The Physical Root

Total Hip Replacement Rehabilitation Protocol

Criteria-based guidance for primary total hip arthroplasty (THA)

Purpose

A clinician-facing framework for safe, progressive rehabilitation after uncomplicated primary THA. Timing is approximate. Progression is based on wound status, symptom irritability, hip mobility, muscle performance, gait quality, function, surgical approach, and the operating surgeon's instructions.

Protocol at a glance

Phase	Typical timing	Primary priorities
0. Readiness	Before surgery	Education, baseline measures, equipment and discharge planning
1. Protection and mobility	Day 0 to week 2	Safety, wound protection, swelling control, transfers, gait and muscle activation
2. Gait and foundational strength	Weeks 2 to 6	Normalize gait, improve functional mobility, build hip and lower-extremity capacity
3. Strength and endurance	Weeks 6 to 12	Progressive resistance, balance, stairs, walking tolerance and work demands
4. Return to participation	Week 12+	Independent training, occupational/recreational readiness and long-term joint health

Design principles

- Use a criteria-based approach rather than calendar time alone.
- Follow the operative report and surgeon-specific weight-bearing and movement precautions. Do not assume precautions solely from the incision location.
- Prioritize safe mobility, progressive gait quality, hip abductor and extensor recovery, and meaningful function.
- Monitor the 24-hour response. If pain, warmth, swelling, stiffness, wound symptoms, or gait worsens and does not settle by the next day, reduce dose or intensity.
- Escalate concerns early when recovery deviates from the expected trajectory.

1. Scope, precautions, and clinical decision rules

Applies to: adults after uncomplicated primary unilateral THA. This document does not supersede the operative report, surgeon communication, facility policy, or individualized restrictions.

Adapt or obtain explicit clearance for: revision THA; bilateral procedures; fracture, oncologic, or complex reconstruction; trochanteric osteotomy or abductor repair; intraoperative fracture; constrained or dual-mobility components with special precautions; significant leg-length or nerve findings; wound complications; neurological disease; substantial cardiopulmonary limitation; uncontrolled diabetes; dialysis; cognitive impairment; or other comorbidity affecting exercise safety.

Urgent and emergent escalation

Finding	Recommended action
Chest pain, severe shortness of breath, syncope, new confusion, or signs of stroke	Activate emergency response / call emergency services.
Possible pulmonary embolism: unexplained dyspnea, pleuritic chest pain, hemoptysis, marked tachycardia, or oxygen desaturation	Emergency medical evaluation. Do not continue therapy.
Possible deep vein thrombosis: new unilateral calf/thigh swelling, pain or tenderness, warmth, color change, or rapidly increasing limb girth	Stop treatment and follow the surgeon/facility pathway for same-day medical assessment. Do not massage the limb.
Possible infection or wound complication: drainage, dehiscence, spreading redness, increasing warmth, purulence, fever, chills, or abrupt pain increase	Contact the surgeon promptly; same-day assessment when clinically concerning.
Possible dislocation, fracture, or acute mechanical complication: sudden severe hip/groin pain, deformity, limb shortening/rotation, inability to bear weight, or a new clunk with loss of function	Protect the limb, stop treatment, and obtain urgent surgical or emergency evaluation.
New foot drop, progressive motor/sensory loss, severe unremitting pain, or loss of distal pulse	Urgent surgical or emergency evaluation.

Medication and wound boundaries

Physical therapy should reinforce, not independently alter, the surgeon's instructions for anticoagulation, analgesics, antibiotics, compression, dressings, bathing, or driving. Avoid lotions, topical agents, soaking, or direct scar work until the incision is fully closed and cleared.

Key monitoring variables

- Pain location and behavior, including groin, lateral hip, thigh, low back, calf, and rest/night symptoms.
- Edema, temperature, bruising, incision status, and distal neurovascular findings.
- Weight-bearing status and approach-specific restrictions documented by the surgeon.
- Hip muscle activation, gait quality, assistive-device fit, transfers, stairs, balance, and fall risk.
- Vital signs and exertional response when indicated; sleep, home support, confidence, and adherence.

