a guide. It is time based, dependent on tissue healing, as well as criterion based. Specific interventions are based on the needs of the individual and examination findings and clinical decision making. The timeframes for expected outcomes contained within this guideline may vary on a surgeon's preference, additional procedures performed, and all complications. The interventions included within this protocol are not intended to be an inclusive list. Therapeutic interventions are included and modified based on the progress of the patient and under the discretion of the clinician.



## Phase 1: Immediate post-op ( 0-2 weeks)

Rehab Goals	<ul style="list-style-type: none"> <li>• Protect surgical site</li> <li>• Reduce swelling, minimise pain</li> <li>• Restore full extension, gradually improve flexion &gt;90 deg</li> <li>• Minimize arthogenic muscle inhibition, re-establish quads control, regain full active extension</li> <li>• Keep knee straight when lying down. Do not rest with a towel under the knee</li> </ul>
Weight Bearing	<p>Walking:</p> <ul style="list-style-type: none"> <li>• Initially brace locked partial weight bearing note to one week continuing to weight bearing as tolerated with crutches as per consultant recommendation</li> <li>• May start walking without crutches as long as there's no increased pain effusion and proper gait</li> <li>• When climbing stairs, make sure you were leading with the non surgical side when going up the stairs, make sure you are leading with the crutch is in the surgical side when going downstairs</li> </ul>
Interventions	<p>Swelling management</p> <ul style="list-style-type: none"> <li>• Ice compression elevation</li> <li>• Retrograde massage</li> <li>• Ankle pumps</li> </ul> <p>Range of Motion</p> <ul style="list-style-type: none"> <li>• Passive range of movement</li> <li>• Heel slides with a towel</li> <li>• Low intensity long duration extensive Stretches such as prone hang heel prop</li> <li>• Seated hamstring and calf stretches</li> </ul> <p>Strengthening</p> <ul style="list-style-type: none"> <li>• Calf raises</li> <li>• Quad sets</li> <li>• Straight leg raise</li> <li>• Hip abduction</li> <li>• Standing hamstring curl</li> </ul>
Criteria to progression	<ul style="list-style-type: none"> <li>• Knee extension full range to 0°</li> <li>• Quad contraction with superior Patella glide and full active extension</li> <li>• Able to perform straight leg raise without lag</li> </ul>

## Phase II: Intermediate post op (3-6 weeks)

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Continue to protect surgical site</li> <li>• Maintain full extension, restore full flexion</li> <li>• Normalize gait</li> <li>• education</li> </ul>
Weight Bearing	<i>Walking</i> <ul style="list-style-type: none"> <li>• WBAT</li> <li>• ( if used) discontinue brace at 6 weeks when gait is normalized</li> </ul>
Additional Interventions <i>Continue with phase 1 interventions</i>	<i>ROM/Mobility</i> <ul style="list-style-type: none"> <li>• Static bike</li> <li>• Patella mobs- ONLY IF STIFFNESS PRESENT</li> </ul> <i>Strengthening</i> <ul style="list-style-type: none"> <li>○ Adductor strength: ball squeeze, SLR adduction, bridge with ball squeeze, ball squats, wall slides, mini squats 0-60</li> </ul> <i>Balance/proprioception</i> <ul style="list-style-type: none"> <li>○ Single leg standing balance ( knee slightly flexed) static progressed to dynamic and level progressed to unsteady surface</li> </ul>
Criteria to progress	<ul style="list-style-type: none"> <li>○ No swelling</li> <li>○ Flexion ROM &gt;90 deg</li> <li>○ Extension ROM equal to contralateral side</li> </ul>

