ACL RECONSTRUCTION

A Hockey-Specific Return to Ice and Play Progression

Evidence-Based Rehabilitation Timeline (Surgery to 9-12+ Months)

Prepared for clinical use

This document is intended for physicians, physical therapists, athletic trainers, strength and conditioning coaches, performance staff, hockey athletes, parents, coaches, and rehabilitation professionals involved in return-to-hockey decision-making following ACL reconstruction.

Important note

Every ACL reconstruction is unique. This timeline provides a framework for progression following uncomplicated primary ACL reconstruction in a hockey athlete. Progression should be based on graft type, concomitant procedures, surgeon precautions, symptoms, effusion, range of motion, quadriceps strength, neuromuscular control, skating tolerance, workload response, psychological readiness, and medical team recommendations. Return to ice should be earned, not guessed. Do not progress solely based on time.

1. Clinical Purpose and Guiding Decision Rule

Time is a reference point - not clearance

Clinical purpose. Provide a structured, hockey-specific rehabilitation framework after ACL reconstruction, progressing from early protection through strength restoration, running, skating, team practice, contact preparation, full practice, and unrestricted competition.

Primary decision rule. Progress the athlete when the knee is quiet, the athlete has earned the next dose, and clinical examination, strength, function, skating quality, exposure history, psychological readiness, and medical clearance support advancement. Time-based milestones are reference points, not automatic clearance criteria.

2. What the Research and Newsletter Framework Tell Us

Hockey outcome data + ACL RTS evidence + IP return-to-ice framework

Hockey-specific ACL reconstruction rehabilitation research is limited. This guideline combines hockey outcome data, foundational on-ice progression literature, broader ACL return-to-sport evidence, and the Integrated Performance return-to-ice framework.

Key finding	Clinical meaning	Implication for hockey rehabilitation
Return to ice should be earned	The first skate is not a calendar event; it is a load-tolerance decision.	Require full extension, near-full ROM, trace/non-reactive effusion, adequate quad capacity, hip/trunk strength, and physician clearance before skating.
Hockey hides early deficits	Glide can make easy skating look acceptable before speed, edges, fatigue, and contact expose deficits.	Separate open skating from full hockey readiness, then build stops, starts, crossovers, pressure, and contact gradually.
RTS requires more than one test	Turk et al. recommend time, >2 functional tests, strength testing, and psychological readiness.	Final clearance should include testing, full-practice tolerance, contact exposure, and shared decision-making.
Total weekly load matters	Busy does not mean better; the body counts team practice, individual skating, lifting, conditioning, shooting, and recovery.	Target quality exposures, avoid load spikes, and keep only 3-4 weekly sessions truly high intensity when rebuilding.

3. Quick Reference Timeline

Progress one step at a time. Earn the next dose.

Phase	Time	Primary focus	Hockey exposure	Primary advancement theme
1	0-2 wks	Protection, extension, swelling control	No skating	Repair/graft protection
2	2-6 wks	Normalize ROM, quad activation, gait	No skating	Quiet knee foundation
3	6-12 wks	Strength base and single-leg control	Off-ice stick skills only	Capacity before impact
4	3-5 mo	Running, plyometrics, deceleration	No ice unless criteria met	Athletic prerequisites
5	5-7 mo	Return to ice and controlled skills	Open ice, low pressure	First skate earned
6	6-8 mo	Speed, transitions, noncontact practice	Team drills, no contact	Exposure budgeting
7	8-10 mo	Testing and contact preparation	Limited contact to full practice	Chaos readiness
8	9-12+ mo	Return to competition	Games after criteria	Stay back, not just get back

4. Detailed Phase-by-Phase Clinical Guideline

Quiet knee first. Capacity before chaos.

PHASE 1 | WEEKS 0-2 | PROTECTION, EXTENSION, AND EARLY RECOVERY

Clinical intent	Protect the graft and surgical sites, control pain and effusion, restore full knee extension, and establish safe quadriceps activation.
Primary goals	- Full passive knee extension as early as appropriate - Trace-to-mild swelling trend - Safe gait progression per surgeon - Incisions healing normally
Strength / mobility	- Quad sets, SLR without lag when appropriate - Heel props/prone hangs as indicated - Patellar mobility and calf/hamstring gentle work - Hip and core training that does not irritate the knee
Hockey preparation	- No skating or fall-risk activity - Upper-body/trunk training if safe - Video, team meetings, and education allowed

