



ACL Reconstruction Protocol

Applicability: Physician Practice	Date Effective: 9/2013
Department: Rehabilitation Services	Date Last Reviewed: 12/2016
Supersedes: n/a	Or Date Last Revision: 12/2016
Administration Approval: Amy Putnam, VP Physician Services	

Purpose: To define the guidelines to be followed for patients referred to Physical Therapy at Northwestern Medical Center after ACL Reconstruction by Northwestern Orthopedics

Policy Statement: Treatment will follow the defined guidelines below and be carried out by a Physical Therapist, Physical Therapy Assistant and/or Athletic Trainer.

Background: Rehab Staff will reference the : VT ACL Protocol 2nd edition; McClure Musculoskeletal Research Center, University of Vermont Department of Orthopaedics and Rehabilitation for suggested exercises.

Definitions: ACL- Anterior Cruciate Ligament, ROM- range of motion, WB- weight bearing

Procedure

Outpatient PT scheduled post-op day 1 (unless surgery on Friday then scheduled on Monday for PT)

Week 1

Goals:

ROM -0 degrees full extension

FWB- crutches if needed

Good edema control

Muscle Control- perform solid quads and hamstring contraction

Precautions/Restrictions:

Brace- keep locked at 0 degrees x 1 week

No sports, no cutting, turning, twisting or jumping

**** If Hamstring graft--** Hamstring resistive strengthening the first 6 weeks to be guided by symptoms-proceed cautiously beginning with AROM

**** If Meniscal Repair-** refer to MD order to determine which protocol to follow

Dressing Change:



Remove post op dressing at the first PT visit, cleanse and apply band-aids

If Aquacel AG is used change at post op day 7 being being cautious not to peel off the derma-bond seal. MD f/u at 8-11 days.

Edema Control (continue edema control until edema resolves typically 4 weeks or less):

Educate in ice/cryocuff use

Elevation

Tensogrip/kiniesotape as indicated

Estim for edema as indicated

Suggested Exercises:

- Ankle Pumps
- QS in 0 degrees flexion
- Co-Contraction in 0 degrees flexion (leg straight tighten muscles in back of thigh pushing heel down and back into floor) while at the same time tightening the muscle on the top of the thigh.
- Gravity Knee Extension (sitting or lying, leg straight with heel propped up, or prone with leg hanging off bed)
- Stationary bike ½ revolutions to assist in ROM no resistance
- Weight shifting- increase weight shift to involved leg 2-3 seconds increasing as tolerated (in clinic with supervision can perform without brace, as HEP with brace ON)

Week 2

Goals:

ROM 0 degrees full extension to 90 degrees flexion

FWB weaned from crutches without limp

Patella Mobility- mild to no restrictions

Patient education/instruction re: brace alignment with center of rotation of the knee. Educate pt that if the brace migrates distally the pt should avoid flexing in the brace as this will apply an anterior drawer against the ACL reconstruction

Precautions/Restrictions

Brace- opened to 5-10 less than available PROM if good SLR

Night time wean brace at 2-3 weeks

No sports, cutting, turning, twisting or jumping

**** If Hamstring graft--** Hamstring resistive strengthening the first 6 weeks to be guided by symptoms-proceed cautiously beginning with AROM

Suggested Exercises:

- Co-Contraction at 30 degrees of flexion
- Seated Leg Extension 90-45 degrees



- Heel Slides (initially may use hands to support then progress to Active)
- SLR
- SLR Hip Abduction
- SLR Hip Adduction
- SLR- Hip Extension
- Stationary bike no resistance
- Prone AA Flexion- actively flex as able and use uninvolved LE to push further hold 20-30 seconds repeat x 4
- Gravity Knee Extension 1-2 minutes sitting, lying or prone
- Patella Mobs- leg straight and relaxed, hold patella borders, slide patella up, down, inside and outside.
- Weight shifting and gait training- ((in clinic with supervision can perform without brace, as HEP with brace ON)
- Closed chain terminal knee extension against theraband

Week 3

Goals:

ROM 0 full extension to full flexion

Gait- WNL with minimal limp

Swelling- minimal

Precautions/Restrictions:

Brace- opened to available ROM

Wean from the brace on indoor surfaces without risk of contact

Night time wean brace at 2-3 weeks

No sporting, cutting, turning, twisting or jumping

**** If Hamstring graft--** Hamstring resistive strengthening the first 6 weeks to be guided by symptoms-proceed cautiously beginning with AROM

Suggested Exercises:

- Stationary Bike with little resistance
- Flutter kick in pool (no frog kick or whip kick)
- Gait training on treadmill (fws & bkwd) fully extending, heel strike and even weight distribution. Bkwd dig in with toes behind, roll as far back on heel as possible while pushing off
- Seated AA Flexion- overpressure from uninvolved LE
- Seated leg extension 90-45 degrees with MAX 5 pound LIMIT
- SLR all 4 planes with weight increased as tolerated, no limit
- QS at 0 degrees of flexion with weight increased as tolerated, no limit
- Co-Contraction at 30 degrees flexion- weight not applicable
- Prone or Standing Hamstring Curls with weight increased as tolerated, no limit unless hamstring graft.



