



**United States Military-Baylor University
Post-professional Sports Medicine-Physical Therapy Doctoral Program
Keller Army Community Hospital, West Point, New York
“Academic, Research, and Clinical Excellence”**

ACL RECONSTRUCTION (BTB,HS,QT) REHABILITATION GUIDELINES

PRE-OP:

- EVALUATION:** Gait, Effusion, ROM, Quad Tone, Patellar Mobility, Questionnaire
Lachman, Pivot Shift, Joint Line Tenderness, KT2000
- CRUTCHES:** Instruction in PWB 3-point gait (Level Surfaces and Stairs)
- BRACE:** Will use a knee immobilizer brace post-op
- EXERCISE:** Instruct in Phase I exercises
- PNT EDUCATION:** Necessity of Compliance in Rehabilitation, Goals for Hospital Discharge,
Precautions & Discharge Plans (i.e. Post-op Rehabilitation done at West
Point or another location)

PHASE I: INPATIENT REHABILITATION:

DOS:

- CRUTCHES:** PWBAT
- BRACE:** Patients are put into a knee immobilizer immediately post-op
- EXERCISE:** Quad/HS co-contractions (in brace)
Calf pumping
Ice (or cryocuff) with knee elevated and in an extended position
OOB with nursing assistance in evening
- WOUND:** Dressing remains intact

PRECAUTIONS: Review falling precautions, bed positioning, importance of extension

POD 1 - D/C:

CRUTCHES: Progressive WBAT x **2-3** weeks per P.T./Ortho

BRACE: Continue in immobilizer except during rehabilitation.

WOUND: POD 1 / Debulk dressing / Compressive Stocking
POD 2 / Dressing changed / Compressive Stocking
Check for Erythema/Abnormal Temperature/Excessive Effusion/Drainage

EXERCISE: **Note: Exercise prescription is dependent upon the tissue healing process and *individual* functional readiness in *all* stages. If any concerns or complications arise regarding the progress of any patient, physical therapy will contact the orthopedic doctor**

A.M. SESSION:

Static Quad Set or SLR w/ E-Stim x 15 min (Muscle Re-education).
(begin SLRs when good quad set is present)
Passive Extension/Active Flexion (PEAF) or Heel Slides.
Prone Hang w/ MHP or Supine Ext. w/ bolster
Multi-angle HS Isometrics
Gentle HS Stretching
Patellar Mobilizations

P.M. SESSION:

UBE - optional

PATIENT's ROOM:

Every waking hour - 100 Quad Sets, 30 Heel Slides, 10 SLRs, 10 Patellar mobilizations, and 20 min of ICE (or Cryocuff) with towel under heel cord to gain full knee extension.
Calf Pumping w/ Tubing
Immobilizer worn except while performing rehabilitation

DOCUMENTATION: Neurovascular Status & Pain Level
Gait Status
Effusion
ROM (after exercise)
Quad Function (Tone/SLR)
Precautions

Goals for Hospital Discharge:

1. Good quad contraction (perform good Quad Set or SLR w/o lag)
2. Full Extension (0-90° ROM)
3. Good patellar mobility
4. Independent in WBAT ambulation with crutches

5. *No evidence of infection*
6. *Understanding of Phase I & II Rehab*
7. *Effusion & Pain controlled*

PHASE II: PROTECTION PHASE:

*Note - should begin 1 - 2 weeks post surgery

FOLLOW-UP: P.T. - Every 7-10 days for first 2 months; MONTHLY thereafter.
Ortho - MONTHLY

IN CLINIC TREATMENT: QD x 6 wks, TIW through 12 wks

DOCUMENTATION: Progress notes weekly for 2 months
Should include: Gait status Effusion
ROM Quad function (Tone)
Patellar mobility Current exercises & modalities

BRACE & CRUTCHES: The immobilizer is discontinued after 2 weeks when the patient:
1. *Has satisfactory quad strength (30 SLRs w/o a lag)*
Crutches are discontinued after 2 weeks when the patient:
1. *Has at least 0-120° AROM*
2. *Performs single leg balancing for 30 seconds*
3. *Demonstrates a normal gait*

EXERCISE: Progress to the following exercises as the patient is functionally ready:
Stationary Bike at **Low Resistance** (progressing gradually)
Forward, lateral and Retro Step-ups (4"→6")
Leg Press (Low weight, high repetitions in painless ROM)
Standing SLR w/ Sport Cord
Heel raise progression (Done in forward position if pnt lacks full knee ext)
HS curls (Low weight, high reps in painless ROM)
Mini-Squats (progress to single leg when quad control is sufficient)
Phase I Aquatic Therapy (**P.T. Supervised BIW**; see Aquatics Program)
Pool Walking (Forward and Lateral)
Bicycling / High Knees
Flutter Kicks (knee remains extended)
1/2 Squats
Weightless Jogging

Note: The Aquatic Program begins only after the incision site is completely closed and sloughing.

