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Periacetabular Osteotomy (PAO)

November 1, 2026

This is the rehabilitation plan I ask your physical therapist to follow after your Periacetabular Osteotomy (PAO). Bring it to your first therapy visit. It is a framework, not a prescription: your therapist adjusts the pace to how you are healing, and anything we discussed in the office takes precedence over what is printed here. If something on this page does not match what we talked about, ask me.

Operation Periacetabular Osteotomy (PAO)

Physical therapist Please send progress notes to the office and call with any question about the plan.

Basic rehabilitation principles

- Recovery starts before surgery: pre-operative rehabilitation with hip and core strengthening, practice walking with an assistive device, and planning of post-operative equipment (elevated toilet seat, wheelchair, long-handled reachers).
- A continuous passive motion (CPM) machine is issued at the pre-operative workup. Setting: 0° extension to 30° flexion, 8 hours per day, until the first post-operative appointment at 2-3 weeks. After the first week, flexion may be increased gradually up to 90° if the patient stays pain-free.
- Weight bearing is limited for the first 6 weeks: no more than 20 pounds, with crutches or a walker for all walking.
- Avoid prolonged sitting, and avoid lying on the operated side, for the first 4-6 weeks.
- Other precautions for the first 6 weeks: avoid painful range of motion; sit with the knee below the hip; do not lift the leg toward the ceiling when lying down; no marching motion in standing.
- Hospital stay is 2-5 days. Walking with crutches or a walker usually starts on day 2. Outpatient physical therapy starts at about 3 weeks.
- Hip and thigh pain, and numbness of the groin, thigh or pelvis near the incision, are common after surgery and usually resolve with time.
- Return to activity: with mild arthritic changes, biking and swimming are the safer activities to return to. Without arthritic changes, return to impact activities such as running is criterion-based, guided by the rehabilitation provider and physician.
- Progression through the phases is criterion-based, not calendar-based.

Phase 1 - surgery to 6 weeks

APPOINTMENTS

- Inpatient hospital stay of 2-5 days
- Inpatient rehabilitation starts post-op day 1, with emphasis on gait training and protection of the operated leg
- Physician appointment 3 weeks after hospital discharge
- First outpatient rehabilitation appointment 3 weeks after discharge
- Second appointment 6 weeks after discharge

GOALS

- Protect the operated hip through limited weight bearing and education on avoiding pain
- Pain 0/10 at rest and with walking
- Normal gait with an assistive device
- Restore leg control

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Periacetabular Osteotomy (PAO) (continued)

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PRECAUTIONS

- No prolonged sitting (more than 1 hour) with the hips flexed to 90° or more
- Do not walk to the point of fatigue
- Anterior hip precautions: no hip extension past neutral, avoid external rotation (ER), no crossing the legs
- No active hip flexion with a long lever arm, such as active SLR
- No open chain isolated muscle activation, such as side lying hip abduction or prone hip extension
- Protective foot-flat weight bearing, no more than 20 lb of body weight, with axillary crutches
- CPM 8 hours per day, range of motion (ROM) 0° extension to 30° flexion, speed 1; after 1 week increase gradually up to 90° as tolerated; usually discontinued at the first post-operative appointment

EXERCISES

- Passive range of motion (PROM)
- Supine abdominal setting; prone abdominal setting with a pillow under the hips; quad sets; ankle pumps
- Isometric hip exercises: abduction, adduction, internal rotation, ER, bridge without lifting the hips; prone heel squeeze with a pillow under the hips
- Short arc quads, long arc quads, standing hamstring curls
- Pool walking, chest deep, may begin at 6 weeks

CARDIOVASCULAR

- Upper body circuit training or upper body ergometry (UBE)

CRITERIA FOR PROGRESSION

- Normal gait with an assistive device and minimal to no pain
- May advance to Phase 2 before 6 weeks per the physician

Phase 2 - usually 6-12 weeks after surgery (begin after meeting Phase 1 criteria)

APPOINTMENTS

- Based on progress, once every 1-2 weeks

GOALS

- Normal gait without a device: progress to WBAT first, then from 2 crutches to 1 crutch to no device
- Good core control, adequate pelvic stability, and no pain with ADLs
- Ascend and descend an 8" step with good control and no pain
- Keep using an assistive device until gait is non-antalgic

PRECAUTIONS

- Avoid provoking symptoms during ADLs and therapeutic exercise
- Avoid post-activity swelling or muscle weakness
- Avoid active hip flexion if symptomatic, especially SLR; iliopsoas impingement on the pubic osteotomy site is common after PAO and can cause tendinopathy
- Avoid faulty movement patterns and postures

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EXERCISES

- Open chain AROM: standing hip abduction and hip extension to neutral
- Hip AROM with a stable pelvis: bent knee fall out, heel slide, prone windshield wiper
- Prone lying, progressing to prone knee bending, then prone posterior pelvic tilts, to recover functional hip extension
- Closed chain work: squats, step ups, step downs, static lunge stance, leg press
- Balance and proprioception: narrow-stance double leg work, single leg, single leg with contralateral lower extremity resistance, Romanian deadlift, upper extremity reaches
- Upper extremity resistance training in lunge stance: single arm rows, single arm punches with and without pelvic rotation

