

PHYSICAL THERAPY PROTOCOL

Knee Arthroscopy Rehabilitation

Partial Meniscectomy · Chondroplasty · Loose Body Removal · Diagnostic Arthroscopy

FOR THE PHYSICAL THERAPIST

Overview and Goals

This protocol governs rehabilitation following knee arthroscopy for partial meniscectomy, chondroplasty (articular cartilage debridement), loose body removal, or diagnostic arthroscopy. These procedures share a common rehabilitation framework: weight bearing as tolerated immediately, early restoration of full range of motion, and a relatively rapid criterion-based return to activity.^{1,2,3}

Most patients ambulate without crutches within several days, return to work within 1–2 weeks, and resume unrestricted activity by 4–6 weeks.^{3,4} Athletes typically return to preinjury sport between 7 and 9 weeks, with reported return-to-sport rates of 80–98% after partial meniscectomy.^{5,6} Progression should be criterion-based rather than strictly time-based, with attention to effusion control, range of motion, and quadriceps activation as the primary rate-limiters.^{1,2}

THIS PROTOCOL DOES NOT COVER CARTILAGE RESTORATION PROCEDURES

If the procedure included microfracture, OATS / osteochondral grafting, autologous chondrocyte implantation (ACI), or any cartilage restoration technique, **do not use this protocol**. These procedures require substantially more conservative weight-bearing restrictions and longer return-to-activity timelines. Refer to Dr. Roth's cartilage-specific protocols (OCD Allograft, Cartiform) or contact the office for guidance.

Rehabilitation Phases

PHASE	WEIGHT BEARING	BRACE	ROM GOALS	EXERCISES	CRITERIA TO ADVANCE
PHASE 1 Weeks 0–2 <i>Recovery, ROM & quad activation</i>	- Weight bearing as tolerated (WBAT) immediately.¹ - Crutches for comfort and gait quality, typically discontinued within the first several days as quadriceps control returns.	None.	Goals by end of Phase 1: - Full passive extension (0°) - Active flexion ≥ 120° - Symmetric to contralateral side	Effusion / pain control: - Cryotherapy, elevation, compression - NMES to quadriceps if persistent activation deficit ROM: - Heel slides, wall slides, prone hangs, towel-roll passive extension, patellar mobilization Strengthening: - Quad sets (with knee support if extension lag) - SLR (all 4 planes) - Short-arc quads (terminal arc 40°–0°) - Hamstring sets - Hip abduction / adduction / extension - Heel raises, ankle pumps - Theraband knee extension and leg press as tolerated Aerobic: - Stationary bike as tolerated once flexion permits - Gait training toward normalized pattern; address antalgic compensation	- Full passive knee extension - Active flexion ≥ 120° - Effusion ≤ 1+ - SLR without extension lag - Normalized gait without crutches - Quad activation symmetric on palpation

PHASE	WEIGHT BEARING	BRACE	ROM GOALS	EXERCISES	CRITERIA TO ADVANCE
PHASE 2 Weeks 2–6 <i>Strengthening & functional progression</i>	- Full weight bearing. - No assistive device.	None.	Full, symmetric, pain-free ROM.	Progressive strengthening: - Mini-squats progressing to full squats to 90° - Leg press, progressive resistance, progressing to single-leg - Step-ups, step-downs (forward and lateral) - Lunges (forward, reverse, lateral) - Eccentric quad and hamstring loading - Hamstring curls (PRES) - Single-leg squat as strength allows Functional / neuromuscular: - Single-leg balance, perturbation training, foam surface - Step-down mechanics with attention to valgus control Aerobic conditioning: - Bike (progressive resistance), elliptical, treadmill walking → mini-trampoline jogging → treadmill jogging - Core and trunk stabilization	- Full symmetric ROM, pain-free - No effusion - Quad LSI ≥ 75% - Symmetric step-down mechanics - Tolerates jogging without pain or effusion
PHASE 3 Weeks 6–8+ <i>Return to sport & activity</i>	Full weight bearing.	None.	Full, pain-free ROM.	Plyometrics progression: - Double-leg jumps in place → broad jumps → box jumps - Lateral bounds - Single-leg hops in multiple planes Agility: - Ladder drills, carioca, sport-cord lateral drills, deceleration training Running progression: - Continuous running → straight-line sprinting → curved running Sport: - Sport-specific drills at progressive intensity - Continue progressive resistance training to close strength asymmetry - Establish home maintenance program	<i>See Return-to-Sport Criteria section below.</i> Athletes typically return to preinjury sport at 7–9 weeks.^{5,6}

Procedure-Specific Considerations

Partial Meniscectomy

Rehabilitation is the same regardless of medial or lateral compartment.⁴ Patients with resection ≤ 50% of the meniscus typically follow the standard timeline. Patients with larger resections, pre-existing radiographic osteoarthritis, or symptom duration > 1 year tend to recover more slowly and warrant a more conservative pacing — particularly with running and impact loading.⁵ Persistent effusion or joint-line pain at 4–6 weeks should prompt re-evaluation rather than continued progression.

