

## Revision Anterior Cruciate Ligament Reconstruction Rehabilitation Protocol

Time	Goals	Precautions/Restrictions	Treatment
Weeks 0 – 2	<ul style="list-style-type: none"> <li>• Protect surgical site</li> <li>• Reduce pain and swelling</li> <li>• Active ROM: 0-90 degree</li> <li>• Full passive extension</li> <li>• Active quadriceps control</li> <li>• Reduce muscle atrophy</li> <li>• Safe use of crutches with near normal gait mechanics</li> </ul>	<ul style="list-style-type: none"> <li>• No brace use</li> <li>• WBAT with crutches</li> <li>• No resisted open chain knee extensions for six weeks</li> <li>• No isolated hamstring strengthening for hamstring autograft surgery</li> </ul>	<ul style="list-style-type: none"> <li>• ROM (as tolerated)               <ul style="list-style-type: none"> <li>○ PROM – AAROM - AROM</li> <li>○ Patella mobilizations</li> </ul> </li> <li>• Quadriceps recruitment/NMES</li> <li>• Global LE/hip strengthening</li> <li>• Gait training with crutches</li> <li>• Modalities as indicated               <ul style="list-style-type: none"> <li>○ Cryotherapy: 5-7 times per day</li> </ul> </li> <li>• Initial Visit: FOTO, LEFS, PSFS</li> <li>• 2 week follow up with MD</li> </ul>
Weeks 2 – 6	<ul style="list-style-type: none"> <li>• Full, symmetric and pain-free AROM</li> <li>• SLR without extensor lag</li> <li>• Normalized gait mechanics</li> <li>• DL squat with good mechanics</li> <li>• Progression of quadriceps strength/endurance</li> <li>• Increase functional activities</li> </ul>	<ul style="list-style-type: none"> <li>• Open kinetic chain is limited to bodyweight leg extensions (weeks 2-6)</li> <li>• No resisted open kinetic chain exercises</li> <li>• Initiate isolated hamstring strengthening for hamstring autograft surgery (6 weeks)</li> <li>• No running, jumping, cutting, pivoting, or twisting</li> <li>• Avoid painful activities/exercises</li> </ul>	<ul style="list-style-type: none"> <li>• AAROM - AROM</li> <li>• Gait training progressing from assistive device</li> <li>• Core stabilization exercises</li> <li>• Closed kinetic chain strengthening as tolerated</li> <li>• Global LE strengthening               <ul style="list-style-type: none"> <li>○ Begin functional strengthening exercises (bridge, mini-squat, step up, etc)</li> </ul> </li> <li>• Double limb to single limb balance/proprioception</li> <li>• Aerobic training:               <ul style="list-style-type: none"> <li>○ Walking program when walking with normal gait mechanics</li> <li>○ Stationary bike</li> </ul> </li> <li>• Optional therapies (if available/as indicated):               <ul style="list-style-type: none"> <li>○ BFR therapy</li> <li>○ Anti-gravity treadmill for walking gait</li> <li>○ Aquatic therapy once incision is healed and cleared by surgeon (2-4 weeks)</li> <li>○ NMES</li> </ul> </li> <li>• Modalities as indicated</li> <li>• Week 6: FOTO, LEFS</li> </ul>
Weeks 6 – 16	<ul style="list-style-type: none"> <li>• Full, symmetric and pain-free ROM</li> <li>• Progress quadriceps strength/endurance</li> <li>• Increase functional activities</li> </ul>	<ul style="list-style-type: none"> <li>• May initiate resisted open kinetic chain exercise               <ul style="list-style-type: none"> <li>○ 90-45° at 6 weeks</li> <li>○ 90-30° at 8 weeks</li> <li>○ 90-0° at 10 weeks</li> <li>○ 90-0° with progressive loading at 12 weeks</li> </ul> </li> <li>• No running, jumping, cutting, pivoting, or twisting</li> <li>• Avoid painful activities/exercises</li> <li>• Avoid patellofemoral pain</li> </ul>	<ul style="list-style-type: none"> <li>• End range flexion and extension</li> <li>• Aerobic training on stationary bike, elliptical, stair climber, UBE</li> <li>• Core stabilization exercises</li> <li>• Progressive double and single limb strengthening</li> <li>• Single to multi-plane exercise</li> <li>• Progression of balance/proprioception</li> <li>• Modalities as indicated</li> <li>• Week 12: FOTO, LEFS, PSFS, ACL-RSI</li> <li>• 6-8 week follow up with MD (SGYM)</li> </ul>

