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ACL RECONSTRUCTION REHABILITATION GUIDELINES

Pre-Operative Check List

- Physical Therapy or home exercises prior to surgery to increase quad/hamstring strength, and normalized gait
- Full Passive and Active Range of Motion: 0-130 and symmetrical with the contralateral knee
- Strength: >20 Straight Leg Raises without any lag sign
- Minimal knee effusion or swelling
- Patient education about surgery and the postoperative exercises.
- Wound care instructions. Review postoperative PT and brace instructions
- Schedule a doctor visit for 10 to 14 days after surgery with Dr. Li's Physician Assistant
- Schedule a PT visit for 2 weeks after surgery
- Visit Dr. Li's website for any questions or educational videos regarding ACL surgery

POSTOPERATIVE PROTOCOL – PHASE I (Surgery to 2 weeks)

Week 1 - Ankle pumps every hour

- **Post-Operative brace (Bledsoe) Locked in Extension to maintain full extension.**
- Quad sets & SLR (Brace on) with no lag
- **Weight Bearing as Tolerated (WBAT)** with Bledsoe Brace (Locked in Extension) and crutches at all times for the first 2 weeks.
- Ice or Cryocuff Unit on knee for 20 – 30 minutes every hour
- Pillow or towel roll under heel - Passive knee extension exercise to maintain full knee extension. (Low load and low duration of 5 to 10 mins per session of stretching)

Week 2 (No knee flexion past 100 deg)

- Supervised PT – 2 to 3 times a week to start now
- Continue SLR's in brace, quad isometric sets, ankle pumps
 1. **Electric Stimulation to Quad. muscle:** Optional if unable to perform SLR without lag.
- No weight bearing with knee in flexed position, WBAT with brace locked in full extension
- Passive knee extension with towel roll under heel (essential to gain full extension)
- Patellar mobilization exercises
 1. Start with medial and lateral mobilization

2. Then superior and inferior mobilization
- Brace locked in full extension for ambulation and sleeping, and may unlock for sitting. Continue to use crutches for ambulation.
 - May remove brace for HEP, except SLR
 - Flexion exercises seated Active Assisted ROM
 1. Wall slides and heel slides.
 - Hamstring sets, curls and calf stretching
 - Hip strengthening and prone Hip Extension
 - Heel raises (calf press)

CRITERIA FOR PROGRESSION TO PHASE 2

- >20 SLR with no Lag sign
- Normal Gait with the Bledsoe Brace
- Crutches discontinued
- ROM: No greater than 5 degrees of active extension lag
- ROM: 110 degrees of active flexion

PHASE 2: Early Rehabilitation Phase (Weeks 2 to 8)

General Exercise Suggestions (MOON Group ACL Rehabilitation Protocol)

ROM:

1. Low load and long duration (assisted as needed)
2. Heel Slides / Wall Slides
3. Heel Prop / Prone hang
4. Bike (rocking for range – ride with a low seat height)
5. Stretching of all major muscle groups

STRENGTHENING:

Quadriceps: Quad sets, Mini squats and wall squats, Step-ups, Knee Extension from 90 to 40 degrees, Leg Press, and Shuttle Press with NO Jumping

Hamstring: Hamstring Curls, Resistive SLR with sports cord

Other Musculature: Hip Adduction and Abduction exercises, Standing heel raises: Progress from double to single leg support, Seated Calf press, and other hip strengthening exercises as tolerated

Neuromuscular Training: Wobble board, Rocker board, Single-leg stance, Slide board, and Fitter

Cardiopulmonary Exercises: Bike, Elliptical trainer, Stairmaster

PHASE 2: Specific Rehab Protocol (2 to 6 weeks)

Week 3 (no knee flexion past 115 deg)

- Continue with above exercises/ice treatments
- ***WBAT with Road Runner brace opened to ROM***
 1. Wane off the crutches as tolerated (week 3 to 6)

- Perform scar massage
- AAROM (using good leg to assist) exercises (4-5x/ day)
- Emphasis full passive extension (towel roll under the foot)
- Progressive SLR program for quad strength with brace off if no extensor lag (otherwise keep brace on and locked) – start with 1 lb, progress 1-2 lbs per week
- Theraband standing terminal knee extension
- Hamstring PREs
- Heel raises with brace on

Week 4 (no restrictions on range of motion)

- Continue all exercises (See the MOON Group Exercises)
- Continue ROM stretching and overpressure into extension
- Heel raises
- SLR's – in all planes with weight
- ***WBAT and Wane out of the Road Runner brace***

