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ACL Reconstruction Rehabilitation Guidelines

Exercise prescription and progression are general guidelines and are dependent upon the tissue healing process and **individual** functional readiness in **all** stages.

Phase 1: Protection of Reconstruction 0 – 4 Weeks Post Op

Appointments:

- Begin PT 3 – 5 days post op
- MD follow up at 2 weeks post op
- PT 2 x per week based on PT eval

Precautions:

- Avoid any side to side or quick motions, keep all movement in a straight line

Weight Bearing:

- WBAT
- Crutches may be discontinued (unless otherwise instructed) when pt has good muscle tone, motion, and can walk without a limp

ROM Guidelines:

- P/AROM to progress knee flexion and extension, not pushing through pain or pressure for flexion
- Emphasize full knee extension, including hyperextension, equal to contralateral knee

Goals by 4 Weeks Post Op:

- Decrease inflammation and swelling with ice, compression, and elevation
- Pain management and decreased swelling
- Ambulate without limp
- Full P/AROM extension
- Knee flexion P/AROM >110°; to 90° with meniscus repairs
- Straight leg raise and short arc quad without extension lag
- Fair (+) quad tone

Treatment Strategies:

- Patellar mobilizations
- NMES or Biofeedback for improved VMO quad activation
- *To be instructed in initial PT eval for HEP:* Knee extension PROM, Gentle knee flexion PROM, Quad set, Knee squeezes, Hamstring set, Resisted plantar flexion, Short arc quads, SLR – no resistance below knee until 8 weeks post op
- Short squats adding weight at tolerated with no hip or pelvic shift; Leg press / Shuttle – not to exceed 90° knee flexion
- Standing TKE with tubing

- Step up/down – front, side, and back
- Full ROM Hamstring curls – should be kept light/relatively pain free
- Resisted quad work 90°-40° range and pain free until 8 weeks post op – keep light resistance if patellar tendon autograft used for repair
- Heel Raises
- Balance and proprioception work
- Progress gait training to stepping over 2 – 6 in high hurdles
- Stationary bike (unless limited by meniscus repair) when ROM allows – no toe clips for 4 – 6 weeks

Phase 2: Protection of Reconstruction 4 – 8 Weeks Post Op

Appointments:

- MD follow up at 6 weeks post op
- PT 1 – 2 x per week based on pt progress

ROM Guidelines:

- Continue to progress towards FROM

Goals by 8 Weeks Post Op:

- Full passive and active extension
- No extension lag with SLR or SAQ
- Knee flexion > 120 degrees
- Good quad tone

Treatment Strategies:

- For meniscal repairs, with MD approval, may discontinue ROM restrictions
- Resisted quad work 90°-40° range and pain free until 8 weeks post op
- Progress PRE's and functional exercises as tolerated
- Begin sport cord training – forward, backward, lateral, ½ circle shuffle
- Add single leg and split squat/bench squats as tolerated
- Advance proprioception and balance training
- Able to progress to biking outside, Elliptical, Treadmill on incline, Stairmaster, and Swimming – no frog or vigorous flutter kick

Phase 3: Intermediate Rehabilitation 8 – 12 Weeks Post Op

Goals by 12 Weeks Post op:

- Begin Pre running drills
- Focus on core and hip stability with single leg control

Treatment Strategies:

- Begin to work quad isolation resistance in FROM / full extension
 - o SLR and SAQ with ankle weight
 - o Work through FROM or Patellar range (0°-40°) to decrease pain and allow for improved muscle recruitment. Only increase if FROM TKE can be achieved
- May begin isokinetic training (especially at higher speeds) through FROM
- Increase focus on eccentric or negative work in preparation for return to running

- Dynamic lunges (short) – front, side, and walking
- Step unders (limbo under shoulder-high bar or cord)
- “Run” on shuttle
- Initiate Pre Impact exercises if achieved appropriate single leg strength/control and minimal to no swelling or pain in knee
 - o Quick feet drill (step up/down rapidly forwards and laterally on a 4 – 6” step)
 - o Jump downs (off 4 – 6” step)
 - o Fast lateral shuffle with sport cord
 - o Jump rope
 - o Stair jogging, walking back down
- **Note: with meniscus repairs, no pre impact or pre running until 3 months post op**

