ACHILLES REPAIR

A Hockey-Specific Return to Ice Progression

Evidence-Based Rehabilitation Timeline (Weeks 6-28+)

PREPARED FOR CLINICAL USE

This document is intended for physicians, physical therapists, athletic trainers, strength and conditioning coaches, performance staff, players, parents, coaches, and rehabilitation professionals involved in return-to-ice decision-making following uncomplicated surgical Achilles tendon repair.

IMPORTANT NOTE

Every Achilles repair is unique. This timeline provides a framework for progression following an uncomplicated surgical Achilles tendon repair. Progression should be based on symptoms, swelling response, tendon tolerance, calf strength, functional testing, and surgeon/rehabilitation team recommendations. Do not progress solely based on time.

CLINICAL PURPOSE, EVIDENCE, AND QUICK REFERENCE

Clinical purpose. Provide a structured, hockey-specific rehabilitation framework for an elite/NHL hockey athlete after surgical Achilles tendon repair, beginning at approximately week 6 post-operative and progressing through return to competition.

Primary decision rule. Progress the athlete when tissue response, clinical examination, strength capacity, neuromuscular control, skating tolerance, and objective performance testing support advancement. Time-based milestones should be treated as reference points, not automatic clearance criteria.

WHAT THE RESEARCH TELLS US

Key Finding	Clinical Meaning	Implication for Hockey Rehabilitation
Early graduated weightbearing appears safe	Does not appear to increase re-rupture risk, does not appear to cause excessive tendon elongation, and may improve early function.	Begin controlled loading once medically cleared, but dose progression according to symptoms, swelling, and gait quality.
Tendon elongation is largely biological	Most elongation occurs during the first 6 weeks, tendon adaptation may continue for up to 6 months, and elongation can occur regardless of rehabilitation strategy.	Protect the repair early, but avoid assuming that complete immobilization eliminates elongation risk. Monitor function and tendon behavior over time.
Loading should be progressive	Achilles loading ranges from approximately 0.5 bodyweights during seated calf raises to over 7 bodyweights during hopping activities.	Progress from low-load, slow-velocity tasks toward higher-load, faster-rate, energy-storage tasks before skating, sprinting, and contact.
Strength matters more than time	Heel-rise performance, calf endurance, hop testing, and skating tolerance are better readiness indicators than the calendar alone.	Use objective benchmarks and repeated exposure tolerance before return to high-speed skating, full practice, and games.

QUICK REFERENCE TIMELINE

Phase	Weeks	Primary Focus	Estimated Achilles Load	Primary Advancement Theme
1	6-8	Protected loading and boot/heel lift weaning	0.5-2 BW	Gait, swelling, WB tolerance
2	8-10	Walking restoration	2-3 BW	Symmetric gait and basic calf capacity
3	10-12	Single-leg strength development	3-4 BW	Quality single-leg heel raise emerging
4	12-14	Energy storage	4-5 BW	Eccentric loading and low-level plyometrics
5	14-16	Return to running	5-6 BW	Jogging and controlled speed exposure
6	16-20	Return to skating	6-7+ BW	Progressive on-ice integration
7	20-24	Return to practice	High, sport-specific	Repeatability and practice tolerance
8	24-28+	Return to competition	Game demand	Objective RTP criteria and clearance

Clinical decision-making should be individualized to injury grade, fixation construct, symptoms, and medical team clearance.

PHASE-BY-PHASE REHABILITATION PROGRESSION

A criteria-based framework for protected loading, functional restoration, and return to hockey.

PHASE 1 | WEEKS 6-8 | PROTECTED LOADING AND BOOT WEANING

Clinical Intent	Restore normal walking mechanics, initiate controlled tendon loading, control swelling, and protect the repair while gradually increasing function.
Primary Goals	- Restore normal walking mechanics - Begin tendon loading - Control swelling - Protect the repair while increasing function
Weightbearing	- Weight bearing as tolerated - Progress toward full weight bearing as gait quality allows
Boot / Heel Lift Progression	- Week 6: walking boot with two heel lifts - Week 7: remove one heel lift - Week 8: remove final heel lift and begin transition to supportive athletic shoe
Range of Motion	- Active ROM - Gentle mobility - Progress toward neutral dorsiflexion without forceful stretching
Strength and Conditioning	- Seated calf raises - Bilateral standing calf raises - Pool
Estimated Achilles Load	0.5-2 bodyweights

