

Altru Advanced Orthopedic ACL Rehabilitation Protocol

The intent of this protocol is to provide the therapist with a guideline for the post-op rehab of a patient who has had an ACL repair. It is not intended to be a substitute for appropriate clinical decision making regarding the progression of a patient's rehab. The actual therapy plan of care must be based on the surgical approach, physical exam and findings, individual progress, any post-op complications, and/or co-morbidities. If a therapist needs assistance or has questions regarding the progression of a patient post surgically they should consult the referring surgeon.

	Treatment	Goals
Week 1 <ul style="list-style-type: none"> • NWB with crutches for first week • Wear knee immobilizer locked in extension, including at night (discontinue brace at night at 2 weeks) 	<ul style="list-style-type: none"> • Supine wall slides, QS, SAQ, LAQ (90-45), SLR (example: 3 sets of 15 reps, stop if pain or improper form, 3 times per day for 1-2 weeks) • bike for ROM only • patellar mobilization, gait training • Cryotherapy and NMES prn 	<ul style="list-style-type: none"> • PROM 0-90° • Active quad contraction
Week 2-4 <ul style="list-style-type: none"> • WBAT with knee immobilizer locked in extension, without crutches, as tolerated • No open chain TKE • Limit closed chain to 0-45° flex • D/C immobilizer when full extension and good quad control • Progress to functional brace as swelling permits and per MD • Initiate Exos programming as indicated 	<ul style="list-style-type: none"> • Step-ups in pain free range (start 2" and progress), wall squats/sits, progress bike and stair master duration (10 min minimum). • Prone hangs if lacking extension, heel slides, bike for ROM, HS/HC stretches • NMR: SLS progression, weight shifts • Incision and soft tissue mobilization as needed, PF mobilization in flexion (if flexion limited) • Cryotherapy and NMES prn 	<ul style="list-style-type: none"> • Knee flexion 90° • Full knee extension • Walking without crutches • Walking with full extension • SLR without extensor lag • Knee Outcome Survey (KOS)ADL score >65% • LEFS

<p>Weeks 4-6</p> <ul style="list-style-type: none"> • No open chain TKE • Limit closed chain 0-45° flex 	<ul style="list-style-type: none"> • Wall squats progression to 45° flex, to single leg; lunges to 45° flex; treadmill walking, lateral stepping, retro-walking • SLS progression, perturbation training • Cryotherapy and NMES prn 	<ul style="list-style-type: none"> • Knee flexion to 110° • Quad strength >50% uninvolved • Normal gait pattern
<p>Week 6-12</p> <ul style="list-style-type: none"> • FWB • Measure and fit for functional brace as ordered by MD 	<ul style="list-style-type: none"> • Progress exercises in intensity and duration • Sports-specific activities-add in ball toss, ball drills, racquet swings, etc. 	<ul style="list-style-type: none"> • Full AROM vs uninvolved • Effusion ≤ 1+ • Quad strength >80%
<p>Week 12-16</p> <ul style="list-style-type: none"> • To be tested at 3mo, 6mo, and 9mo out: <ul style="list-style-type: none"> ○ Y balance test ○ DVJ ○ ACL-RSI 	<ul style="list-style-type: none"> • Plyometrics: step-off box jumps, bounce jumps, etc. • Agility exercises: lateral shuffle, skipping, etc. starting at low intensity • Begin running progression on treadmill with functional brace (if all goals met and per MD) • Transfer to fitness facility (if goals met) • 	<ul style="list-style-type: none"> • Maintain or gain quad strength (>80%) • KOS sports >70% • LEFS • ACL-RSI
<p>Running Progression:</p> <ul style="list-style-type: none"> • Trace or less effusion, 80% or > strength, understand soreness rules 	<ol style="list-style-type: none"> 1. Treadmill/track walking 2. Treadmill walk/run intervals 3. Treadmill running/track: run straights walk turns 4. Track: run straights and turns 5. Run outside on path/road 	<ul style="list-style-type: none"> • Progress until 2 miles tolerated without increased pain and swelling. • No more than 4 times/week and only every other day. • Do not progress more than 2 levels in 7 days.
<p>Weeks 16-20</p>	<ul style="list-style-type: none"> • Progress plyometrics: jump downs progressing to 12", lateral hops, twist jumps, single leg jumps up to 6" box, etc. 	<ul style="list-style-type: none"> • Independent running • Controlled landings from 12" box (video as needed)