2. Surgical-approach precautions and preoperative readiness

Approach-specific precautions

Modern THA pathways vary widely. Some surgeons use no formal movement precautions, while others prescribe temporary restrictions based on approach, soft-tissue repair, implant stability, and patient risk. The surgeon's written instructions govern. The examples below are common patterns, not automatic rules.

Approach / factor	Commonly encountered considerations
Posterior / posterolateral	May restrict combined hip flexion, adduction across midline, and internal rotation, particularly in the first several weeks. Avoid low chairs and twisting on the operative limb when restrictions are active.
Direct anterior	May restrict excessive hip extension with external rotation; some surgeons limit active straight-leg raise or aggressive hip-flexor loading early because of anterior soft-tissue irritation.
Anterolateral / direct lateral	May limit active hip abduction or resisted abduction when the abductor mechanism has been repaired; monitor Trendelenburg gait and lateral pain.
Complex reconstruction / intraoperative fracture	May include partial or toe-touch weight bearing, abduction brace, longer precautions, or delayed strengthening. Obtain explicit parameters.
No formal precautions	Still teach avoidance of forceful end-range combinations, pivoting on the planted operative limb, falls, and low/high-risk positions during early tissue healing.

Precaution communication

Document the exact movement and weight-bearing restrictions, duration, and source. If the operative report and discharge instructions conflict or are unclear, communicate with the surgical team before advancing.

Preoperative readiness

- Set expectations for recovery and criteria-based progression.
- Record baseline pain, hip mobility as appropriate, muscle performance, gait, device use, home barriers, work demands, and patient-reported function.
- Teach transfer strategies, walker/crutch use, stair sequencing, home setup, and the initial home exercise routine.
- Coordinate equipment, transportation, caregiver support, and discharge destination.

Suggested baseline measures

5 Times Sit-to-Stand or 30-Second Chair Stand when safe; Timed Up and Go; usual gait speed or 6-Minute Walk Test as appropriate; stair performance; balance/fall-risk screening; and a patient-reported measure such as HOOS-JR or PROMIS Physical Function.

3. Phase 1 - protection, symptom control, and safe mobility

Typical timing: day 0 through week 2. **Visits:** based on setting, surgical pathway, medical need, and functional status.

Goals

- Protect the incision and repaired tissues and reduce preventable complications.
- Achieve safe, independent bed mobility, transfers, household ambulation, and required stairs with the least restrictive safe device.
- Control pain and swelling sufficiently for sleep, self-care, and frequent short walking bouts.
- Establish early gluteal, quadriceps, and ankle muscle activation without violating precautions.
- Establish an independent home program and clear escalation instructions.

Interventions

Domain	Examples and dosing guidance
Education / swelling	Frequent short bouts of walking; position changes; elevation and compression if permitted; cryotherapy when sensation and circulation are intact. Reinforce wound, medication, fall-prevention, and precaution instructions.
Mobility	Bed mobility, supine-to-sit, chair/toilet and vehicle transfers; use elevated surfaces when required by precautions. Avoid pivoting on the operative limb.
Activation	Ankle pumps; quadriceps and gluteal sets; heel slides within permitted range; short-arc knee extension; supported standing weight shifts; gentle hip abduction only when allowed.
Gait / stairs	Walker or crutches fitted correctly; step length and stance control; prescribed weight bearing; step-to stair sequence initially when needed.
Dose	Several brief sessions daily are often better tolerated than one long session. Adjust volume according to symptoms, wound response, gait quality, and next-day recovery.

Avoid

- Unverified end-range or combined hip positions that conflict with surgeon precautions.
- Pivoting or twisting on the planted operative limb.
- Walking without an assistive device when gait is unstable, markedly antalgic, or demonstrates poor stance control.
- Forceful stretching, aggressive soft-tissue work near the incision, or resisted exercise that aggravates the hip or wound.
- Prolonged inactivity except when medically necessary.

