



### Accelerated ACL Rehabilitation Guidelines

Postoperative Weeks      Postoperative Months

	1-2	3-4	5-6	7-8	9-12	4	5	6	7-12
<b>Brace:</b> immobilizer for patient comfort	X	(X)							
<b>Range of motion minimum goals:</b> 0°-110° 0°-120° 0°-135°	X	X	X						
<b>Weight bearing:</b> 1/2 body weight Full	X	X							
<b>Patella mobilization</b>	X	X	X						
<b>Modalities:</b> Electrical muscle stimulation Pain/edema management (cryotherapy)	X X	X X	X X	X	X	X	X	X	X
<b>Stretching:</b> Hamstring, gastroc-soleus, iliotibial band, quadriceps	X	X	X	X	X	X	X	X	X
<b>Strengthening:</b> Quadriceps isometrics, straight leg raises, active knee extension Closed-chain: gait retraining, toe raises, wall sits, mini-squats Knee flexion hamstring curls (90°) Knee extension quadriceps (90°-30°) Hip abduction-adduction, multi-hip Leg press (70°-10°)	X X X X X X	X X X X X X	X X X X X X	X X X X X X	X	X X X X X	X X X X X	X X X X X	X X X X X
<b>Balance/proprioceptive training:</b> Weight-shifting, cup walking, BBS BBS, BAPS, perturbation training, balance board, mini-trampoline	X	X	X	X X	X	X	X	X	



# DR. DAN JOHNSON

ORTHOPEDIC SPORTS MEDICINE

<b>Conditioning:</b>									
UBC	X	X	X						
Bike (stationary)		X	X	X	X	X	X	X	X
Aquatic program		X	X	X	X	X	X	X	X
Swimming (kicking)				X	X	X	X	X	X
Walking				X	X	X	X	X	X
Stair climbing machine			X	X	X	X	X	X	X
Ski machine			X	X	X	X	X	X	X
Elliptical machine				X	X	X	X	X	X
Running: straight					X	X	X	X	X
Cutting: lateral carioca, figure-8's						X	X	X	X
Plyometric training						X	X	X	X
Full sports							X	X	X

BAPS = Biomechanical Ankle Platform System (Camp, Jackson, MI), BBS = Biodex Balance System (Biodex Medical Systems, Inc, Shirley, NY), UBC = upper body cycle (Biodex Medical Systems, Inc, Shirley, NY).

Phase 1. Weeks 1-2

<b>General Observation</b>	50% weight bearing with 2 crutches when: - Postoperative pain controlled - Hemarthrosis controlled - Voluntary quadriceps contraction achieved	
<b>Factors Evaluated</b>	Pain Hemarthrosis Patellar mobility Range of motion (minimum) Quadriceps contraction & patella migration Soft tissue contracture Joint arthrometer (day 14)	<b>Goals</b> Controlled Mild Good 0°-110° Good None < 3 mm
<b>Frequency</b> 3-4 x/day 10 minutes  3 x/day 15 minutes  3 x/day 5 minutes  1-2 x/day 5 minutes  As required	<b>Range of motion</b> Range of motion passive, 0°-90° Patella mobilization Ankle pumps (plantar flexion with resistance band) Hamstring, gastroc-soleus stretches  <b>Strengthening</b> Straight leg raises (flexion, extension, abduction, adduction) Active quadriceps isometrics (full extension) Knee flexion (active, 0°-90°) Knee extension (active-assisted. 90°-30°) Multi-hip machine (flexion, extension, abduction, adduction) Leg press (70°-10°) Closed-chain - Mini-squats (0°-45°, 1/2 weight bearing)  <b>Balance training</b> Weight shift side/side and forward/back  <b>Aerobic conditioning</b> UBC  <b>Modalities</b> Electrical muscle stimulation Cryotherapy	<b>Duration</b>  5 reps x 30 secs  3 sets x 10 reps 1 set x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps  5 sets x 10 reps  20 minutes 20 minutes
<b>Goals</b>	Range of motion 0°-110° Adequate quadriceps contraction Control inflammation, effusion 50% weight bearing	