WOUND: Remove staples/sutures @ 7-10 days per P.T.
May shower the morning after sutures are removed
Begin scar massage after incision site sloughs / scar is formed.
Remove compressive stocking and begin ACE wrap (prn)

CRITERIA FOR PROGRESSION TO PHASE III:

1. *Crutch discharge*
2. *Pain & Effusion under control*
3. *Stair Ambulation w/o difficulty (pain, swelling, or the sensation of giving-way)*
4. *Passive Extension deficit of $\leq 5^\circ$, Flexion ROM $\geq 120^\circ$*

PHASE III: STRENGTHENING PHASE:

*Note - should begin 4 - 6 weeks post surgery

BRACE: None required

EXERCISES: Progress to the following exercises as the patient is functionally ready:
Stairmaster, Rowing, or Nordic Track (5 min., progress as tolerated)
Gait Training - Exercise Band Training - Cone Walking
Retrowalking on the Treadmill (2 mph @ 1% grade - progress as tolerated)
Step-up progression (continued)
Progressive Quad & HS Strengthening (Supersets: 3 Total Sets)
 Exercise to muscle failure (First set: 20 repetitions, then 2 additional sets at the same weight doing as many repetitions as possible)
Active Knee Extension 90-40° (Low weight, high reps in painless ROM)
Gastroc / Soleus press (Progressive Strengthening)
Proprioceptive/Kinesthetic training
 Single Leg Body Blade
 BAPS Proprioceptive Training (Progress through levels w/ eyes eyes opened/closed)
 Plyoback training
Phase II Aquatic Therapy: (**P.T. Supervised**; see Aquatics Program)
 Treading water
 Kickboard swimming
 Pool Running, Shuffling, & Carioca
 Swimming
 Modified aquatic sports

ACTIVITIES: Upper body workout at gym as desired

CRITERIA FOR PROGRESSION TO PHASE IV:

1. *FAROM (95% uninjured)*
2. *Pain and Effusion minimal*
3. *Time frame per Ortho/PT - Generally 3 months minimum post-operative*

PHASE IV: ADVANCED STRENGTHENING & BASIC FUNCTIONAL TRAINING

BRACE: None Required

EXERCISES: Continue progression of phase III strengthening and proprioceptive exercises (First set 15 reps, then 2 additional sets with same weight)
Progress to the following exercises as the patient is functionally ready:
Jogging (**50-75% Pace**) on level surfaces, progressing gradually
 (> **12 wks post-op & No cutting, jumping, twisting, or contact sports**)
Active Knee Extensions 90-0° (Low weight, high repetitions to fatigue)
Basic Functional Training (**P.T. Supervised**; see Functional Program):
 Directional Running (50-75% speed) Agility Exercises
 Sport specific balance/proprioception exercises

Jumping/Hopping Progression

CRITERIA FOR PROGRESSION TO PHASE V:

1. Running 20 min. at normal pace (pre-injury) w/o difficulty (pain, swelling, or giving-way)
2. No Effusion
3. Basic Functional Training w/o difficulty

PHASE V: ADVANCED FUNCTIONAL TRAINING/RETURN TO SPORT

EXERCISES: Continue progression of strengthening and proprioceptive exercises
(First set: 8 - 10 repetitions, then 2 additional sets at the same weight)
Advanced Functional Training (**P.T. Supervised**; see Functional Program):
Directional Running (75-90% speed)
Advanced Agility Exercises
Sport specific balance/proprioception exercises
Continue Jumping/Hopping Progression
Controlled Sporting Activities

EVALUATION (6 MONTH):

ROM
KT2000
Questionnaire
Functional Testing
Single-Leg Hop
12 Meter Hop for Time.

Lachman
Isokinetic Test 60 & 180°/sec

Pivot Shift

GOALS:

1. Lachman - Within 1 grade of contralateral side
2. Pivot Shift - Symmetrical to contralateral side
3. $KT2000 \leq 3$ mm difference when compared to contralateral side
4. Isokinetic Testing $\geq 90\%$ contralateral side
5. Functional Testing $\geq 90\%$ contralateral side
6. Ability to pass the APFT

CONTINUE FORMAL REHABILITATION & RECONDITIONING AS NECESSARY

CONTINUE FOLLOW-UP EVALUATIONS AT 1 YR, 2 YRS, & 3 YRS POST-OP AS AVAILABLE

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APPROVE / DISAPPROVE

APPROVE / DISAPPROVE