Avoid / Defer

- Skating or running
- Extension loss accepted as normal
- Loaded twisting or pivoting
- Ignoring increasing effusion

Criteria to Progress

- Pain controlled at rest
- Extension improving toward full
- Quad activation present
- No concerning wound or DVT signs

PHASE 2 | WEEKS 2-6 | ROM, GAIT, QUAD ACTIVATION, AND QUIET KNEE FOUNDATION

Clinical intent	Normalize gait, restore ROM, reduce effusion, improve quad control, and build the foundation for later loading.
ROM / effusion	- Full extension maintained - Flexion progressing toward functional ranges - Effusion trace or clearly improving - Knee response monitored after each load increase
Strength	- NMES if quad inhibition persists - Progressive leg press/squat patterns in safe ranges - Hip abductors/adductors, hamstrings, calf, and trunk - Stationary bike when ROM allows
Hockey preparation	- No ice exposure - Low-risk conditioning only - Begin load education: swelling and extension are key feedback signals

Avoid / Defer

- Walking with a limp
- Progressing with reactive swelling
- Cutting, pivoting, running, or skating
- Replacing rehab work with team activity

Criteria to Progress

- Full extension maintained
- Gait normalized or clearly improving
- Effusion trace/minimal
- Good quad set and SLR without lag

PHASE 3 | WEEKS 6-12 | STRENGTH BASE, SINGLE-LEG CONTROL, AND IMPACT PREPARATION

Clinical intent	Build usable lower-extremity strength and control before running, plyometrics, and ice exposure are considered.
Strength emphasis	- Progressive squat, split squat, step-up, leg press, RDL, hamstring, calf, hip, and trunk work - Begin heavier quadriceps loading as tolerated and cleared - Continue adductor/abductor capacity for lateral hockey demands
Movement quality	- Single-leg squat control - No knee collapse, trunk dump, hip shift, or side-to-side avoidance - Controlled landing prep and low-level deceleration mechanics
Hockey preparation	- Off-ice stickhandling with controlled footwork - No skating until return-to-ice gate is met - Strength training remains the priority

Avoid / Defer

- Running before criteria
- Skating because the player looks good walking
- High-volume jumping with swelling
- Team chaos or reactive puck pressure

Criteria to Progress

- No reactive effusion
- Full extension after loading
- Single-leg control improving
- Quad strength moving toward running/ice criteria

PHASE 4 | MONTHS 3-5 | RUNNING, PLYOMETRICS, DECELERATION, AND FIRST-SKATE PREREQUISITES

Clinical intent	Bridge gym strength into athletic movement, running, landing, deceleration, lateral control, and the prerequisites for the first skate.
Athletic progression	- Jog progression only after criteria - Pogos, snap-downs, low-amplitude hops, and landing mechanics - Planned acceleration/deceleration before reactive change - Lateral shuffle and low-intensity crossover patterns off ice
Return-to-ice gate	- Near-full knee ROM and full extension - Trace or less non-reactive effusion - Quad strength >=65% LSI with uninvolved peak torque/body weight >=100% - Adequate hip/adductor/abductor strength and physician clearance
Load rule	- Skating should be added to rehab, not replace rehab - The first skate should feel controlled, not heroic - The athlete should finish feeling like they could have done more

Avoid / Defer

- First skate with swelling or extension loss
- High-speed crossovers before control
- Reactive drills before planned drills
- Stacking skating on top of every prior exposure

Criteria to Progress

- Return-to-ice gate met
- No next-day response to running/plyometrics
- Confidence with single-leg loading
- Medical team agrees first skate is earned

PHASE 5 | MONTHS 5-7 | RETURN TO ICE AND CONTROLLED HOCKEY SKILLS

Clinical intent	Reintroduce skating while controlling speed, space, fatigue, traffic, puck demand, and next-day knee response.
On-ice rules	- Symmetry comes first: equal push-off, clean stride, no guarding - At least 48 hours between early skates - No more than 3 skates per week early - Progress one variable at a time: speed, volume, edges, puck, fatigue, or pressure
Sample progression	- Step 1: 50%, open ice, <30-40 min; forward skating, hockey turns, puck touches - Step 2: 50-75%, 30-40 min; backward skating, controlled crossovers, C-cuts - Step 3: 75%, 40-60 min; power turns, controlled stops/starts - Step 4: 90-100%, up to practice length; basic skills, wrist/snap shots, team-skate prep
Dose language	- RPE 2-3 for early exposure - RPE 4-6 for basic skating and controlled puck work - RPE 7-8 only after the knee repeatedly stays quiet

