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Rehabilitation Guidelines for Hip Arthroscopy Procedures

The hip is a ball-and-socket joint. The socket is formed by the acetabulum, which is part of the large pelvis bone. The ball is the femoral head, which is the upper end of the femur (thighbone).The hip joint allows flexion and extension as well as rotation of the thigh and leg. Because the hip is responsible for transmitting the weight of the upper body to the lower extremities, the joint is subjected to substantial forces. Walking transmits 1.3 to 5.8 times body weight through the joint. Running and jumping can generate forces across the joint equal to 6 to 8 times body weight.

The acetabulum is ringed by strong fibrocartilage called the labrum. The labrum forms a gasket around the socket, creating a tight seal and helping to provide stability to the joint.

The iliopsoas tendon lays across the anterior hip joint and connects the fibers of the psoas major and iliacus muscles to the proximal femur (lesser trochanter). It can become irritated when there is inflammation deeper in the hip caused by inflamed structures (see figure 2). Hip joints of athletes are exposed to extremes of motion. These forces are absorbed by and can injure the labrum. It is currently thought that the labrum may also be injured by impingement of the hip, also called femoroacetabular impingement, or FAI.

FAI is a condition in which extra bone grows along the bones that form the hip joint.

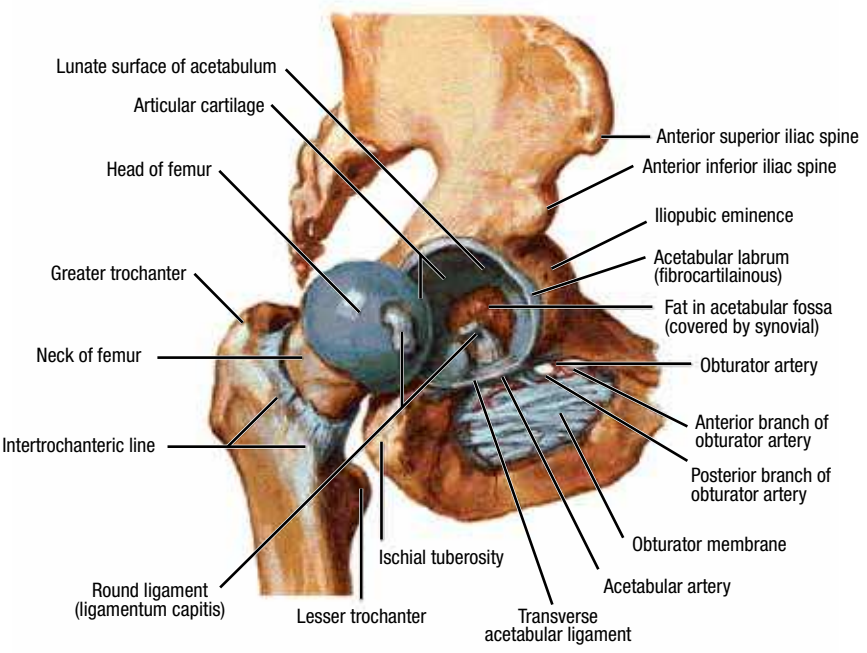

Figure 1 *Hip joint (opened) lateral view*

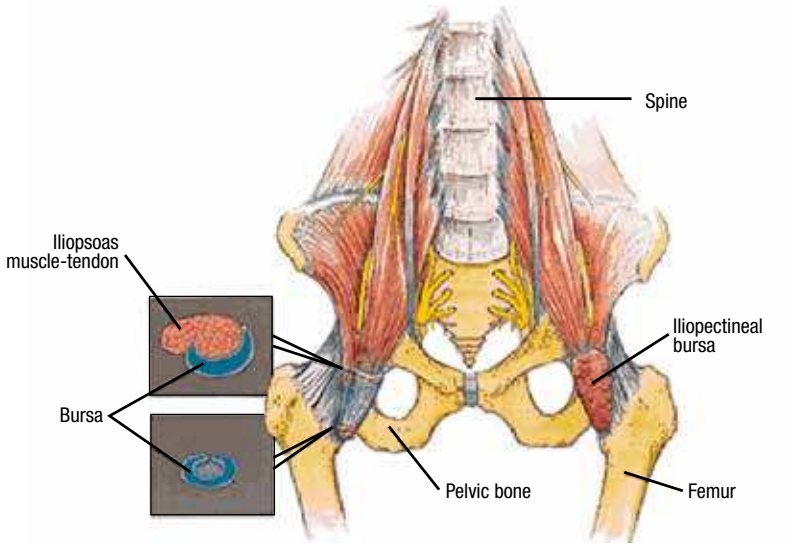

Figure 2: *Diagram of the iliopsoas muscle-tendon and bursa.*

Because the bones do not fit together perfectly, they rub against each other during movement. This friction can damage the joint, causing pain and limiting activity.

There are three types of FAI:

- **Pincer**. This occurs when extra bone extends out over the normal rim of the acetabulum. The labrum can be crushed under the prominent rim of the acetabulum.
- **Cam**. the femoral head is not round and cannot rotate smoothly inside the acetabulum. A bump forms on the edge of the femoral head that grinds the cartilage inside the acetabulum. Figure 3 demonstrates the boney abnormality associated with cam impingement of the right hip; note the difference in the shape of the femoral head.
- **Combined**. Combined impingement just means that both the pincer and cam types are present.

Cam and pincer impingement can co-exist. When the normal ball and socket function is lost, impingement may occur as the hip is flexed toward its end range. This is often made worse with adduction and internal rotation. Repetitive impingement can cause labral tears and fracturing of the acetabular articular cartilage. Labral tears can cause sharp, catching pain, popping or locking during activities including running, kicking or changing directions. Most people with this injury will also