LMH Health OrthoKansas

ACL Reconstruction Post-operative Guidelines

These guidelines are meant to be a guide for rehabilitation professionals. A general framework has been provided to help provide structure and measureable criteria for progression. Rehabilitation professionals are free to work within this framework based on individual needs of the athlete/patient. At LMH Health, we emphasize criteria-based progressions rather than time-based return to activity and when appropriate, return to sport. Each individual case will progress differently based on comorbidities, age, injury history, sport and level of participation (recreational v. elite), and associated procedures with ACL reconstruction (i.e. meniscus repair, cartilage restoration, or multi-ligament injuries). Expect return to full participation in sports activities at a minimum of 6 months but more likely from 9-12 months post-operatively in order to ensure that strict criteria are met and the athlete has appropriate fitness levels to maximize return to sport capabilities.

Pre-operative milestones for surgery include range of motion to at least 120° flexion, minimal to no effusion, and the ability to perform a straight leg raise without a quadriceps lag. Ideally, extension range of motion is 0°, but this may be limited by space-occupying lesions like meniscus tears or cartilage injuries.

At our center, the majority of our patients have hamstring autografts. Goals and milestones may be adjusted based on the type of graft used. Consult your physician as well as your physical therapist about changes or adjustments to the guidelines.

Phase	Intervention	Goals and Criteria for Progression
First post-operative visit until Week 4	**Education: Discuss rehabilitation plan, criteria for progression, gait progression, use of assistive devices during level ground and stair ambulation, answer questions/concerns** **Home Program: Ankle pumps, Heel hangs, Quadriceps sets, Assisted heel slides as tolerated** **Additional exercises include proximal hip exercises in standing (abduction, extension)** **Begin Russian stimulation to the quads. Encourage wide work/rest ratios initially to maximize recovery between contractions**	**Ensure patient understands signs of infection and best practices for wound healing** **Be able to initiate and sustain a quad contraction** **Adequate patellar mobility, 2 quadrants in each direction** **Achieve symmetrical knee extension ASAP** **Reduce pain and effusion** **Perform a straight leg raise without a quadriceps lag**

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	Begin well-leg strengthening with high loads **Ice can be used for pain inhibition** **Stationary bike for ROM only to begin about day 7-10** **Gait Training: Instruction on use of assisted device and proper gait sequencing** **Weight Bearing Status: PWB with crutches for the 2 weeks, WBAT after unless meniscus repair then NWB for at least 4 weeks** **ROM: 0-90 by week 2** **BFR training not to begin before week 2**	**Progress assistive device based on quad control during mid-stance. Use one crutch or a cane to transition to full WB w/o assistive devices. Limping and a flexed knee gait should not be encouraged** **Closed kinetic chain exercises can begin once gait is normal and patient is able to perform a straight leg raise without a quad lag** **Begin single leg balance exercises once full WB**
Weeks 4-8 **Expected visits: 1-2x/week**	**ROM: Full AROM in supine should be achieved by the end of week 8** **Maintain terminal knee extension** **Continue NMES to quads** **Physical therapy Treatment:** • **Hypertrophy and strength emphasis with strengthening, 12-20 RM** • **Continue high loads on well leg** • **Closed chain exercises to 60° flexion** • **Open Chain Quad strengthening 90-45°** • **Open & Closed Chain hamstring strengthening exercises** • **Shuttle/Total Gym** • **Leg Press - emphasize eccentric lowering** • **Step ups/downs** • **Lunges** • **BFR training if appropriate** • **Total Leg Strengthening: hip extensors, abductors, calves** • **Core strengthening** • **Balance activities**	**Normal gait** **No effusion** **Symmetrical AROM to uninvolved side** **Reciprocating gait on stairs at the end of week 8**

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Weeks 8-16 **Expected visits: 1-2x/week**	**Continue strengthening from previous phases, increasing loads to build strength, 8-12 sets, 6-10 RM of involved** **Full arc OKC knee extension by week 12** **Continue BFR training as adjunct** **Consider Google cardboard/VR for neuroplasticity training**	**Consider lateral step down test by week 12** **Return to jogging from weeks 12-16:** • **No effusion** • **No pain** • **Symmetrical AROM** • **Quad and Hamstring strength via HHD at least 75%** • **Lateral step down test symmetrical**
Weeks 16-24 **Expected visits: 1-2x/week**	**Once cleared for jogging, provide walk/jog program to be completed every other day (when appropriate)** **Initiate low impact progressions** • **Begin on shuttle or Total Gym** • **Jumps TO box** • **Land-based jumps in place** • **Jumps to box, 2 leg to 1** • **Land-based broad jumps** • **Land-based bounds** • **Single leg hops TO box** • **Single leg hops on land** • **Sagittal plane, Frontal Plane, Transverse plane, Multi-plane** **Volume: Begin w/ 40-50 foot contacts per session and increase from there** **Once lateral plyos initiated, begin CoD progressions** • **45° cuts** • **90° cuts, outside leg** • **90° cuts, inside leg** **Strengthening: Based on testing results. Provided strength deficits remain, maintain eccentric-emphasized training** **Continue BFR training as adjunct**	**Once walk/jog program completed, begin return to sprinting progression if appropriate** **Functional testing** • **Hop testing battery** • **Y Balance test** • **HHD testing** **PRO's - IKDC and ACL-RSI** **Consider return to participation in sport when strength and hop testing values at least 85% of the uninvolved side** • **Individual drills** • **Drills w/ chaos (1 on 1 basketball, 3 v 3 soccer)** • **Team drills, non-contact** • **Team drills, contact or reduced constraints** **Achieve symmetrical passive flexion by 5-6 months**

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Weeks 24+	Progress plyometric activities	CRITERIA FOR DISCHARGE TO RETURN TO SPORTS:
Expected visits: 1x/week to once every other week *****Full release to sport on approval from MD, PT, and after completion of full participation in practices and team activities. Return to sport DOES NOT necessarily mean release to full participation in full games. There will be a progression to this as well.***	• **Continue earlier exercises, moving to more explosive movements with full recovery** • **Jumps FROM Box** • **Reactive jumps** • **Tuck jumps** **Strengthening/Power Training** • **Based on deficits** • **Emphasize strength if values not 90% or >** • **Transition to power-based activities when strength symmetrical**	• **IKDC at least 90, ACL-RSI at least 100** • **Symmetrical AROM and PROM** • **Quad mass within 1 cm of the uninvolved** • **HHD testing 95% or greater** • ***Single leg press to 90° 2x BW 10x if no HHD*** • **All hop tests 95% or greater** • **SLVJ 95% or greater** • **Reactive strength within 5-10%** • **Return to sport progression completed**

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