Avoid / Defer

- Contact, battles, or crowded ice
- Daily skating early
- Progressing speed and volume together
- Fatigue-driven technique loss

Criteria to Progress

- No pain, swelling, stiffness, or extension loss
- Smooth push-off and controlled edges
- Comfortable-speed crossovers tolerated
- Athlete confident and moving symmetrically

5. Soreness and Response Rules

The knee gets a vote

Knee response	Clinical adjustment
Soreness during warm-up that continues	Take 2 days off skating and revert 1 step.
Soreness during warm-up that goes away	Stay at the same step; do not advance yet.
Soreness goes away, then returns during session	Take 2 days off and revert 1 step.
Next-day soreness, swelling, stiffness, or extension loss	Take 1 day off, reduce dose, and do not advance.
No soreness or swelling response	Advance 1 step per week or as directed.

PHASE 6 | MONTHS 6-8 | SPEED, TRANSITIONS, SHOOTING, AND NONCONTACT PRACTICE

Clinical intent	Progress from controlled individual skating into repeatable hockey patterns, speed changes, puck skills, shooting, and noncontact team exposure while managing the whole week.
On-ice progression	- Acceleration/deceleration - Backward skating and transitions - Tighter turns and planned change of direction - Noncontact small-area movement and controlled shooting
Team integration	- Predictable routes before reactive drills - Team practice 1x/week before 2-3x/week - Replace some individual skating as team exposure increases - Do not add team practice on top of everything else
Quality check	- Skill work should not accidentally become conditioning - Mechanics should remain symmetric under moderate fatigue - The knee should return to baseline by the next day

Avoid / Defer

- Full practice without restrictions
- Live contact or board battles
- Turning every skill session into conditioning
- Increasing practice, individual skating, conditioning, shooting, and

Criteria to Progress

- Noncontact practice tolerated
- No effusion after speed/skill sessions
- Movement repeatable across sessions
- Strength and function trending toward >=90%

6. Phase 2 Newsletter Exposure Budget

Replace, do not just add

Step	Team exposure	Individual work	Load management point
1	Team practice 1x/wk	Individual drills 3x/wk	Most work remains controlled and individual.
2	Team practice 2x/wk	Individual drills 2x/wk	Team exposure increases, so individual volume decreases.
3	Team practice 3x/wk	Individual drills 1x/wk	Week becomes more hockey-heavy.
4	Full-time team practice	Individual work as needed	Extra work should be selective, not automatic.

PHASE 7 | MONTHS 8-10 | GAME-SIMULATED EXPOSURE, CONTACT PREPARATION, AND TESTING

Clinical intent	Prepare the athlete for opponent pressure, board play, collision demands, fatigue, and full-practice tolerance through controlled exposure and objective testing.
Game-simulated progression	- Noncontact team drills and odd-man rushes - Noncontact 1v1 small-area work - Power play, penalty kill, controlled scrimmage - More players, speed, spacing, fatigue, and reaction
Contact progression	- Angling and stick pressure - Puck protection at low-moderate speed - Controlled board approach and retrievals - Progressive battle drills and perturbations
Testing focus	- Quadriceps/hamstring strength - >2 functional tests - Landing, deceleration, and COD quality - Psychological readiness and confidence

Avoid / Defer

- Games before full-contact practice tolerance
- High-volume contact with fatigue
- Uncontrolled open-ice collisions
- Clearing based only on time or one hop test

Criteria to Progress

- Complete RTP testing battery
- Full practice progression tolerated
- No swelling or giving-way episodes
- Athlete confident with contact and boards

PHASE 8 | MONTHS 9-12+ | RETURN TO COMPETITION

Clinical intent	Return to games only when the knee tolerates practice demands, contact exposure, objective testing, psychological readiness, and repeated workload.
Full participation gate	- Near-full ROM and full extension - Trace or less non-reactive effusion - Strong single-leg squat to deeper range - Quad symmetry >=90% with strong peak torque relative to body weight - Adequate adductor-to-abductor strength ratio - At least 8 weeks of exposure time and physician clearance
Recommended benchmarks	- Quadriceps/hamstring strength >=90% LSI, often 95%+ for elite/high-risk athletes - >2 functional tests passed - Movement quality symmetric under fatigue - Psychological readiness acceptable
Return to games	- Practical full activity may occur around 6-7 months when criteria allow - Full contact is often closer to 9+ months - Use modified minutes or role restrictions when needed - Continue strength and workload monitoring in-season

Avoid / Defer

- Back-to-back games immediately after clearance
- Ignoring next-day knee response
- Returning before full practice tolerance
- Assuming skating equals game readiness

Criteria to Progress

- Multiple full practices tolerated
- Testing battery passed
- No apprehension with contact or edge demands
- Shared decision-making completed

7. Criteria-Based Return-to-Hockey Testing Battery

Objective data plus repeated tolerance

Criteria-based testing should occur before unrestricted full contact clearance. The goal is convergence across clinical exam, strength, function, movement quality, psychological readiness, workload response, and hockey-specific exposure. Testing helps, but it is not enough by itself.