Phase 4: Advanced Rehabilitation

3 Months Post Op

Criteria to progress to running:

- Full passive and active extension and no extension lag with SLR and SAQ
- Minimal pain with resisted knee extensions
- Minimal swelling
- Knee flexion > 135 degrees
- Good single leg stability, control, and alignment
- No pain or swelling with Pre running drills

Treatment Strategies:

- May begin low impact running if OK'd by MD
 - o Only progress running if no increase in pain or swelling
 - o If available, begin with short uphill runs, stair jogging, or Alter-G running (30 – 50 yards at a moderate speed), walking back down. Start with 6 – 10 uphill runs. If no pain or swelling, begin running on a flat surface.
 - o When jogging on flat ground
 - Run on turf or court if applicable at 75% speed: 10 x 30 – 50 yard intervals
 - If no pain or swelling, increase to 10 x 100 yards.
 - Progress to 85% - 95 % speed (30 – 100 yard repeats for 600 – 1200 yards total)
 - o No hard cuts or stops until 5 months post op
 - o Running program progression is dependent on pt goals and status of knee joint
- Continue to progress PRE's and functional training
- May discontinue the initial HEP from beginning of PT

4 Months Post Op

Treatment Strategies:

- Progress running as tolerated
- Begin increasing running speed up to 90 – 95% of full speed.
 - o Progress to 90% - 95% working on speed – endurance intervals with controlled rest periods
 - o 100 yards x 10, running every 60 sec, progress to running every 50 sec, 40 sec, 30sec

- Endurance athletes can start to increase running distance past 2 miles if knee tolerates
- Continue to progress PRE's and functional training

5 Months Post Op

Criteria to progress to Agilities and Hop drills:

- Minimal pain with resisted knee extensions
- No increase in pain or swelling with running
- Full P/AROM knee extension
- Knee flexion >145 degrees
- No more than trace effusion
- Able to run at > 90% of full speed
- Biodex quad deficit < 40%

Treatment Strategies:

- May begin Early Phase Agility Training
 - o Individual drills: Back pedal, lateral steps, cross over steps, stopping
 - o Warm up with skipping and diagonal hops
- May begin Early Phase Hop Drills
 - o Focus on core stability and kinetic chain control
 - o Skipping 20 yards
 - o Side to side hops: hop from one foot to the other, gradually increasing jump height and width. 3 sets of 10
 - o Diagonal hops: hop from one foot to the other while moving forward at a 45 degree angle. 3 sets of 10
 - o Standing broad jumps: focus on sticking the landing (knees bent) and good alignment. Do 10
 - o Agility ladder drills
- Continue to progress PRE's, running, and functional training
- 1st Biodex strength test / Sportsmetrics Jump Test goals
 - o Quad deficit = 25% - 40% (>50% = "red flag")
 - o Hamstring deficit = 10% - 20%
 - o Quads = 60% - 75% of goals
 - o Hams = 70% - 85% of goals

6 Months Post Op

Criteria to progress Agilities and Hop drills:

- If Agility and Hop drills are performed with good alignment and control and no increased pain or swelling progress to Intermediate Phase Agility and Hop drills
- Meet Biodex test and Hop test goals
- Minimal pain with resisted knee extensions

Treatment Strategies:

- Continue to progress PRE's and functional training
- Start Sportsmetrics Jump Training Phase 1 (depending on sport)
- ACL-RSI Test (to evaluate psychological readiness)