*Phase 2. Weeks 3-4*

<b>General Observation</b>	Full weight bearing with 1 crutch when: - Pain controlled without narcotics - Effusion controlled - ROM 0°-100° - Muscle control throughout ROM	
<b>Evaluation</b>	Pain Effusion Patellar mobility Range of motion minimum Muscle control Joint arthrometer (day 28) Inflammatory response	<b>Goals</b> Mild Minimal Good 0°-120° 3/5 < 3 mm None
<b>Frequency</b> 3-4 x/day 10 minutes	<b>Range of motion</b> Range of motion passive, 0°-120° Patella mobilization Ankle pumps (plantar flexion with resistance band) Hamstring, gastroc-soleus stretches	<b>Duration</b>  5 reps x 30 secs
2-3 x/day 20 minutes	<b>Strengthening</b> Straight leg raises (flexion, extension, abduction, adduction) Isometric training: multi-angle (90°, 60°, 30°) Heel raise/toe raise Hamstring curls (active, 0°-90°) Knee extension (active, 90°-30°) Closed-chain - Wall sits - Mini-squats Multi-hip machine (flexion, extension, abduction, adduction) Leg press (70°-10°)	3 sets x 10 reps 1 set x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	<b>Balance training</b> Weight shift side/side and forward/back Balance board/2 legged	5 sets x 10 reps
1-2 x/day 5 minutes	Cup walking Single leg stance (level surface)	5 reps
2 x/day 5 minutes	<b>Aerobic conditioning</b> UBC Water walking Stationary bicycling (patellofemoral precautions)	
As required	<b>Modalities</b> Electrical muscle stimulation Cryotherapy	20 minutes 20 minutes
<b>Goals</b>	Range of motion 0°-125° Muscle control Arthrometer within 3 mm	

	Control inflammation, effusion 100% weight bearing	
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*Phase 3. Weeks 5-6*

<b>General Observation</b>	Independent ambulation when: - Pain controlled                      - Effusion controlled - ROM 0°-120°                              - Muscle control throughout ROM	
<b>Evaluation</b>	Pain Effusion Patellar mobility ROM Muscle control Inflammatory response Gait	<b>Goals</b> No RSD Minimal Good 0°-135° 4/5 None Symmetrical
<b>Frequency</b> 3 x/day 10 minutes	<b>Range of motion</b> Range of motion passive, 0°-135° Patella mobilization Hamstring, gastroc-soleus stretches	<b>Duration</b>  5 reps x 30 secs
2 x/day 20 minutes	<b>Strengthening</b> Straight leg raises (ankle weight, not to exceed 10% of body weight) Straight leg raises, rubber tubing Isometric training: multi-angle (90°, 60°, 30°) Heel raise/toe raise Hamstring curls (active, 0°-90°) Knee extension with resistance (90°-30°) Closed-chain - Wall sits - Mini-squats Multi-hip machine (flexion, extension, abduction, adduction) Leg press (70°-10°)	3 sets x 10 reps 3 sets x 10 reps 2 sets x 10 reps 3 sets x 20 reps 3 sets x 10 reps 3 sets x 10 reps  5 reps 3 sets x 20 reps 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	<b>Balance training</b> Balance board/2 legged Lateral step-ups: 2-4"	
2 x/day 10 minutes	<b>Aerobic conditioning</b> (patellofemoral precautions) UBC Stationary bicycling Water walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance) Elliptical (low resistance)	

As required	<b>Modalities</b> Cryotherapy	20 minutes
<b>Goals</b>	Range of motion 0°-135° Control inflammation, effusion Muscle endurance Recognition complications (motion loss, pain syndrome, increased AP displacement) Recognition patellofemoral changes Full weight bearing, normal gait	

*Phase 4. Weeks 7-8*

<b>General Observation</b>	No effusion, painless ROM, joint stability Performs activities of daily living, can walk 20 minutes without pain	ROM 0°-135° Full weight bearing	
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>v Manual muscle test Hamstrings, quadriceps, hip abductors/adductors/flexors/extensors</li> <li>v Swelling</li> <li>v Joint arthrometer (8 weeks)</li> <li>v Patellar mobility</li> <li>v Crepitus</li> </ul>		<b>Goals</b> 4/5  None < 3 mm Good None/slight
<b>Frequency</b> 2 x/day 10 minutes	<b>Range of motion</b> Hamstring, gastroc-soleus stretches		<b>Duration</b> 5 reps x 30 secs
2 x/day 20 minutes	<b>Strengthening</b> Straight leg raises, rubber tubing Hamstring curls (active, 0°-90°) Knee extension with resistance (90°-30°) Leg press (70°-10°) Multi-hip machine (flexion, extension, abduction, adduction) Closed-chain - Wall sits - Mini-squats		3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	<b>Balance training</b> Balance board/2 legged Single leg stance Resistance band walking Plyoback ball toss Perturbation training		5 reps 3 sets x 20 reps