### Phase III: Late post op (7-12 weeks)

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Continue to protect surgical site</li> <li>• Maintain full ROM</li> <li>• Safely progress strengthening</li> <li>• Promote proper movement patterns</li> <li>• Avoid post exercise/ swelling</li> <li>• Avoid activities that produce pain at the reconstruction site</li> </ul>
Weight Bearing	<i>Walking</i> <ul style="list-style-type: none"> <li>• FWB without assistive device</li> </ul>
Additional Interventions <i>Continue with phase I-II interventions</i>	<i>ROM/Mobility</i> <ul style="list-style-type: none"> <li>• Gentle stretching all muscle groups</li> </ul> <i>Strengthening</i> <ul style="list-style-type: none"> <li>• Gym equipment: leg press, seated hamstring curl, hip abduction / adduction, roman chair, seated calf</li> <li>• Chair bridge double and single, band walk, standing clamshell</li> <li>• Squat to chair</li> <li>• Lateral lunges</li> <li>• Romanian deadlift</li> <li>• Single leg press</li> <li>• Slider lunges</li> <li>• Split squat</li> <li>• Step up</li> <li>• Lateral step up</li> <li>• Step downs</li> </ul> <i>Cardio</i> <ul style="list-style-type: none"> <li>• <u>At 8 weeks</u>: cross trainer, stepper, straight leg swimming, pool jogging</li> </ul> <i>Balance/proprioception</i> <ul style="list-style-type: none"> <li>○ Progress single leg balance including perturbation training</li> </ul>
Criteria to progress	<ul style="list-style-type: none"> <li>○ No swelling/ effusion/pain after exercise</li> <li>○ ROM equal to other side</li> <li>○ Normal gait</li> <li>○ Quads/HS/Glute power at 70% contralateral side on isometric testing</li> </ul>

## Phase IV: Transitional (13-16 weeks)

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Maintain full ROM</li> <li>• Safely progress strengthening</li> <li>• Promote proper movement patterns</li> <li>• Avoid post exercise pain / swelling</li> <li>• Avoid activities that produce pain</li> </ul>
Additional Interventions	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>• Progress intensity ( weight) and volume ( reps) of exercises</li> </ul> <p><i>Plyometric</i></p> <ul style="list-style-type: none"> <li>• Bilateral FWB plyometrics progressing to single leg</li> </ul> <p><i>Balance/proprioception</i></p> <ul style="list-style-type: none"> <li>• Progress single leg limb balance including peturbation training</li> </ul>
Criteria to progress	<ul style="list-style-type: none"> <li>• Clearance from surgeon</li> <li>• Functional assessment:               <ol style="list-style-type: none"> <li>1. Quad/HS/Glute index 80%</li> <li>2. Hop testing 80% compared to contralateral side</li> </ol> </li> </ul>

## Phase V Early Return To Sport post op 3-5 months

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Safely progress strengthening</li> <li>• Safely initiate sport specific training program</li> <li>• Promote proper movement patterns</li> <li>• Avoid post exercise pain / swelling</li> <li>• Avoid activities that produce pain</li> </ul>
Additional Interventions Continue phase II-IV interventions	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>• Progress intensity ( weight) and volume ( reps) of exercises</li> </ul> <p><i>Plyometric</i></p> <ul style="list-style-type: none"> <li>• Agility and plyo program</li> </ul> <p><i>Interval running program</i></p>
Criteria to progress	<ul style="list-style-type: none"> <li>• Clearance from surgeon</li> <li>• Complete run / jog program without pain / effusion/swelling</li> <li>• Functional assessment:               <ol style="list-style-type: none"> <li>3. Quad/HS/Glute index 95%</li> <li>4. Hop testing 90% compared to contralateral side</li> </ol> </li> </ul>

## Phase VI: Unrestricted Return To Sport 6+ months

Rehabilitation Goals	<ul style="list-style-type: none"><li>• Continued strength and proprioception exercises</li><li>• Symmetrical performance with sport specific drills</li><li>• Safely return to full sport</li></ul>
Additional Interventions	<ul style="list-style-type: none"><li>• Multi plane sport specific plyometrics program</li><li>• Multi plane sport specific agility program</li><li>• <i>Include hard cutting and pivoting depending on individual goals</i></li><li>• <i>Non contact practice &gt; full practice &gt; full play 6-7 months</i></li></ul>
Criteria to progress	Last stage, no additional criteria

## Return to Run Program

This program is designed as a guide for patients through a progressive return to run program. Patients should demonstrate >80% on the functional assessment prior to initiating this program. Specific recommendations are based on the needs of the individual and should consider clinical decision making.