Phase 1 progression criteria

Progress when most are present	Hold, regress, or communicate when
Incision is stable; swelling and pain are controlled or trending down; prescribed weight bearing is followed; transfers and household gait are safe; early muscle activation is improving; home program and precautions are understood.	Worsening drainage/redness; systemic symptoms; escalating calf symptoms; sudden hip/groin pain or mechanical change; repeated loss of balance; inability to manage the home setting; progressive neurological findings; severe pain or swelling after routine loading.

Early mobility trajectory

Safe, frequent mobility is generally favored after uncomplicated THA. Progress distance and independence only when gait quality, symptom response, and prescribed weight bearing remain acceptable.

4. Phase 2 - restore gait and foundational strength

Typical timing: weeks 2 to 6. Entry depends on medical stability, wound status, restrictions, and functional readiness.

Goals

- Walk safely with improving symmetry and transition toward the least restrictive device without a compensatory gait.
- Improve hip and lower-extremity muscle capacity for transfers, stairs, and community mobility.
- Restore functional hip mobility within approach-specific and surgeon-defined boundaries.
- Reduce swelling and recover from exercise by the next day.
- Improve confidence and independence with the home program.

Interventions

Domain	Progression options
Mobility	Heel slides; gentle supported hip range within precautions; hip flexor and posterior-chain mobility selected from examination; stationary cycling with appropriate seat height when transfers and motion are safe.
Strength	Sit-to-stand; bridge; heel raises; mini-squat or supported squat; low step-up; hip extension and abduction in positions allowed by the approach; knee strengthening. Progress resistance only with stable mechanics.
Gait / balance	Device weaning based on gait quality; weight shifts; stance-control drills; obstacle negotiation; tandem or narrow-base tasks with support; stair retraining.
Conditioning	Short, frequent walks progressing duration; recumbent or upright bike as transfers and precautions permit; low-impact aerobic work at modest perceived exertion.
Manual / adjunctive care	Treat specific mobility or pain impairments away from the healing incision using examination-driven techniques. Avoid forceful end-range mobilization. NMES may support muscle activation when indicated.

Device-weaning criteria

- No recurrent loss of balance or unsafe instability.
- Adequate operative-limb stance control and foot clearance.
- No clinically meaningful increase in trunk lean, pelvic drop, circumduction, or shortened stance time.
- Symptoms and swelling remain stable during and after the transition.
- Patient can comply with prescribed weight bearing without the device, if unrestricted by the surgeon.

Suggested progression criteria

- Incision fully closed or progressing appropriately and no unresolved red flags.
- Basic transfers and community gait are safe with the appropriate device.
- Functional mobility is improving without violating precautions.
- Repeated sit-to-stand and low step tasks are controlled.
- Exercise and walking produce a predictable, short-lived response.

5. Phase 3 - progressive strength, balance, and capacity

Typical timing: weeks 6 to 12. Some patients enter later because of restrictions, irritability, comorbidity, preoperative deconditioning, or delayed gait recovery.

Goals

- Build hip abductor, extensor, rotator, knee, and calf strength toward the uninvolved side and age/activity expectations.
- Perform reciprocal stairs when feasible with controlled pelvis and trunk mechanics.
- Increase walking speed, distance, and community confidence.
- Tolerate progressive work and household demands without a sustained symptom response.
- Transition from basic rehabilitation to a structured independent strengthening program.