Avoid / Defer

- Aggressive stretching
- Loaded dorsiflexion beyond neutral

Criteria to Progress

- Walking without crutches
- Minimal swelling
- Pain less than 2/10
- Full weightbearing tolerance

PHASE 2 | WEEKS 8-10 | WALKING RESTORATION PHASE

Clinical Intent	Normalize gait mechanics, improve basic calf strength, improve balance, and complete transition into shoe-based walking while minimizing tendon irritability.
Goals	- Normalize gait - Improve calf strength - Improve balance
Footwear	- Supportive athletic shoe - Optional 5-8 mm heel cushion - Wean heel cushion completely by week 10 as gait quality permits
Strength	- Bilateral calf raises - Heavy seated calf raises
Conditioning	- Bike - Elliptical - Pool running - Incline walking
Estimated Achilles Load	2-3 bodyweights

Avoid / Defer

- Running
- Jumping
- Eccentric heel drops

Criteria to Progress

- Symmetrical gait
- 20 bilateral calf raises
- Single-leg balance greater than 30 seconds

PHASE 3 | WEEKS 10-12 | SINGLE-LEG STRENGTH DEVELOPMENT

Restore unilateral calf strength and prepare for higher tendon loads.

Clinical Intent	Restore unilateral plantarflexor strength, improve calf capacity, and prepare the tendon for higher-load and higher-rate tasks.
Goals	- Restore unilateral strength - Improve calf capacity - Prepare for higher tendon loads
Strength	- Single-leg calf raise progression - Seated calf raises (heavy)
Movement	- Lateral weight shifts - Single-leg control drills - Skating position holds
Conditioning	- Bike - Elliptical - Assault bike
Estimated Achilles Load	3-4 bodyweights
Clinical Milestone	First quality single-leg heel raise

Criteria to Progress

- Ten quality single-leg heel raises
- No reactive swelling
- Good movement quality

PHASE 4 | WEEKS 12-14 | ENERGY STORAGE PHASE

Introduce eccentric loading and low-level plyometrics.

Clinical Intent	At approximately 12 weeks, the tendon begins tolerating more aggressive loading. This phase introduces eccentric loading and low-level energy-storage tasks. This aligns with GAIT Consensus recommendations that eccentric loading and stretching should not begin before 12 weeks.
Strength	- Heavy calf raises - Eccentric calf raises - Sled pushes
Plyometric Introduction	- Jump rope - Pogos - Line hops - Landing mechanics
Hockey Preparation	- Slideboard - Skating position drills - Lateral push mechanics
Estimated Achilles Load	4-5 bodyweights

Criteria to Progress

- Twenty single-leg calf raises
- Pain-free pogo hopping
- Limb symmetry index greater than 70%

PHASE 5 | WEEKS 14-16 | RETURN TO RUNNING PHASE

Restore energy-storage function, running mechanics, and power before on-ice progression.

Clinical Intent	Restore energy-storage function, reintroduce running mechanics, and build power before on-ice progression.
Goals	- Restore energy-storage - Restore running mechanics - Build power
Running Progression	- Week 14: walk-jog intervals - Week 15: continuous jogging - Week 16: speed progression
Strength	- Heavy calf raises - Single-leg calf raises - Deadlifts - Split squats
Power	- Box jumps - Broad jumps - Landing drills - Medicine ball throws
Hockey Preparation	- Slideboard intervals - Lateral acceleration drills
Estimated Achilles Load	5-6 bodyweights

Criteria to Progress

- Jog 20 minutes pain free
- Limb symmetry index greater than 80%
- Hop without apprehension

PHASE 6 | WEEKS 16-20 | RETURN TO SKATING

Use a graded on-ice exposure model from basic skating to team integration.

Clinical Intent	Reintroduce on-ice loading using a graded exposure model that progresses from straight-line skating to acceleration, edge work, transitions, puck handling, and team integration.
Week 16 On-Ice	- Straight-line skating - Easy laps - Open skating - Session duration: 20-40 minutes
Week 17 On-Ice	- Acceleration drills - Deceleration drills - Controlled edge work - Forward stride mechanics
Week 18 On-Ice	- Crossovers - Tight turns - Backward skating - Figure-8 patterns
Week 19 On-Ice	- Puck handling - Small-area movement - Non-contact drills - Hockey-specific conditioning
Week 20 On-Ice	- Full skating practice - High-speed skating - Hockey-specific transitions - Team practice integration
Estimated Achilles Load	6-7+ bodyweights

Avoid / Defer

- Week 16: maximal pushes
- Week 16: tight turns
- Week 16: crossovers

PHASE 7 | WEEKS 20-24 | RETURN TO PRACTICE

Build repeatability, practice tolerance, and confidence through repeated hockey-specific exposures.