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Each patient’s progress may vary based on specifics of their injury and procedure.

<p>Weeks 16-20</p>	<ul style="list-style-type: none"> <li>• Full, symmetric ROM</li> <li>• No effusion with increased activity</li> <li>• Increase intensity and duration of functional LE strength</li> <li>• Initiate return to jogging program</li> <li>• Begin low level plyometric and agility training</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid painful activities/exercises</li> <li>• Jogging program initiated at 12 weeks if cleared by surgeon                             <ul style="list-style-type: none"> <li>○ No effusion</li> <li>○ Full AROM</li> <li>○ &gt;80% LSI</li> </ul> </li> <li>• No jogging on painful or swollen knee</li> </ul>	<ul style="list-style-type: none"> <li>• Increase loading capacity for lower extremity strengthening exercises</li> <li>• Continue balance/proprioceptive training</li> <li>• Week 12: begin return to jogging program                             <ul style="list-style-type: none"> <li>○ If applicable, start with pool/anti-gravity treadmill</li> </ul> </li> <li>• Begin low level plyometric and agility training at 12 weeks</li> <li>• Functional assessment (see attached)</li> <li>• 3-4 month follow up with MD (SGYM)</li> </ul>
<p>Months 5-7</p>	<ul style="list-style-type: none"> <li>• Continue to progress functional strengthening</li> <li>• Successful progression of the return to running program</li> <li>• Initiate higher level plyometric and agility training</li> </ul>	<ul style="list-style-type: none"> <li>• No jogging on a painful or swollen knee</li> <li>• Avoid painful activities/exercises</li> <li>• Avoid patellofemoral pain</li> <li>• No participation in sports unless specified by care team</li> </ul>	<ul style="list-style-type: none"> <li>• Progression of return to jogging program</li> <li>• Gradually increase lifting loads focusing on form, control, and tissue tolerance</li> <li>• Progress as tolerated:                             <ul style="list-style-type: none"> <li>○ Core Stability</li> <li>○ Strength</li> <li>○ Endurance</li> <li>○ Proprioception/Balance</li> </ul> </li> <li>• Increase intensity of plyometric and agility training</li> <li>• Foot speed and change of direction</li> <li>• Functional assessment at 6 months (see attached)</li> <li>• Month 6: FOTO, LEFS, PSFS, ACL-RSI</li> </ul>
<p>Months 7-10</p>	<ul style="list-style-type: none"> <li>• Continue to progress functional strengthening</li> <li>• Sport-specific training</li> </ul>	<ul style="list-style-type: none"> <li>• No participation in sports unless specified by your care team</li> <li>• Avoid painful activities</li> </ul>	<ul style="list-style-type: none"> <li>• Progress as tolerated:                             <ul style="list-style-type: none"> <li>○ Core Stability</li> <li>○ Strength</li> <li>○ Endurance</li> <li>○ Proprioception/Balance</li> </ul> </li> <li>• Begin sport-specific training</li> <li>• Single-to multi-task</li> <li>• Reactionary drills</li> <li>• Perturbation training</li> <li>• Closed to open environment</li> </ul>
<p>Months 10+</p>	<ul style="list-style-type: none"> <li>• Pass return to play criteria (re-test at 12+ months, if necessary)</li> <li>• Begin gradual return to sport</li> </ul>	<ul style="list-style-type: none"> <li>• Gradual return to full participation in sports</li> </ul>	<ul style="list-style-type: none"> <li>• Progress as tolerated:                             <ul style="list-style-type: none"> <li>○ Core Stability</li> <li>○ Strength</li> <li>○ Endurance</li> <li>○ Proprioception/Balance</li> <li>○ Plyometric training</li> <li>○ Agility drills</li> <li>○ Sport-specific activities</li> </ul> </li> <li>• Gradual return to sport progression</li> <li>• Month 9: FOTO, LEFS, PSFS, ACL-RSI</li> <li>• Functional assessment (see attached)</li> <li>• 9+ month follow up with MD (SGYM)</li> </ul>