Progressive loading menu

Capacity	Exercise examples	Progression signal
Hip abductor / pelvic control	Standing or side-lying abduction when cleared; lateral stepping; supported single-leg stance; step-up	Level pelvis, controlled trunk, and no sustained lateral hip flare.
Hip extensor / lower limb	Bridge variations; hip hinge; sit-to-stand; squat to target; leg press; step-up	Progressive load tolerated with symmetrical strategy and stable next-day response.
Rotational control	Multidirectional stepping; resisted anti-rotation tasks; controlled turns; balance perturbations	No pivoting collapse, apprehension, or unsafe combined end-range position.
Calf / ankle	Bilateral to unilateral heel raise; ankle mobility; propulsion drills	Improved terminal stance and walking speed.
Aerobic	Bike, elliptical, pool once wound is fully healed and cleared, progressive outdoor walking	Longer duration at sustainable effort without prolonged symptom increase.

Loading framework

Begin strengthening with a load that permits technically sound repetitions and leaves several repetitions in reserve. Progress one variable at a time: external load, range, repetitions, sets, lever arm, speed, or task complexity. Mild, transient muscular discomfort can be acceptable; escalating joint pain, new groin pain, altered gait, wound symptoms, or a next-day flare indicates excessive dose or the need for reassessment.

Common barriers and responses

Barrier	Clinical response
Persistent Trendelenburg gait	Retain or temporarily resume the appropriate device; assess abductor capacity, pain, leg-length perception, balance, and adherence; progress closed- and open-chain loading within repair restrictions.
Persistent groin pain	Review hip-flexor loading, step length, cycling position, transfer strategy, and exercise dose; screen for mechanical or medical concerns and communicate if persistent or worsening.
Lateral hip pain	Assess incision/tissue irritability, abductor load, sleep position, device height, gait mechanics, and compressive postures; modify load and escalate concerning symptoms.
Perceived leg-length difference	Assess pelvic obliquity, contracture, gait strategy, true/apparent length, and adaptation over time. Do not prescribe a lift without appropriate evaluation and surgeon coordination.
Fear or low confidence	Use graded exposure, appropriate device support, task-specific practice, education, and objective progress measures.

6. Phase 4 - return to participation and long-term joint health

Typical timing: week 12 and beyond. Recovery of strength, endurance, and confidence commonly continues for many months.

Goals

- Meet individualized work, household, caregiving, travel, and recreational demands.
- Develop a durable independent program for strength, aerobic fitness, balance, mobility, and body-weight management when relevant.
- Use objective testing to identify residual asymmetry and guide progression.
- Maintain realistic expectations for impact, extremes of motion, transient swelling, and long-term implant care.

Participation guidance

Activity	Decision guidance
Driving	Requires surgeon clearance, no impairing medication, adequate reaction time and vehicle control, safe transfers, and compliance with local requirements. Right-sided procedures often require more time.
Work	Use a graded plan based on sitting, standing, walking, lifting, climbing, kneeling, travel, and shift length. Coordinate restrictions and accommodations with the surgeon/employer as appropriate.
Recreation	Low-impact activities such as walking, cycling, swimming after wound clearance, golf, doubles tennis or pickleball when appropriate, hiking, and controlled strength training are commonly favored.
Higher-impact / pivoting	Running, jumping, singles court sports, contact sports, and high-fall-risk activities require individualized surgeon discussion. Implant factors, prior experience, strength, balance, and risk tolerance matter.
Sexual activity / extreme positions	This protocol does not provide position-specific guidance. Follow surgeon advice and avoid restricted or forceful end-range combinations until cleared.

Discharge or transition criteria

- Patient goals are met or a safe independent plan is established.
- No unresolved red flags or unexplained regression.
- Hip mobility is stable and adequate for meaningful activities without violating ongoing restrictions.
- Strength and functional testing show sufficient capacity for intended tasks, with residual deficits clearly addressed in the plan.
- The patient can self-monitor loading and symptoms and knows when to seek reassessment.

Recommended reassessment battery

Select measures that match the patient and setting. Options include hip muscle strength by dynamometry when available; 30-Second Chair Stand or 5 Times Sit-to-Stand; Timed Up and Go; 10-Meter Walk Test; 6-Minute Walk Test; Stair Climb Test; single-leg balance when appropriate; and HOOS-JR or PROMIS Physical Function. Use the same protocol and device at each comparison.