Week 5

- Continue above exercises (See the MOON Group Exercises)
- Self ROM 4-5x/day using other leg to provide ROM, emphasis on maintaining 0 deg passive extension
- Advance ROM as tolerated
- Isotonic leg press (0 – 90 degrees) if ROM allows
- Regular stationary bike if Flexion up to 115, use short crank or high seat if not
- Lateral step out with therabands
- ***WBAT and Wane out of the Road Runner brace***

Week 6

- Continue above exercises (See the MOON Group Exercises)
- Can increase ROM as tolerated with no restrictions
- May D/C brace when walking with brace unlocked and no limp
- ***WBAT with Normal Gait***
 1. ***Road Runner Brace should be discontinued***

CRITERIA FOR PROGRESSION TO PHASE 3

- Full ROM – Passive and Active
- Minimal Effusion and Pain
- Functional strength and control in normal daily activities
- Normal gait without any brace or assistive devices (crutches)

PHASE 3: Strengthening and Control Phase (Weeks 7 to 12)

General Exercise Suggestions (MOON Group ACL Rehabilitation Protocol)

Strengthening: Squats, Leg Press, Hamstring curl, Knee Extension 90 to 0 degrees, Step-ups/down, Lunges, Shuttle, Sports cord, Wall squats.

Neuromuscular Training: Wobble board, Rocker board, Roller board, Varied surfaces, and Perturbation training.

Cardiopulmonary Training: Bike, Elliptical, Stairmaster, and Swimming.

PHASE 3: Specific Rehab Protocol (7 to 12 weeks)

Week 7-9

- Advance ROM and maintain extension
- Retro treadmill progressive inclines
- Half squats (0-40 degrees)
- Add ball squats
 Goal: 0 to 115 degrees, walking with no limp
- Brisk walking
- Stair master machine
- Increase resistance on stationary bike
- Sportcord (bungee) walking
- Start slide board
- 8 inch step ups
- Initiate retro treadmill with 3% incline (for quad control)
- 4-6 inch step downs

Week 10-11

- Begin resistance for open chain knee extension
- Progress balance and board throws
- Bike outdoors, level surfaces only
- Plyometric leg press
- Jump down's (double stance landing)

CRITERIA FOR PROGRESSION TO PHASE 4

- Full ROM with SLR without difficulties
- No pain or swelling with any of the above exercises
- Neuromuscular and strength training exercises without difficulties

PHASE 4: Advanced Training Phase (Weeks 12 to 16)

General Exercise Suggestions (MOON Group ACL Rehabilitation Protocol)

Strengthening: Squats, Lunges, and Plyometric

Neuromuscular Training: Wobble board, Rocker board, Roller board, Varied surfaces, and Perturbation training.

Agility Drills: Shuffling, Hopping, Carioca, Vertical jumps, Running patterns at 50 to 75% speed, and start sports specific drills at 50 to 60 % effort

CRITERIA FOR PROGRESSION TO PHASE 5

- No pain or swelling with any of the above exercises
- Maximum vertical jump without pain or instability
- 75% of contralateral hop test
- Ability to tolerate running at 75% of speed

PHASE 5: Return to Sports Phase (Weeks 17 to 24)

Week 12-24 (General Guidelines)

- If full ROM, quad strength > 80% contralateral side, functional hop test >85% contralateral side, satisfactory clinical exam and MD approval:
- Progress to home program for running. Progress to hops, jumps, cuts and sports specific drills. Begin to wean from supervised therapy.
- Quadriceps Isotonics – Full arc for closed chain. Open chain: 90-40 degrees.
- May begin full running program at 17 weeks
- Sports Specific Activities (Week 17 and beyond):
 1. Interval training programs
 2. Running patterns in football
 3. Sprinting
 4. Change of direction, pivot, and drive in Basketball
 5. Kicking in Soccer

CRITERIA TO RETURN TO SPORTS (6 to 9 Months)

- Full Active and Passive ROM
- Quadriceps >90% contralateral side
- Satisfactory clinical exam
- Functional hop test > 90% contralateral side
- Completion of ACL running program
- Agility Drills
- No functional complaints
- Confidence in the knee with running, cutting, jumping at full speed

One Year

- Doctor visit
- ROM and Functional Exam

This is strictly an outline of most of the major exercises that we would like to incorporate into the ACL rehabilitation. Not all exercises need to be done. Two main goals are that appropriate progress is made on a weekly basis, and that communication exists between patient, therapist and doctor.

**Please send or fax progress notes.

Physician's Signature: _____

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