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## Anterior Cruciate Ligament Testing Protocol

Phase	Goals	Surgery	Testing
<b>Week 12 (SGYM)</b>	<ul style="list-style-type: none"> <li>• Full, symmetric ROM</li> <li>• Y-balance anterior reach asymmetry &lt; 5 cm</li> <li>• Quadriceps strength for isometric test &gt; 80% of uninvolved side</li> </ul>	<ul style="list-style-type: none"> <li>• ACL reconstruction</li> <li>• ACL reconstruction with meniscus repair</li> <li>• ACL Allograft (12 week and 6 month recheck)</li> <li>• ACL revision (12 week and 6 month recheck)</li> </ul>	<b>TESTING:</b> <ul style="list-style-type: none"> <li>• Knee assessment including assessment for effusion</li> <li>• Passive and active ROM</li> <li>• Y-balance anterior reach</li> <li>• Isometric knee extension at 60° and 90°</li> <li>• FOTO, LEFS, PSFS, ACL-RSI</li> </ul>
<b>Month 6 (No SGYM)</b>	<ul style="list-style-type: none"> <li>• Full, symmetric ROM</li> <li>• Y-balance anterior reach asymmetry &lt; 3 cm</li> <li>• &gt; 80% LSI for isokinetic testing</li> <li>• 90% LSI for functional testing</li> <li>• ACL-RSI &gt; 56</li> </ul>	<ul style="list-style-type: none"> <li>• ACL reconstruction</li> <li>• ACL reconstruction with meniscus repair</li> <li>• <u>ACL Allograft (9 month)</u></li> <li>• <u>ACL revision (9 month)</u></li> </ul>	<b>TESTING:</b> <ul style="list-style-type: none"> <li>• Knee assessment including assessment for effusion</li> <li>• Passive and active ROM</li> <li>• Hop Test                             <ul style="list-style-type: none"> <li>○ Single Hop</li> <li>○ Triple Hop</li> </ul> </li> <li>• Isokinetic Test (90°, 180°/s)</li> <li>• Y-Balance Anterior Reach</li> <li>• Agility T-Test</li> <li>• FOTO, LEFS, PSFS, ACL-RSI</li> </ul>
<b>Month 9-10 (SGYM)</b>	<ul style="list-style-type: none"> <li>• Full, symmetric ROM</li> <li>• &gt; 90% LSI for isokinetic and functional testing</li> <li>• Y-balance anterior reach asymmetry &lt; 3 cm</li> <li>• ACL-RSI &gt; 56</li> </ul>	<ul style="list-style-type: none"> <li>• ACL reconstruction</li> <li>• ACL reconstruction with meniscus repair</li> <li>• <u>ACL Allograft (12 month)</u></li> <li>• <u>ACL revision (12 month)</u></li> </ul>	<b>TESTING:</b> <ul style="list-style-type: none"> <li>• Knee assessment including assessment for effusion</li> <li>• Passive and active ROM</li> <li>• Hop Test                             <ul style="list-style-type: none"> <li>○ Single Hop</li> <li>○ Triple Hop</li> <li>○ Cross-over Hop</li> </ul> </li> <li>• Isokinetic Test (90°, 180°/s)</li> <li>• Y-Balance Anterior Reach</li> <li>• Agility T-Test</li> <li>• FOTO, LEFS, PSFS, ACL-RSI</li> </ul>

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