experience more subtle, dull, activity-induced positional pain while sitting. Pain with sitting is common with patients who have FAI. Patients will often describe a deep discomfort in the anterior groin while sitting. The pain can also be directly lateral or deep within the buttocks. Flaps from damaged articular cartilage may cause mechanical symptoms often causing pain during or after weight bearing and impact activities, such as running and jumping.

Figure 3: *Frog leg radiograph: The thin arrow on your left indicates the area of "flattening" of the right femoral head and lack of the normal femoral head-neck offset. The thick arrow on the right indicates the more normal, rounded contour of the left femoral head.*

Non-operative treatment of painful labral tears is usually not successful, but 33-69% of young adults and 73% of people over age 50 have labral tears seen on MRIs, with no symptoms. In pediatric patients (aged 2-18 years) the rate of asymptomatic labral tears is quite low, about 1.4%. Somebody in that age group is unlikely to have a labral tear that does not cause them some pain. Arthroscopic repair of a labral tear is suggested when clinical tests and imaging studies have indicated that the hip pain is likely due to the labral tear. Labral repair restores the normal suction seal of the hip joint. Hip arthroscopy is performed on an outpatient basis under general anesthesia. The hip is placed in traction to open the joint enough to allow for the insertion of the instruments. After marking out the anatomical landmarks with x-ray guidance, three to four small incisions are made in the area of the hip joint. One incision is used to insert a camera that displays the inside of the hip joint on a monitor and the other incisions are used to insert the surgical instruments used for repairing labral tears, debriding defective cartilage, removing bone spurs associated with pincer impingement and removing loose bodies. The anterior hip joint capsule is entered using a small incision called a capsulotomy. The FAI is then treated using a burr

to reshape the femoral head-neck offset. This is called a proximal femoral osteoplasty. The goal is to restore the normal ball on socket function so that the hip can move through the full range of motion without impingement. Hip arthroscopy can also be used to treat articular cartilage lesions inside the joint and the pain generators directly outside of the hip joint including mechanical symptoms that come from the iliopsoas tendon as it crosses the front of the joint and hip abductor tendon tears. Treatment of articular cartilage lesions is done by creating small holes in the subchondral bone of the defect to promote the inflow of blood and stem cell in the hopes that these elements will lead to the growth of fibrocartilage to fill the chondral defect. Although the fibrocartilage is not as strong as the original hyaline cartilage, it does act to create continuity of the surface.