- o Scores below 39 suggest not likely to return to sports at 12 months
 - o Scores above 60 suggest likely to return to sports at 12 months
- Intermediate Phase Agility Drills (link individual drills into combination drills)
 - o Agility Box
 - o Forward/Backward zig-zag drill, 90 degree cuts
 - o Figure 8 running
 - o If no pain or swelling with above exercises, progress to cone drills
- Intermediate Phase Hop Drills
 - o Single leg hops: focus on sticking landing and good alignment. Only increase distance with good technique
 - Hop off one leg and hold landing. 2 – 3 sets, 3 – 5 hops bilaterally
 - 3 – 5 consecutive hops, hold the landing on each hop. 3 – 5 sets
 - o Single leg with double leg landing. 2 – 3 sets, 3 – 5 hops bilaterally

7 – 8 Months Post Op

Criteria to progress Agilities and Hop drills (Non-Contact drills):

- If individual drills are performed with good alignment and control and no increased pain or swelling progress to Advanced Phase Agility and Hop drills

Treatment Strategies:

- Begin Advanced Phase Agility drills: Sport Specific Drills
- Begin Advanced Phase Hop drills
 - o Triple hops: hop 3 x in a row on one leg and hold landing on 3rd hop. 3 x 5 reps bilat
 - o Cross over hops: 3, forward, single leg hops diagonally crossing over a 15cm wide strip line and hopping as far as possible. Hold the landing after the 3rd hop
 - o Single leg 6m timed hop: large, one-legged hops in a series over 6m. Time to the nearest 10th of a second
- 2nd Boidex strength test goals
 - o Quad deficit = 15% - 30%
 - o Hamstring deficit = 10% - 15%
 - o Quads = 75 – 85% of goals (5% - 15% increase per month since 1st test)
 - o Hams = 80% - 90% of goals (5% - 10% increase per month since 1st test)
- 1st Hop Test goals
 - o Symmetry of single leg hop (involved / uninvolved) > 80%
- Single Leg Confidence > 75%
- ACL-RSI Test (to evaluate psychological readiness)

9 – 10 Months Post Op

Criteria to progress to Contact Drills:

- No pain or swelling with Sport Specific Drills
- Minimal anterior knee pain
- Meet Biodex and Hop Test goals

Treatment Strategies:

- Begin one on one contact drills

- o For soccer and basketball, start with offensive drills and progress to defensive drills
- Agility drills for sport specific fitness
- Continue hop training for sport specific drills
- 3rd Biodex strength test goals
 - o Quad deficit = 15% - 25%
 - o Hamstring deficit = 10% - 15%
 - o Quads = 75 - 90% of goals (5% - 15% increase per month since 1st test)
 - o Hams = 85% - 95% of goals (5% - 10% increase per month since 1st test)
- 2nd Hop Test goals
 - o Symmetry of single leg hop (involved / uninvolved) > 85%
- Single Leg Confidence > 80%

11 - 12 Months Post Op

Criteria to progress to Full Practice and Competition:

- No pain or swelling with Sport Specific Drills, Contact Drills, or Scrimmage play
- Minimal anterior knee pain
- Meet Biodex and Hop Test goals

Treatment Strategies:

- Progress to full competition
- 4th Biodex strength test goals
 - o Quad deficit = 10% - 18%
 - o Hamstring deficit = 10% - 15%
 - o Quads = 85 - 100% of goals (5% - 15% increase per month since 2nd test)
 - o Hams = 85% - 100% of goals (5% - 10% increase per month since 2nd test)
- 3rd Hop Test goals
 - o Symmetry of single leg hop (involved / uninvolved) > 90%
- Single Leg Confidence > 90%
- ACL-RSI Test (to evaluate psychological readiness)
- Continue PRE's for as long as you wish to remain active

Anterior Cruciate Ligament Reconstruction Return to Activities Guideline

Subject to change per Surgeon's Approval and Individual Patient Circumstance
(i.e. additional injury to meniscus, cartilage or other ligaments)

1-2 Months Post Op

Activity	Month	Guideline
Stationary Bike	ASAP	Needs 110 Degrees of Flexion
Elliptical	2 Weeks	
Rowing - Stationary	2 Weeks	
Stair Machine	2 Weeks	
Road Bike	1 Month	Without Cleats, Ok to Use Loose Toe Straps
Swimming - Flutter Kick	1 Month	
Pilates	1-2 Months	
Scuba/Snorkel	1-2 Months	Without Fins
Float Tube - Fishing	2 Months	
Rowing - Shell	2 Months	
Water Aerobics	2 Months	
Flat Water Canoe	2 Months	Only if Experienced - Careful of Put-Ins and Take Outs