Clinical Intent	Restore power, repeat sprint ability, practice tolerance, and confidence through repeated hockey-specific exposures.
Practice Progression	- Individual skating - Non-contact team drills - Full practice - Contact integration
Continue	- Heavy calf strengthening - Sprint progression - Plyometric progression - Change of direction training
Performance Goal	- Restore power - Restore repeat sprint ability - Restore practice tolerance - Restore confidence

PHASE 8 | WEEKS 24-28+ | RETURN TO COMPETITION

Return only when objective readiness, hockey performance, and tissue response support full competition.

Clinical Intent	Return to games is based on a combination of tissue response, objective performance, position demands, competition level, and contact tolerance.
Requirements	- No swelling after practice - Full skating progression completed - Surgeon clearance - Rehabilitation clearance
Recommended Benchmarks	- Heel raise endurance greater than 90% of uninvolved side - Heel raise height greater than 90% of uninvolved side - Hop testing greater than 90% symmetry - Sprint testing greater than 90% symmetry - Repeated calf raises: 25+ quality repetitions
Return to Games	- Week 24-28+ - Decision based on strength, performance, position, competition level, and contact tolerance

ACHILLES TENDON LOAD PROGRESSION AND HOCKEY-SPECIFIC CLINICAL PEARLS

The following progression summarizes approximate Achilles tendon loading demands and should be used to conceptualize the gradual increase in magnitude and rate of loading across rehabilitation. Values are approximate and should be interpreted clinically rather than as absolute thresholds.

EXERCISE	APPROXIMATE TENDON LOAD
Seated Calf Raise	0.5 BW
Standing Bilateral Calf Raise	1.5-2 BW
Split Squat	2-3 BW
Step Up	3 BW
Single-Leg Calf Raise	4 BW
Jogging	4-5 BW
Skating Stride	4-6 BW
Single-Leg Hop	7+ BW

(Baxter et al., 2021)

HOCKEY-SPECIFIC CLINICAL PEARLS

CLINICAL PEARLS

1. Respect the First 12 Weeks. Most tendon elongation occurs before meaningful athletic loading begins.
2. Strength Before Speed. If an athlete cannot perform 20+ quality single-leg heel raises, they are not ready for high-speed skating.
3. Skating Is Not Playing Hockey. Athletes frequently return to skating 4-8 weeks before returning to unrestricted competition.
4. Calf Capacity Drives Success. A hockey player may perform thousands of skating pushes in a single week. The calf must be prepared for that demand.
5. Don't Chase the Calendar. The athlete who is stronger, more symmetrical, and better conditioned is often safer than the athlete who simply reaches a specific week.

KEY REFERENCES

#	REFERENCE
1	Baxter JR et al. Exercise Progression to Incrementally Load the Achilles Tendon. Med Sci Sports Exerc. 2021.
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3	Aufwerber S et al. Effects of Early Functional Mobilization Following Achilles Repair. AJSM. 2020.
4	Deng Z et al. Early Versus Late Functional Weight-Bearing After Achilles Repair. Arch Orthop Trauma Surg. 2023.
5	Hoeffner R et al. Tendon Elongation and Function After Delayed or Standard Loading. AJSM. 2024.
6	Eliasson P et al. Achilles Tendon Elongation After Repair Regardless of Early or Late Weightbearing, AJSM. 2018.
7	Saxena A et al. GAIT Consensus Statement for Achilles Repair Rehabilitation. J Foot Ankle Surg. 2022.
8	Won Lee K et al. Immediate Weightbearing and Ankle Motion Exercise After Achilles Tendon Rupture Repair. J Foot Ankle Surg. 2022.

FINAL USE NOTE

This clinical guideline is intended to support clinical reasoning and interdisciplinary decision-making. It should not replace surgeon-specific precautions, patient-specific clinical examination, or shared decision-making with the athlete and medical team.