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## Knee Cartilage or Microfracture Protocol

Phase/ Goals	Immobilization	ROM	Therapeutic Exercises
<b>Phase 1 (0-2 weeks)</b>  Goals: <ul style="list-style-type: none"><li>● Decrease swelling</li><li>● Gain full extension</li><li>● Quad control</li></ul>	Touch-down weightbearing x 2 weeks  Knee locked straight in brace for first 2 weeks. May unlock when seated from 0-90	<ul style="list-style-type: none"><li>● Avoid forced flexion</li><li>● Full extension important</li></ul> Modalities: <ul style="list-style-type: none"><li>● NMES if unable to perform SLR without lag</li><li>● Cryocuff/Game Ready Compression/ Ice</li><li>● Scar STM when incision healed</li><li>● Patellar mobs all directions</li></ul>	<ul style="list-style-type: none"><li>● Quad recruitment, NMES as needed</li><li>● Terminal knee extension</li><li>● Prone hangs, heel props</li><li>● Passive motion</li><li>● Ankle pumps</li><li>● Quad sets/SLR in brace locked at 0</li><li>● SLR in all planes with assist until no lag</li><li>● Gastric/soleus stretch</li></ul>
<b>Phase 2 (3-6 weeks)</b>  Goals: <ul style="list-style-type: none"><li>● Regain full ROM</li><li>● Normalize gait after 4 weeks</li><li>● Decrease swelling</li></ul>	50% weightbearing x 2 weeks  May keep brace unlocked from 0-90 as long as quad function has returned  Progress to full weightbearing after 4 weeks  Can wean from brace after 4 weeks	<ul style="list-style-type: none"><li>● 0-90 until week 4</li><li>● Avoid forced flexion</li></ul> Modalities: <ul style="list-style-type: none"><li>● NMES if unable to perform SLR without lag</li><li>● Cryocuff/Game Ready Compression/ Ice</li><li>● Scar STM when incision healed</li><li>● Patellar mobs all directions</li><li>● Gentle prone quad stretch/knee flex</li><li>● Manual assist extension/passive stretch</li></ul>	<ul style="list-style-type: none"><li>● Quad sets/SLR in brace locked at 0</li><li>● SLR in all planes with assist until no lag</li><li>● Gastric/soleus stretch</li><li>● Water/aquatic walking, marching in at least waist-deep water</li><li>● Quad sets/glut sets, clams/mini-hydrants/glut pushes</li><li>● Calf raises on leg press</li><li>● Work on gait cycle after 4 weeks when weaned off crutches</li></ul>

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<p><b>Phase 3 (7-12 weeks)</b></p> <p>Goals:</p> <ul style="list-style-type: none"><li>• No effusion</li><li>• Progress to full ROM</li><li>• Hip, quad, HS, calf strength</li></ul>	<p>Full Weightbearing</p>	<ul style="list-style-type: none"><li>• Restore full ROM</li></ul>	<ul style="list-style-type: none"><li>• Bilateral closed chain exercises</li><li>• Leg press with 50% body weight</li><li>• Normalize gait pattern</li><li>• Hamstring curls</li><li>• Quad rock backs</li><li>• Lateral band stepping</li><li>• Progress to unilateral strengthening</li></ul>
<p><b>Phase 4 (13-18 weeks)</b></p> <p>Goals:</p> <ul style="list-style-type: none"><li>• Full ROM</li><li>• Full weightbearing</li><li>• Normal gait</li></ul>	<p>Full weightbearing – unrestricted ROM</p>	<ul style="list-style-type: none"><li>• Full A/PROM</li></ul> <p>Manual:</p> <ul style="list-style-type: none"><li>• Joint mobs PRN for full flex and ext ROM</li><li>• Patellar mobs/ Scar STM with extractor</li></ul> <p>Modalities:</p> <ul style="list-style-type: none"><li>• Ice/stim PRN</li></ul>	<ul style="list-style-type: none"><li>• Bike, elliptical, stair master</li><li>• Step ups/lateral step over's- progress to faster pace</li><li>• Single leg press</li><li>• Treadmill walking (forwards and backwards) starting</li><li>• Unilateral step-ups</li><li>• Kettlebell deadlift</li><li>• SLS dynamic surfaces</li><li>• Advance strengthening as tolerated</li><li>• Transition back to full athletic activity</li></ul>