Domain	Recommended criteria before full contact
Clinical exam	Pain-free functional ROM; full extension maintained; no mechanical symptoms; no giving-way episodes; effusion remains baseline after hard sessions.
Strength	Quadriceps and hamstring strength at least 90% LSI; consider 95%+ or EPIC/preinjury estimates for elite athletes or bilateral deconditioning concerns.
Functional testing	>2 dynamic tests: single hop, triple hop, crossover hop, timed hop, vertical/horizontal power, deceleration, COD, and fatigue testing as appropriate.
Movement quality	No dynamic valgus collapse, trunk/pelvis loss, stiff landing, asymmetrical braking, or reconstructed-side avoidance during planned and reactive tasks.
Skating quality	Equal push-off, clean stride mechanics, controlled edges, no guarding, no side-to-side avoidance, and quiet next-day knee response.
Hockey skill	Stops/starts, crossovers, transitions, backward skating, puck handling, passing, shooting, and small-area movement tolerated at planned intensities.
Contact exposure	Angling, board approach, puck protection, stick pressure, controlled battles, and full-contact practice completed before games.
Psychological readiness	Athlete reports confidence with reconstructed-side loading, skating, stops, crossovers, contact, and game workload. Consider ACL-RSI or team-specific readiness scales when available.

Pass/fail principle

A single failed domain should delay unrestricted competition. The athlete can often continue skating, strength training, skill work, and controlled practice while the limiting domain is targeted. Do not reduce return to hockey to one hop test, one strength number, or one date.

8. Hockey-Specific Exposure Ladder

Skating readiness is not hockey readiness

Use the ladder below to separate skating readiness from hockey readiness. A player may look excellent skating in open ice while still being unprepared for pressure, contact, board play, unexpected falls, or game fatigue.

Level	Exposure	Advance when
1	Off-ice strength, landing, deceleration, and stick skills	Quiet knee, full extension, good single-leg control, and workload response.
2	Easy skating and controlled puck touches	No symptoms during or the day after skating.
3	Controlled edges, stops, turns, and comfortable-speed crossovers	Movement is smooth and not protective; no next-day swelling.
4	Speed changes, transitions, passing, shooting, and noncontact skill drills	Planned speed and skill demands can be repeated without symptom response.
5	Noncontact practice and small-area movement	Repeatability across multiple practices without swelling or confidence drop.
6	Controlled opponent pressure, puck protection, and board approach	Confidence with reconstructed-side loading near boards and during pressure.
7	Limited contact and full-practice progression	No effusion, instability symptoms, avoidance, or protective movement behavior.
8	Competition	Testing passed, medical clearance complete, full-contact practice tolerated.

9. What to Watch For and Clinical Pearls

The knee gets a vote

Warning sign	Likely clinical message
Swelling, stiffness, or extension loss after skating	The knee may not be tolerating the current dose.
Asymmetrical skating or avoiding one side	Return to controlled individual work and clean up mechanics.
Hesitation with stops, starts, crossovers, or board pressure	Confidence, strength, or deceleration capacity may not be ready.
Heavy legs early or mechanics change when tired	Reduce intensity/volume and protect quality.

Hockey-specific clinical pearls

- The knee gets a vote. Swelling after skating is not just soreness; it is feedback.
- Dose the movement. A controlled crossover in open ice is different from a full-speed crossover under pressure.
- Replace, do not just add. As team practice increases, reduce some individual skating or conditioning.

10. Key References

Evidence base and clinical framework

#	Reference
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Use note

This guideline is intended to support clinical reasoning, not replace surgical precautions or individualized medical decision-making. Modify progression for graft type, meniscus repair, cartilage procedures, LET/ALL augmentation, revision ACL reconstruction, multiligament injury, growth plate considerations, persistent effusion, extension loss, or surgeon-specific precautions. Return to ice is earned. Full hockey is built.