CARDIOVASCULAR

- UBE, swimming laps with a pull buoy, walking in the pool (chest-height water is 75% unweighted, waist height is 50% unweighted)

CRITERIA FOR PROGRESSION

- Normal gait on all surfaces without a device
- ROM sufficient to carry out functional movements without unloading the operated leg or pain, with good control
- Ascend and descend an 8" step with good pelvic control
- Good pelvic control while holding single leg balance for 15 seconds

Phase 3 - usually 12-16 weeks after surgery (begin after meeting Phase 2 criteria)

APPOINTMENTS

- Based on progress, once every 2-3 weeks

GOALS

- Optimize ROM
- Core strength: adequate performance at level III on the Sahrmann core test
- Lower extremity strength 5/5, particularly proximally
- Pain-free ADLs
- Symmetry with the uninvolved side on higher-level single leg balance tests, such as the Y-balance test

PRECAUTIONS

- No ballistic or forced stretching
- Avoid painful end-range hip flexion; a little restriction of end-range hip flexion is expected because of the new orientation of the acetabulum
- Be cautious with repetitive hip flexion activities such as treadmill and StairMaster; Sahrmann testing is not to be used as an exercise progression
- Avoid lumbar and pelvic compensations during functional movement
- No impact activities until the patient is at least 3 months out from surgery and shows adequate hip and lower extremity control

EXERCISES

- Gait and functional movement drills
- Non-impact lower extremity and core strength work, progressing from quadruped to standing, double leg to single

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leg, and single plane to multiplane
- Focus on hip abduction strengthening: side lying and functional closed chain
- Continue aggressive hip rotator strengthening: lunge stance single arm rows and punches with and without pelvic rotation
- Balance and proprioceptive training
- Progress hip ROM without pain; manual therapy and joint mobilization may be appropriate, but use them with caution because some patients had hip instability before surgery
- When strength is adequate, impact control exercises: 2 feet to 2 feet, then 1 foot to the other foot, then 1 foot to the same foot; single plane drills before multi-plane drills
- Sport- or work-specific balance and proprioceptive drills
- Stretching for patient-specific muscle imbalances

CARDIOVASCULAR
- Cycling, elliptical, deep water running
- Avoid pelvic compensations

CRITERIA FOR PROGRESSION
- Level III on the Sahrmann core test
- 5/5 lower extremity strength
- Good pelvic control with single limb activities
- Hip ROM adequately meets the demands of all ADLs

Phase 4 - usually 16-20 weeks after surgery (begin after meeting Phase 3 criteria)

APPOINTMENTS
- Based on progress, once every 3-4 weeks

GOALS
- Independence with the exercise program
- No post-exercise soreness
- Able to walk long distances (more than 1 mile) without a limp
- Pass the appropriate functional tests before returning to sport
- Maintain an adequate strength base

PRECAUTIONS
- None listed

EXERCISES
- Continue aggressive hip and core strength work
- High-level balance and proprioceptive training
- Maximize ROM
- Introduce plyometrics, running and cutting
- Sport- or work-specific balance and proprioceptive drills
- Stretching for patient-specific muscle imbalances

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CARDIOVASCULAR

- Specific to the sport

CRITERIA FOR PROGRESSION

- Pain-free with rehab
- Pass the appropriate functional testing to ensure a safe return to sport

References

- Ganz R et al. A New Periacetabular Osteotomy for the Treatment of Hip Dysplasias: Technique and Preliminary Results. Clinical Orthopaedics and Related Research. 232, 1988.

Abbreviations

AROM / AAROM / PROM: active / active-assisted / passive range of motion. ROM: range of motion. ER / IR: external / internal rotation. ABD / ADD: abduction / adduction (away from / toward the midline). FLEX / EXT: flexion / extension. WBAT / PWB / TTWB / NWB: weight bearing as tolerated / partial / toe-touch / non-weight bearing. SLR: straight leg raise. HS: hamstrings. ITB: iliotibial band. UE / LE: upper / lower extremity. UBE: upper body ergometer (arm bike). BAPS: balance board. BFR: blood flow restriction training. PREs: progressive resistance exercises. D/C: discontinue. prn: as needed. POD: post-operative day. TENS: transcutaneous electrical nerve stimulation. ADLs: activities of daily living.

Source

Adapted from UW Health Sports Rehabilitation (University of Wisconsin), "UW Hip Periacetabular Osteotomy", Updated May 2018, published by William Beaumont Army Medical Center at https://william-beaumont.tricare.mil/Health-Services/Hospital-Care-Surgery/Post-Operative-Rehabilitation-Protocols (reproduced with attribution; the clinical parameters are theirs, the wording is ours).

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