# REHABILITATION GUIDELINES FOR ACL RECONSTRUCTION WITH HAMSTRING AUTOGRRAFT

## PHASE I (WEEKS 1-4)

### Appointments
- Physical therapy 2 x per week

### Rehabilitation Goals
- Protect graft during re-vascularization and fixation x 8-12 weeks
- Control inflammation
- Regain full knee PROM
- Restore normal gait pattern
- Patient education in rehab progression

### Precautions

#### Brace:
- locked in extension at all times until 1st PT visit
- weeks 1-3: Unlock brace to 90 degrees as quad control allows
- weeks 3-4: Wean from brace if patient demonstrates good quad control and normal gait mechanics
- weeks 4-8: use brace in crowds, on uneven terrain etc.

#### WB:
- PWB with 2 crutches x 1 week
- FWB with crutches weeks 1-4 progress as patient demonstrates good quad control, normal gait mechanics and no extension lag
- NO limits on ROM progress as tolerated
- Avoid hyperextension >10 degrees

### Suggested Therapeutic Exercises
- Patellar mobilizations
- Gastroc/soleus stretches
- Heel slides as tolerated
- SLR all planes with brace in full extension and no extension lag
- Quad sets, SAQ, LAQ with NMES as needed
- Single leg balance progression (floor, foam, stability disc)
- Mini squats
- If good quad control: Lateral high stepping over cones
- Lateral lunges (begin with 30 degrees knee flexion and 45 degrees hip flexion)
- Core stabilization exercises
- Aquatic therapy once incision is healed for gain and increased WB
# Rehabilitation Guidelines for ACL Reconstruction with Hamstring Autograft

## Cardiovascular Exercises
- Upper body ergometer
- Stationary bike when ROM allows

## Progression Criteria
- Good quad set, SLR without extension lag
- Full extension/hyperextension
- 90 degrees knee flexion
- Minimal swelling/inflammation
- Normal gait on level surfaces

## Phase II (Weeks 4-12) Dates:

<table>
<thead>
<tr>
<th>Appointments</th>
<th>Physical therapy 2x per week</th>
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<thead>
<tr>
<th>Rehabilitation Goals</th>
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<tbody>
<tr>
<td>Restore normal gait with stairs</td>
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<tr>
<td>Maintain full extension</td>
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<tr>
<td>Regain full flexion by week 6</td>
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<tr>
<td>Protect graft and graft fixation</td>
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<tr>
<td>Increase hip, quadriceps and calf strength</td>
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<td>Increase proprioception</td>
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<tr>
<td>Increase core strength</td>
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<table>
<thead>
<tr>
<th>Precautions</th>
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<tr>
<td>If necessary, continue to wean from crutches/brace; use 1 crutch until gait normalizes</td>
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<table>
<thead>
<tr>
<th>Suggested Therapeutic Exercises</th>
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<tr>
<td>ROM/flexibility as appropriate for patient</td>
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<tr>
<td>Initiate CKC quad strengthening (wall sits, step ups, mini squats, leg press 90-0 degrees, lunges); progress as tolerated</td>
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<tr>
<td>CKC TKE with tubing</td>
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<tr>
<td>4 way hip, hamstring, calf exercise progression</td>
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<tr>
<td>Balance exercises (SLS on various surfaces/with perturbations, ball toss, balance beam, mini trampoline with medicine ball lifts in various directions)</td>
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<tr>
<td>Progress core strengthening (front planks, side planks with hip ABD)</td>
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<td>Hamstring curls (gradually add resistance at week 12)</td>
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<td>Aquatic therapy for waist deep running</td>
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<tr>
<th>Cardiovascular Exercises</th>
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<tr>
<td>Stair Master</td>
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<tr>
<td>Nordic Track</td>
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<tr>
<td>Elliptical,</td>
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<tr>
<td>Stationary bike progressive time and resistance</td>
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## REHABILITATION GUIDELINES FOR ACL RECONSTRUCTION WITH HAMSTRING AUTOGRAFT

| Progression Criteria | No patellofemoral pain  
| Minimum of 120 degrees knee flexion  
| Minimal swelling/inflammation |

### PHASE III (12 – 18 WEEKS)  

**DATES:**

| Appointments | Physical therapy 1-2x per week |

| Rehabilitation Goals | Full ROM  
| Improve LE strength, endurance and proprioception to prepare for sports  
| Normalize running mechanics  
| Progressive resistance for hamstring strengthening  
| Strength 85% of uninvolved leg by week 14 |

| Precautions | Avoid overstressing graft fixation  
| Protect patella-femoral joint |

| Suggested Therapeutic Exercises | Initiate eccentric quad strengthening  
| Continue to progress hip, quad, hamstring and calf strengthening  
| Progress proprioceptive activities: slide board, balance activities with sport specific equipment  
| Functional exercises at 14 weeks:  
| - timed ground clock  
| - timed one legged squat to 70 degrees  
| - lateral shuffle  
| - carioca  
| - Y balance test  
| Initiate treadmill running at week 12  
| Initiate running on land at week 16 – 18 |

| Cardiovascular Exercises | Aquatic: running, swimming (no breaststroke)  
| Running progression treadmill to land |

| Progression Criteria | Strength and proprioception at least 70% of uninvolved leg and sufficient to initiate agility drills  
| Full, pain free ROM, no significant swelling  
| No patellofemoral irritation  
| Normal running gait  
| MD clearance for return to functional progression |
# REHABILITATION GUIDELINES FOR

## ACL RECONSTRUCTION WITH HAMSTRING AUTOGRRAFT

### PHASE IV (12-18 WEEKS)

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<th>Appointments</th>
<th>Physical therapy 1-2x per week</th>
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### Rehabilitation Goals
- Symmetric performance of basic and sport specific agility drills
- Single leg hop and 3 hop tests 85% of uninvolved leg
- Quad/hamstring strength at least 85% of uninvolved leg
- Gradual return to sports by 6-7 months

### Precautions
- Initiate sports brace if recommended by physician

### Suggested Therapeutic Exercises
- Initiate plyometrics (patient/sports specific)
- Progress running distance
- Agility progression
  - cutting
  - cariocas
  - figure 8’s
  - 1 and 2 leg jumping, bounding
  - acceleration/deceleration
  - ladder drills
- Sport specific drills

### Progression Criteria
- No patellofemoral or soft tissue complaints
- Necessary ROM, strength, endurance and proprioception to safely return to work or athletics
- MD clearance to resume partial or full activity at month 6 or 7
- Gradual return to sports after cleared by MD and with continued HEP for maintain strength and endurance

### References:

PT name and date: Erin Stansbury, PTA April 2016
MD name and date: Approved by MD April 2016