3-4 Months Post Op

Activity	Month	Guideline
Low Impact Aerobics	3 Months	
Backpacking	3 Months	No Steep Descents until 6 Months
Bowling	3 Months	
Cross Country Skiing - Classic	3 Months	If Experienced
Fishing - Wading	3 Months	
Golf	3 Months	Without Cleats
Hike	3 Months	No Steep Descents until 5 Months
Ping Pong	3 Months	
Roller Ski	3 Months	If Experienced
Swimming - Breaststroke	3 Months	
Yoga	3 Months	If Single Leg Balance is Good
HIIT	4 Months	Inline Only
Soccer- Juggling	4 Months	Controlled Juggling in Box - As per ATC/PT Direction
Horseback Ride	3-4 Months	
Hunting	3-5 Months	Depends on Terrain
Body Pump	4 Months	In-Line Movements Only
Barre	4 Months	
Jump Rope	4 Months	
Motorcycle Riding	4 Months	
Rock Climb - From Top Rope	4 Months	
Weightlifting	4 Months	Refers to Training for Heavy Competition

Cross Country Skiing – Skating	4 Months	
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5-6 Months Post Op		
Activity	Month	Guideline
HIIT - Agility	5-6 Months	
Agility Training	5 Months	Depending on Biodex Test
White Water Raft	5 Months	
Rock Climbing	5 Months	
Running	5-6 Months	Start with Pre-Running
Canoe – Whitewater	6 Months	If Experienced – Be Careful with Put-Ins and Take-Outs
Kayak	3 Months	Be Careful with Put-Ins and Take Outs
Mountain Bike	4-5 Months	Without Cleats – Ok to Use Loose Toe Straps
Cycling – Spinning	5 Months	Out of Saddle
Fencing	5 Months	
Windsurfing	5 Months	
Wake Surf	5-6 Months	
Hunting	3-5 Months	Depends on Terrain
Jet Ski	6 Months	
Surfing	6 Months	
Cross-Fit	6-7 Months	
Throwing	5-6 Months	
Ice Skate	6-7 Months	
Snowshoe	6-8 Months	
Throwing	6-8 Months	Lead Leg - Mound

7-8 Months Post Op		
Activity	Month	Guideline
Alpine Skiing	7 Months	Experienced Skier Packed Runs/Get Bindings Checked/Take Lesson
Badminton	8 Months	
Baseball/Softball	8 Months	
Cross Fit	6-7 Months	
Dance – Modern	7 Months	
Dance – Swing	7 Months	
Dance – Ballet	7 Months	
Skateboard	7 Months	
Snowboard	7 Months	If Experienced
Wakeboard	7 Months	
Zumba	7 Months	
Waterski/Knee Board	8 Months	
Sport Specific Skills	7-8 Months	Begin with general Sports Drills. Progress to Offensive then Defensive Drills
Telemark Skiing	7 Months	If at Least Intermediate Ability
Handball	8 Months	
Hockey	8 Months	
Racquetball	8 Months	
Tennis/ Pickleball	8 Months	Begin with Doubles, Work into Singles

Activity	Month	Guideline
Basketball	9-12 Months	
Boxing	9 Months	
Football	9-12 Months	
Gymnastics	9-12 Months	
Hangliding	9 Months	
Lacrosse	9 Months	
Motocross	9 Months	
Motorcycle Riding	9 Months	
Rodeo	9 Months	If Experienced
Rugby	9 Months	
Skydive	9 Months	
Slackline	9 Months	
Sledding	9 Months	
Snowmobile	9-12 Months	
Soccer	9-12 Months	
Trampoline	9 Months	
Ultimate Frisbee	9 Months	
Volleyball	9 Months	
Wrestling	9 Months	
9-12 Months Post Op		