Phase I: warm up 15 mins walk, cool down 10 mins walk

Day	1	2	3	4	5	6	7
Week 1	W5/ J1x5		W5/ J1x5		W4 / J2x5		W4/J2x5
Week 2		W3/J3x5		W3/J3x5		W2/J4x5	
Week 3	W2/J4x5		W1/J5x5		W1/J5x5		

Phase II Only progress if no swelling / pain post run. Warm Up 15 mins walk, cool down 10 mins walk

Week	1 sun	2 mon	3 tues	4 wed	5 thur	6 frid	7 sat	8 sun
1	20 mins		20 mins		25 mins			
2		25 mins		25mins		30 mins		
3	30 mins		30 mins		35mins		35mins	
4		35mins		35mins		40 mins		
5	40 mins		40 mins		45mins		45mins	
6								
7	50mins		50 mins		55 mins			
8		60 min		60 mins				

- Runs should take place on soft surface during phase 1
- Non impact activity on off days
- Goal is to increase milage and then increase pace
- 10% rule: no more than 10%increase in milage per week

## Agility and Plyometric program

This program is designed as a guide for patients through a progressive series of agility and plyometric exercises to promote a successful return to sport and reduce an injury risk. Patients should demonstrate >80% on the functional assessment prior to initiating this program. Specific intervention should be based on the needs of the individual and should consider clinical decisionmaking.

### Phase I: Anterior Progression

Rehabilitation Goals	<ul style="list-style-type: none"><li>• Safely recondition the knee</li><li>• provide a logical sequence of progressive drills for pre sports conditioning</li></ul>
Agility	<ul style="list-style-type: none"><li>• Forward run</li><li>• backward run</li><li>• forward lean into a run</li><li>• forward run with three-step deceleration</li><li>• Figure 8 run</li><li>• circle run</li><li>• ladder</li></ul>
Plyometrics	<ul style="list-style-type: none"><li>• Shuttle press double leg to alternating leg to single leg jumps</li><li>• double leg jumps onto a box&gt; jumps off a box&gt;jumps on/off the box</li><li>• forward jumps, forward jump to broad jump tuck jumps</li><li>• backward/forward hops over line/cone</li><li>• single leg:<ol style="list-style-type: none"><li>1. Progressive single leg jump tasks</li><li>2. founding run</li><li>3. sister jumps</li><li>4. backward forward hops over line / cone</li></ol>down</li></ul>
Criteria to progress	<ul style="list-style-type: none"><li>• No increase in pain or swelling</li><li>• pain free during loading activities</li><li>• demonstrates proper movement patterns</li></ul>

### Phase II: Lateral Progression

Rehabilitation Goals	<ul style="list-style-type: none"><li>• Safely recondition the knee</li><li>• provide a logical sequence of progressive drills for level 1 sports athlete</li></ul>
Agility Continue with phase I	<ul style="list-style-type: none"><li>• side shuffle</li><li>• carioca</li><li>• crossover steps</li><li>• shuttle run</li><li>• zig zag run</li><li>• ladder</li></ul>
Plyometrics Continue with phase I	<p>Double Leg</p> <ul style="list-style-type: none"><li>• Lateral jumps over line / cone</li></ul>



	<ul style="list-style-type: none"> <li>• Lateral tuck jumps over line / cone</li> </ul> Progress to single leg for more advanced athlete
Criteria to progress	<ul style="list-style-type: none"> <li>• No increase in pain or swelling</li> <li>• pain free during loading activities</li> <li>• demonstrates proper movement patterns</li> </ul>

### Phase III: Multi Direction Progression

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Challenge the level 1 sport athlete in preperation for final clearence for return to sport</li> </ul>
Agility	<ul style="list-style-type: none"> <li>• Box drill</li> <li>• Star drill</li> <li>• Side shuffle with hurdles</li> </ul>
Plyometrics	<ul style="list-style-type: none"> <li>• Box jump with change of direction</li> <li>• 90 /180 deg jumps</li> </ul>
Crietria to progress	<ul style="list-style-type: none"> <li>• Clearence from surgeon</li> <li>• KOOs sports questionnaire &gt;90%</li> <li>• Hop test &gt;90%</li> <li>• Quad/HS/glute index &gt; 90%</li> </ul>