Chondroplasty

Weight bearing and overall timeline are the same as for meniscectomy. The articular surface is not biologically restored by chondroplasty — debrided cartilage relies on synovial fluid diffusion for nutrition, which controlled motion supports. PT exercise selection should minimize high-shear loading at the lesion site.^{8,9}

- **Femoral condyle lesions** — open kinetic chain knee extension is generally well tolerated in the 90°–40° range; deep loaded flexion creates higher shear at the weight-bearing surface.
- **Patellofemoral lesions** — closed kinetic chain exercises in the 0°–40° range minimize patellofemoral contact stress; avoid deep squats and lunges that load the patella against the trochlea at high flexion angles.

If lesion location was not specified in the operative note, contact Dr. Roth's office for clarification before introducing high-load exercises.

Loose Body Removal & Diagnostic Arthroscopy

The fastest trajectory of the four procedures. Patients who underwent loose body removal or diagnostic-only arthroscopy without significant intra-articular pathology often self-pace recovery and may not require full Phase 2 progression. Focus on effusion resolution, ROM, and quad activation; advance based on patient symptoms and functional goals. If incidental chondral or meniscal findings were addressed during the procedure, defer to the relevant section above.

WHEN FORMAL PT ADDS THE MOST VALUE

Recent evidence — including a 2021 meta-analysis of 8 RCTs⁷ and the 2025 TeMPO trial in NEJM¹⁰ — has shown that supervised outpatient PT and structured home-based exercise produce comparable patient-reported outcomes after partial meniscectomy. This does not diminish the role of skilled PT; rather, it helps direct it. Formal supervised PT is most beneficial for patients with:

- Significant pre-operative quadriceps atrophy or activation deficit
- Athletes targeting accelerated return to sport
- Persistent effusion or ROM limitations after the first 1–2 weeks
- Older patients with substantial pre-operative deconditioning
- Pre-existing biomechanical issues (gait abnormalities, malalignment, prior contralateral surgery)

Patients without these factors often do well with a well-structured home program and a single PT consultation for instruction and progression checkpoints.

Return-to-Sport Criteria

Return to sport after knee arthroscopy is criterion-based. The typical timeline is 6–8 weeks for recreational return and 7–9 weeks for athletes returning to competitive sport.^{5,6} All criteria below should be met before clearance, and patients who do not meet criteria should not progress to sport regardless of elapsed time.

Domain	Criterion
Range of motion	Full, symmetric, pain-free flexion and extension ^{1,2}
Joint signs	No effusion (trace or less). No joint-line tenderness with sport-specific loading. ¹
Quadriceps strength	LSI ≥ 85% on isokinetic or handheld dynamometer testing ^{1,2}
Hop test battery	LSI ≥ 85% on the four-test battery: single hop, triple hop, crossover hop, side hop ²
Single-leg squat	Controlled, pain-free, symmetric depth comparable to contralateral side ²

Domain	Criterion
Sport-specific function	Successful completion of running, agility, and sport-specific drills without pain or compensation ^{1,2}
Time from surgery	Typically 6–8 weeks for recreational activity; 7–9 weeks for competitive athletes ^{3,4}

WHEN TO PAUSE AND REASSESS

Persistent effusion, joint-line pain, or pain with impact loading at 4–6 weeks post-arthroscopy is not a normal recovery pattern and should prompt re-evaluation by Dr. Roth before continued progression. This is particularly relevant for patients with larger meniscectomies, pre-existing chondral disease, or symptoms that pre-dated the surgery by more than a year.⁵

References

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Glossary

ACI — Autologous chondrocyte implantation; cartilage restoration procedure using cultured cells.

CKC — Closed kinetic chain; exercises in which the distal limb is fixed (e.g., squat, leg press).

LSI — Limb Symmetry Index; the operative limb's strength or performance as a percentage of the contralateral limb (operative ÷ contralateral × 100).

NMES — Neuromuscular electrical stimulation; surface electrical stimulation used to augment voluntary muscle contraction.

OA — Osteoarthritis.

OATS — Osteochondral autograft transplantation system; cartilage restoration using osteochondral plugs.

OKC — Open kinetic chain; exercises in which the distal limb moves freely (e.g., seated knee extension).

PRE — Progressive resistance exercise.

ROM — Range of motion.

RTS — Return to sport.

SLR — Straight leg raise.

WBAT — Weight-bearing as tolerated; the patient loads the operative limb to comfort, typically with crutch support initially.

KEVIN M. ROTH, MD

ORTHOPAEDIC SPORTS MEDICINE



Kevin M. Roth, MD

Board-Certified Orthopaedic Surgeon · Subspecialty Certification in Sports Medicine

Dr. Roth completed his orthopaedic surgery residency at Harvard Medical School and his sports medicine fellowship at the Kerlan-Jobe Orthopaedic Clinic in Los Angeles. In practice since 2013, he specializes in advanced arthroscopic techniques and sports medicine procedures, and sees patients at Palo Alto Medical Foundation's Palo Alto and Dublin offices. He welcomes calls from physical therapists about his patients or this protocol.

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