- Standing Heel raises with weight increased as tolerated, progressed to single heel raise holding weighted ball overhead; no weight limit (stress quality of contraction over quantity)
- Step up exercises with focus on quality and knee alignment
- Single Leg stance- slight bend in the knee, 15-20 seconds progressed to eyes closed, unsteady surface, throwing/catching weighted object (avoid pivoting)
- Gravity Knee Extension with weight increased as tolerated, no limit

Week 4

Goals:

ROM 0 full extension to full flexion

WB- full without crutches

Gait- NL with no limp

Swelling- None

Precautions/Restrictions: Brace- opened to available ROM

Begin weaning from brace at 4 weeks with goal to be out of brace at 6 weeks.

No sporting, cutting, turning, twisting or jumping

**** If Hamstring graft--** Hamstring resistive strengthening the first 6 weeks to be guided by symptoms-proceed cautiously beginning with AROM

Suggested Exercises: Same as week 3 plus

- Co-Contractions at 30 degrees, 50 degrees and 70 degrees of flexion
- Stability ball bridging- legs straight, feet propped on ball, arms at side, raise hips so that the body creates straight line hold 10-15 seconds repeat x 4

Week 5

Goals:

ROM 0 full extension to full flexion

Gait- NL with no limp

Swelling- None

Precautions/Restrictions:

Brace- opened to available ROM

Begin weaning from brace at 4 weeks with goal to be out of brace at 6 weeks.

No sporting, cutting, turning, twisting or jumping

**** If Hamstring graft--** Hamstring resistive strengthening the first 6 weeks to be guided by symptoms-proceed cautiously beginning with AROM



Suggested Exercises –(week 5) (10 reps, 3 sets, 3 days/week): Intensity of exercise increases and therefore recuperation time is necessary so home program is reduced to 3 days/week

- Stationary Bike
- Swimming with flutter Kick
- Stair Climbing Machine
- LAQ/Seated Leg Extension through entire 90 degrees to 0 degrees **MAX 5 lb limit**
- SLR all 4 planes, weight as tolerated
- SAQ with MAX 5 lbs
- Standing Heel raises- weight as tolerated
- Single Leg Stance- eyes open/closed weight as tolerated
- Stability ball bridging weight N/A

Week 6 and 7

Goals:

ROM 0 full extension to full flexion

Discontinue use of brace

Gait- NL with no limp

Swelling- None

Precautions/Restrictions:

Brace- Discontinue

No sporting, cutting, turning, twisting or jumping

Suggested Exercises (week 6 and 7)

Weight restriction lifted from leg extension; now permitted to use as much weight as tolerated (but start increasing slowly).

- Stationary Bike
- Swimming with flutter Kick
- Stair Climbing Machine
- Standing squat between 90 degrees and 45 degrees- equal weight distribution
- Step up/down weight as tolerated
- Stability ball squats weight as tolerated
- SLR all 4 planes with weight as tolerated
- LAQ weight as tolerated
- SAQ weight as tolerated
- Standing hamstring curl weight as tolerated
- Standing heel raises weight as tolerated
- Single leg stance eyes open/closed
- Use of Weight Machines with proper instruction



Week 8

Goals

Manual Muscle Strength Test Score 4 out of 5

Gait- NL with no limp

Swelling- None (do not start jogging until swelling has fully resolved)

Precautions/Restrictions

No sporting, cutting, turning, twisting or jumping

Suggested Exercises (week 8)

- Continue above program plus
- Begin Jogging in a safe environment and without pain ONLY if swelling has resolved. Use cryocuff upon completion and swelling is the guide to progressing jogging
- Nordic Track
- Fitter
- BAPs Board
- Elliptical Trainer

Weeks 9-24

Goals:

Manual Muscle Strength Test- Score 4/5

Exercises- gradually increasing resistance

Gait- NL with no limp

Swelling None

Precautions/Restrictions:

No sporting, cutting, turning, twisting or jumping

Suggested Exercises (week 9-24)

- Squats with weight/Leg Press
- SAQ/LAQ/Leg Extension machine
- Hamstring curl machine/Standing Hamstring Curls
- Lunges
- Calf Press Machine/Standing Heel Raises
- Step Ups
- SLR all 4 directions
- Single Leg Balance Eyes open/closed
- Stability Ball Squat



- Stationary Bike
- Swimming with flutter Kick
- Stair Climber machine
- Balance Board
- Elliptical machine
- Jogging (if swelling is resolved and normal gait)
- Non-contact sport specific simulation in controlled environment at 20 weeks

Biodex testing:

Biodex testing completed in Physical Therapy at 6 months (prior to 6 month follow up with surgeon).

Return to Sport:

Return to sport will be approved by MD between 6-9 months. Dependent upon 90% strength return in involved as compared to uninvolved as demonstrated on Biodex testing. At 6 month follow up patients planning to return to contact sports will be fitted for brace to be worn for 18 months.

Note Well: Variances will be communicated by the surgeon directly to Rehabilitation Services.

Monitoring Plan: rehab chart auditing

Related Policies: n/a

References: VT ACL Protocol 2nd edition; McClure Musculoskeletal Research Center, University of Vermont Department of Orthopaedics and Rehabilitation.

Reviewers: Rehab and Orthopedics

A. Key Stakeholders: Michael Barnum Ortho Medical Director

B. Committees: n/a

C. Key Process Owner (KPO): Kristy Cushing, Rehab Manager, Karen Staniels Ortho Rehab Director

Not part of policy: [ADD Key words for policy search if end user didn't know the name]