Return-to-activity rule

Clearance should be based on task capacity, movement quality, symptom stability, confidence, fall risk, and surgeon guidance. A date on the calendar alone is not clearance.

7. Clinician documentation and communication checklist

At evaluation

- Procedure date, side, surgical approach if documented, surgeon, implant/repair details available, weight-bearing status, movement precautions, and follow-up date.
- Medical history, medications relevant to treatment safety, prior function, home environment, support, equipment, and goals.
- Incision and limb screen; pain/edema; motor and sensory findings; transfers, gait, stairs, balance, and fall risk.
- Baseline outcome measures and a plan for repeat testing.

At each progression point

- Objective change in symptoms, swelling, muscle performance, gait, balance, and functional performance.
- Exercise dose, external load, repetitions, sets, range, assistance, and response during and after treatment.
- Rationale for device change, precaution progression, return-to-work plan, or activity advancement.
- Education provided, patient understanding, adherence barriers, and shared decisions.
- Any communication with the surgeon or care team and the resulting plan.

Suggested communication triggers

Trigger	Examples
Immediate / emergency	Cardiopulmonary emergency signs, stroke signs, loss of distal perfusion, suspected dislocation/fracture, severe neurological change.
Same day	Concerning DVT signs, significant wound drainage/dehiscence, systemic infection signs, acute loss of weight-bearing ability, uncontrolled pain.
Prompt non-emergent	Persistent or worsening groin pain, new mechanical symptoms, recurrent instability/apprehension, progressive foot drop, inability to progress weight bearing/device, failure to meet basic functional needs.
Routine	Clarification of approach precautions, active abduction restrictions, work status, driving, aquatic therapy, higher-impact recreation, or durable medical equipment.

Home-program communication principles

- Keep the program short enough to complete and specific enough to measure.
- Separate activation/strength, walking/conditioning, mobility, balance, and recovery instructions.
- State the exact precautions and give a clear dose range and symptom-response rule.
- Update the program when an exercise is no longer challenging, no longer relevant, or repeatedly aggravating.
- Use teach-back and observe at least one full set of key exercises.

Quality marker

A successful protocol is not a checklist of exercises. It is a repeatable decision system that links surgical restrictions, examination findings, loading dose, functional goals, and the patient's response.

8. Evidence and protocol synthesis

This document is an original clinical synthesis. It reflects recurring elements in major academic rehabilitation pathways and professional guidance, including early mobility, complication awareness, explicit approach and weight-bearing precautions, progressive gait training, hip muscle recovery, progressive resistance exercise, balance, functional testing, and criteria-based return to activity.

Primary protocol models consulted

Source family	Contributions reflected in this synthesis
University of Delaware / Delaware Physical Therapy Clinic hip arthroplasty rehabilitation guidance	Criterion-based progression, objective functional testing, gait recovery, hip muscle performance, and task-based rehabilitation.
Massachusetts General Hospital rehabilitation protocol for total hip arthroplasty	Phase structure, approach-specific precautions, early mobility, exercise progression, and return-to-function considerations.
The Ohio State University Wexner Medical Center total hip arthroplasty clinical practice guidance	Clinical decision making, red flags, weight-bearing and precaution management, progressive loading, and objective criteria.
APTA / Academy of Orthopaedic Physical Therapy guidance for physical therapist management after THA	Evidence-informed recommendations for education, early mobility, gait, strengthening, balance, and outcomes.
AAOS, AAHKS, and contemporary enhanced-recovery principles	Patient education, complication awareness, early function, interdisciplinary coordination, activity counseling, and long-term joint health.

Important interpretation note

Institutional protocols differ in approach precautions, weight-bearing restrictions, phase timing, exercise selection, and return-to-activity language. This protocol intentionally avoids treating any single precaution or milestone as universal. The operative report and direct surgeon instructions take precedence. Clinicians should verify the current edition of source protocols and applicable professional guidance before local adoption because institutional documents can be revised.

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