	<ul style="list-style-type: none"> Progress agility: backwards running, figure 8 running wide to narrow, cutting, sport specific drills, etc. 	<ul style="list-style-type: none"> Controlled single leg landing up to 6" box Maintain gains in strength (> or = 90% to 100%) HOP test (> or = 90-100%) KOS sports (> or = 80%) 												
Functional Testing: <ul style="list-style-type: none"> 4 months post-op 	<ul style="list-style-type: none"> Provide recommendations for changes in rehab Provide info for return to sport 													
Cybox Test Goals: <ul style="list-style-type: none"> Can be tested at 6 mo, 9 mo, and 12 mo 	<table border="1"> <thead> <tr> <th>Peak Torque/BW %</th> <th>Males</th> <th>Females</th> </tr> </thead> <tbody> <tr> <td>60 deg/sec</td> <td>110-115</td> <td>80-95</td> </tr> <tr> <td>180 deg/sec</td> <td>60-75</td> <td>50-65</td> </tr> <tr> <td>300 deg/sec</td> <td>30-40</td> <td>30-45</td> </tr> </tbody> </table>	Peak Torque/BW %	Males	Females	60 deg/sec	110-115	80-95	180 deg/sec	60-75	50-65	300 deg/sec	30-40	30-45	
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Hop Test: <ul style="list-style-type: none"> Single hop for distance Triple hop for distance Cross-over hop for distance Timed Running T-Test Y-balance- anterior 	Goals: <ul style="list-style-type: none"> Involved side must be greater than or equal to 90% of the uninvolved side for each individual hop test. No giving way, increased effusion, or increased pain. 	Re-Testing: <ul style="list-style-type: none"> If a patient has 1 of 4 hop tests that they do not achieve 90% or > they may re-do ONLY 1 test using the same guidelines for application as above. Scoring and passing criteria remain the same as the original test 												
Weeks 20-24	<ul style="list-style-type: none"> Single leg plyometrics Resisted running, full speed running, cutting, stopping Sport specific activities: by 5 months noncontact sport skills with team 	<ul style="list-style-type: none"> Return to full activity by 6 months for autograft and 9 months for allograft. Meet goals for HOP test and/or Cybox testing per MD order 												

Precautions:	
<ul style="list-style-type: none"> • Patellar tendon graft • Hamstring tendon graft 	<ul style="list-style-type: none"> • Be aware of patellofemoral forces and possible irritation with exercise. • No resisted hamstring strengthening until 8-12 weeks.
<p>*Below precautions for any secondary surgery or injury in addition to ACL repair:</p>	
<ul style="list-style-type: none"> • Partial meniscectomy • Meniscal repair • Lateral release • Concomitant abrasion chondroplasty • Concomitant microfracture • MCL injury 	<ul style="list-style-type: none"> • No modifications, progress per protocol above • No weight-bearing flexion beyond 45° for 4 weeks • Weight bearing in full extension permitted • Patellar mobs, ambulate NWB with crutches 2 weeks • WBAT with crutches 3-5 days, no modifications, progress per protocol above • NWB 2-4 weeks with crutches • No weight-bearing activities in treatment for 4 weeks • Restrict motion to sagittal plane until weeks 4-6 to allow MCL healing • Perform exercises with tibia in IR in early phase • Consider brace if severe sprain and pain

<ul style="list-style-type: none"> • Posterolateral corner injury/PCL repair • ACL revision 	<ul style="list-style-type: none"> • Nonrepaired ROM restrictions: Grade 1: no restrictions, Grade 2: 0-90° week 1, 0-110° week 2, Grade 3: 0-30° week 1, 0-90° week 2, 0-110° week3. • Minimize ER torques and varus stress 6-8 weeks • Avoid hyperextension • No active knee flexion ROM for 6 weeks • No resisted knee flexion for 12 weeks • Delay running progression, hop testing, agility drills, and return to sport by 4 weeks. • Crutches and immobilizer used for 2 weeks following surgery.
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Soreness Rules

Criterion	Action
1. Soreness during warm-up that continues	2 days off, drop down 1 step
2. Soreness during warm-up that goes away	Stay at step that led to soreness
3. Soreness during warm-up that goes away but redevelops during session	2 days off, drop down 1 step
4. Soreness the day after lifting (Not muscle soreness)	1 day off, do not advance program to the next step
5. No soreness	Advance 1 step per week or as instructed by healthcare professional