



## REHABILITATION GUIDELINES

### **ACL RECONSTRUCTION**

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#### **OFFICE LOCATIONS**

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#### **CLINICAL NURSE**

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The intent of this protocol is to provide the therapist with guidelines of the post-operative rehabilitation course after a meniscal repair. It should not be a substitute for one's clinical decision making regarding the progression of a patient's post-operative course based on their physical exam findings, individual progress, and/or the presence of post-operative complications. The therapist should consult the referring physician with any questions or concerns.

#### **INDIVIDUAL CONSIDERATIONS:**

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#### **PHASE I (0-4 weeks)**

##### **Goals**

- Control inflammation and pain
- Full active extension
- Achieve quadriceps control

##### **ROM**

- Progress as tolerated (without meniscus repair)
- 0-90 degrees for 6 weeks (if meniscus repair)

##### **Brace**

- Brace: Locked in extension x 2 weeks. Can unlock after if demonstrates good quad control.
- Brace Locked in extension 6 weeks post-op (if meniscus repair).
- May remove for sleep after one weeks (two weeks if meniscus repair)

##### **Weight-Bearing Status**

- No Meniscal Repair: WBAT in extension x 2 weeks. Can unlock for ambulation after if quad control adequate.
- Meniscus Repair: WBAT in extension x 6 weeks



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- Meniscus Root Repair:
  - Week 0-2: NWB in extension
  - Week 2-4: Heel Touch WB in extension
  - Week 4-6: WBAT in extension

**Restrictions**

- No Running, Jumping, Squatting, Kneeling, or Pivoting

**Therapeutic Exercises**

- Straight leg raises in all planes (use brace locked in extension initially until quad strength is good enough to prevent an extension lag)
- Heel slides to <90 degrees of flexion, calf pumps, quadriceps sets
- Electrical stimulation
- Patellar mobilization
- Blood Flow Restriction (starting at 2 weeks)
- Week 4+: Stationary bike (seat high, low tension)

**PHASE II (5- 8 weeks)**

**Criteria to advance from Phase I→II**

- Good quad set, straight leg raise without extension lag
- 90 degrees of knee flexion
- Full extension

**Goals**

- Progress weight-bearing
- Restore full range of motion after 6 weeks post-op

**Brace/Weight-Bearing Status**

- Criteria to D/C Brace: Full weight bearing and discontinue brace as soon as normal gait pattern/quad control is achieved
- Without Meniscus Repair: WBAT, wean from brace between Week 4-6.
- Meniscus Repair (including Root Repair): WBAT, Unlock at Week 6, wean Week 7-8

**Restrictions**

- Meniscus Repair: No Running, Jumping, Twisting, Kneeling, Pivoting, or Squatting>45°

**Therapeutic Exercises**

- Mini-squats (0-45 degrees)
- Stationary Bike (high seat, low tension)
- Prone leg hangs with ankle weights until extension is achieved



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- Closed chain extension (leg press:0-45 degrees)
- Pool walking/jogging
- Toe raises
- Hamstring and gastroc/soleus stretches
- StairMaster
- *Proprioception*
  - Mini-tramp standing
  - Unstable platform (BAPS) with eyes open and closed
  - Standing ball throwing and catching

**PHASE III (8-20 weeks)**

**Criteria to advance from Phase II→III**

- Normal gait
- Full range of motion (avoid hyperflexion loading)
- Sufficient strength and proprioception to initiate functional activities

**Goals**

- Improve confidence in the knee
- Avoid oversteering the graft
- Protect the patellofemoral joint
- Progress with strength, power, and proprioception

**Restrictions**

- Meniscus Repair: No Jumping, Twisting, Kneeling, Pivoting, or Squatting>90°

**Therapeutic Exercise**

- Continue with flexibility exercises
- Advance closed chain kinetic strengthening (one-leg squats, leg press 0-60 degrees)
- StairMaster, elliptical trainer, cross-country ski machine
- *Plyometrics*
  - Stair jogging
  - Box jumps (6 to 12-inch heights)
- *Proprioception*
  - Mini-tramp bouncing
  - Lateral slide board
  - Ball throwing and catching on unstable surface
- *Functional Training (12+ weeks)*
  - Interval Running Program (see below)
- *Agility (16+ weeks)*
  - Start at slow speed
  - Shuttle run, lateral slides, Carioca cross-overs



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- Plyometrics
- Stair running
- Box jumps (1-2 foot heights)

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### **PHASE IV (5 months+)**

#### **Criteria to advance from Phase III→IV**

- Full, pain-free range of motion
- No patellofemoral irritation
- Sufficient strength and proprioception to progress to recreational activities

#### **Goals**

- Begin return to play testing around 6-7 months (Return to sport around 8-10 months)