1-2 x/day 15-20 minutes	<b>Aerobic conditioning</b> (patellofemoral precautions) Stationary bicycling Water walking Swimming (straight leg kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance) Elliptical machine (low resistance)	
As required	<b>Modalities</b> Cryotherapy	20 minutes
<b>Goals</b>	Increase strength and endurance	

*Phase 5. Weeks 9-12*

<b>General Observation</b>	No effusion, painless ROM, joint stability Performs activities of daily living, can walk 20 minutes without pain	ROM 0°-135° Full weight bearing	
<b>Evaluation</b>	v Manual muscle test Hamstrings, quadriceps, hip abductors/adductors/flexors/extensors v Isometric test (12 wks, mean avg torque/% deficit quads & hams) v Swelling v Joint arthrometer (12 weeks) v Patellar mobility v Crepitus		<b>Goals</b> 4/5  30 None < 3 mm Good None/slight
<b>Frequency</b> 2 x/day 10 minutes  2 x/day 20 minutes	<b>Range of motion</b> Hamstring, gastroc-soleus, quad, ITB stretches  <b>Strengthening</b> Straight leg raises, rubber tubing Hamstring curls (active, 0°-90°) Knee extension with resistance (90°-30°) Leg press (70°-10°) Multi-hip machine (flexion, extension, abduction, adduction) Closed-chain - Wall sits - Mini-squats - Lateral step-ups (2-4" block)		<b>Duration</b>  5 reps x 30 secs  3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps  5 reps 3 sets x 20 reps 3 sets x 10 reps

3 x/day 5 minutes	<b>Balance training</b> Balance board/2 legged Single leg stance Resistance band walking Plyoback ball toss Perturbation training	
3 x/week 15 -20 minutes	<b>Aerobic conditioning</b> (patellofemoral precautions) Stationary bicycling Water walking Swimming (kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance) Elliptical machine (low resistance)	
3 x/week 10 minutes	<b>Running program</b> (straight) Jog Walk Backward walk	1/4 mile 1/8 mile 20 yards
As required	<b>Modalities</b> Cryotherapy	20 minutes
<b>Goals</b>	Increase strength and endurance	

*Phase 6. Weeks 13-26*

<b>General Observation</b>	No effusion, painless ROM, joint stability Performs activities of daily living, can walk 20 minutes without pain	
<b>Evaluation</b>	Isokinetic test (isometric + torque 300°/sec, % difference quads & hams, tested monthly) Swelling Joint arthrometer Patellar mobility Crepitus Single-leg function tests (hop distance, timed hop, % inv/uninv)	<b>Goals</b> 20-25%  None 3 mm Good None/slight 75%
<b>Frequency</b> 2 x/day 10 minutes	<b>Range of motion</b> Hamstring, gastroc-soleus, quad, ITB stretches	<b>Duration</b>  5 reps x 30 secs



1 x/day 20-30 minutes	<b>Strengthening (patellofemoral precautions)</b> Straight leg raises, rubber tubing (high speed) Hamstring curls (active, 0°-90°) Knee extension with resistance (90°-30°) Leg press (70°-10°) Multi-hip machine (flexion, extension, abduction, adduction)	3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	<b>Balance training</b> Balance board/2 legged                      Single leg Single leg stance                                      Unstable platform	
3 x/week 20-30 minutes	<b>Aerobic conditioning (patellofemoral precautions)</b> Stationary bicycling Water walking Swimming (kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance) Elliptical machine (low resistance)	
3 x/week 15-20 minutes	<b>Running program (straight)</b> Jog (progression of speed: ½, ¾, full) Walk Backward run	1/4 – 1 mile 1/8 mile 20 yards
3 x/week	<b>Cutting program</b> – lateral, carioca, figure 8’s	20 yards
3 x/week	<b>Functional training</b> Plyometric training: box hops, level, double-leg Sport specific drills	15 secs, 4-6 sets
As required	<b>Modalities</b> Cryotherapy	20 minutes
<b>Goals</b>	Increase strength and endurance	



<b>Goals</b>	Increase function, strength, endurance Return to previous activity level	
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