#### **Restrictions**

- Meniscus Repair: Avoid hyper-flexion and squatting >90° until 6 months post-op

#### **Therapeutic Exercises**

- Progress with flexibility and strengthening program
- Plyometrics program (See below)
- Continue running
- Incorporate cutting drills into agility training
- Advance heights with plyometric conditioning
- Sports specific drills (start a 25% on speed and advance as tolerated)

#### **General Criteria for Return to Sports**

- Full range of motion
- No effusion
- Quadriceps strength 85% of contralateral side
- Hamstring strength 100% of contralateral side
- Single leg hop 90% of contralateral side
- Single leg triple hop 90% of contralateral side
- Single leg squat demonstrates good control
- Clearance from doctor prior to return to sport



## REHABILITATION GUIDELINES

### RETURN TO RUNNING PROGRAM

#### PHASE I – Warm Up Walk 15 Minutes, Cool Down Walk 10 Minutes

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Day	1	2	3	4	5	6	7
<b>Week 1</b>	W5/J1x5*		W5/J1x5		W4/J2x5		W4/J2x5
<b>Week 2</b>		W3/J3x5		W3/J3x5		W2/J4x5	
<b>Week 3</b>	W2/J4x5		W1/J5x5		W1/J5x5		<b>Return to Run</b>

Key: W=walk, J=jog

\*W5/J1x5= Walk (5 minutes), Jog (1 minute); repeat 5 times

#### PHASE II – Warm Up Walk 15 Minutes, Cool Down Walk 10 Minutes

Week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>1</b>	<b>20 min</b>		<b>20 min</b>		<b>20 min</b>		<b>25 min</b>
<b>2</b>		<b>25 min</b>		<b>25 min</b>		<b>30 min</b>	
<b>3</b>	<b>30 min</b>		<b>30 min</b>		<b>35 min</b>		<b>35 min</b>
<b>4</b>		<b>35 min</b>		<b>40 min</b>		<b>40 min</b>	
<b>5</b>	<b>40 min</b>		<b>45 min</b>		<b>45 min</b>		<b>45 min</b>
<b>6</b>		<b>50 min</b>		<b>50 min</b>		<b>50 min</b>	
<b>7</b>	<b>55 min</b>		<b>55 min</b>		<b>55 min</b>		<b>60 min</b>
<b>8</b>		<b>60 min</b>		<b>60 min</b>			

- Recommendations:
  - Runs should occur on softer surfaces during Phase 1
  - Non-impact activity on off days
  - Goal is to increase mileage and then increase pace; avoid increasing two variables at once
  - 10% rule: no more than 10% increase in mileage per week

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### **AGILITY AND PLYOMETRICS PROGRAM**

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#### **PHASE I: ANTERIOR PROGRESSION**

##### **Goals:**

- Safely recondition the knee
- Provide a logical sequence of progressive drills for pre-sports conditioning

##### **Agility:**

- Forward run
- Backward run
- Forward lean in to a run
- Forward run with 3-step deceleration
- Figure 8 run
- Circle run
- Ladder

##### **Plyometrics:**

- Shuttle press: Double leg → alternating leg → single leg jumps
- Double leg:
  - Jumps on to a box → jump off of a box → jumps on/off box
  - Forward jumps, forward jump to broad jump
  - Tuck jumps
  - Backward/forward hops over line/cone
- Single leg (these exercises are challenging and should be considered for more advanced athletes):
  - Progressive single leg jump tasks
  - Bounding run
  - Scissor jumps
  - Backward/forward hops over line/cone

##### **Criteria to Progress:**

- No increase in pain or swelling
- Pain-free during loading activities
- Demonstrates proper movement patterns



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**PHASE II: LATERAL PROGRESSION**

**Goals:**

- Safely recondition the knee
- Provide a logical sequence of progressive drills for the Level 1 sport athlete

**Agility (\*Continue with Phase 1 interventions):**

- Side shuffle
- Carioca
- Crossover steps
- Shuttle run
- Zig-zag run
- Ladder

**Plyometrics**

- Double leg:
  - Lateral jumps over line/cone
  - Lateral tuck jumps over cone
- Single leg (these exercises are challenging and should be considered for the more advanced athletes):
  - Lateral jumps over line/cone
  - Lateral jumps with sport cord

**Criteria to Progress**

- No increase in pain or swelling
- Pain-free during loading activities
- Demonstrates proper movement patterns

**PHASE III: MULTI-PLANAR PROGRESSION**

**Goals:**

- Challenge athlete in preparation for final clearance for return to sport

**Agility:**

- Box drill
- Star drill
- Side shuffle with hurdles

**Plyometrics:**

- Box jumps with quick change of direction
- 90 and 180 degree jumps

**Criteria to Progress:**

- Clearance from MD
- Functional Assessment
  - $\geq 90\%$  contralateral side
- Return to Sport Index