Hip arthroscopy has allowed for the repair of hip abductor (gluteus medius and minimus) tendon tears. Figure 4 shows an image of an abductor tendon tear. Suture anchors are placed in the greater tuberosity and then the sutures are passed through the torn tendon and the tendons are brought back to their anatomic location on the femur. This is similar to a rotator cuff repair in the shoulder. To allow the tendon to heal back to the bone after this procedure, weight bearing and strengthening exercises will be limited in the first post-operative rehabilitation phase.

Iliopsoas tendon dysfunction is a source of anterior hip pain.

Figure 4: *T2 MR image showing abductor tendon tears (yellow arrows) at the greater trochanter of the femur.*

The iliopsoas can snap over the iliopectineal eminence and bursae (Figure 2). While the snapping can be painful, anterior hip pain due to iliopsoas bursitis and tendonitis may occur without snapping of the tendon. It should be noted that asymptomatic snapping can be common in hypermobile athletes. Non-operative treatment (physical therapy and basic psoas bursa injections) is successful in getting almost two thirds of patients with painful snapping hips back to full activity. When these measures fail, an arthroscopic management of the iliopsoas tendon may be performed and does provide long-term relief of the snapping and pain. This can include surgical lengthening of the iliopsoas tendon or deepening the groove beneath the tendon to potentially help limit its movement as a means of reducing irritation. While up to 80% of patients who have a lengthening procedure for the tendon report improvement in symptoms of painful snapping, there is a possibility of chronic hip flexor weakness and pain following this procedure.

Rehabilitation of the hip begins the day after surgery. The rehabilitation guidelines are presented in a criterion-based progression and each patient will progress at a different rate depending on the specific procedure performed, age, preinjury health status and rehab compliance. The patient may also have postoperative hip and thigh pain which can slow the recovery rate. This can be caused by traction on the hip during surgery. There may also be reflex inhibition and poor control of the muscles that stabilize the hip immediately following hip arthroscopy. Aggressive range of motion (ROM) is avoided in order to protect the repaired labrum, the repair of the capsulotomy, and the now sensitive bony areas that have been recontoured. It is important to use crutches for the first two to three weeks after surgery to minimize forces on the back and pelvic joints while developing pain control, protecting repaired structures and avoiding compensatory habits that can prolong post-operative pain. All exercises should be performed within pain tolerance. Pushing to extremes of motion beyond pain tolerance does not enhance function but rather increases discomfort and prolongs rehabilitation. Rehab in the first 6 weeks following hip arthroscopy emphasizes muscle activation and hip stability, working within range of motion restrictions.

Rehabilitation Principals:

1. Patients may stand and walk with 20% of their body weight on their surgical leg for the first 2 weeks after their procedure. This precaution is extended to 4-6 weeks when the procedure involves microfracture or abductor repair. Crutches or another assistive device should be used unless instructed by your physician or your physical therapist allows you to discontinue use.
2. Active assistive range of motion exercises are begun early (the first 2-5 days after surgery), but range of motion restrictions for hip flexion, abduction, external rotation and extension need to be followed to protect the labral and capsular repairs. Hip stability, rather than mobility, is most important in the early stages. Range of motion is completed to lubricate the joint rather than aggressively stretch articular and periarticular structures.
3. Muscle strengthening exercises are to be done during the first week after surgery. Progressive strengthening depends upon the patient's tolerance. Patients should avoid exercises that heavily activate the iliopsoas during the first several weeks after surgery, such as straight leg raises and resisted hip flexion. If the patient had an abductor repair, abductor strengthening will be limited early in the rehab process to allow the tendon to heal back to the bone.

Frequently asked questions:

1. **When can I shower?**

   You will be able to shower 72 hours after surgery. Cover your stitches with a barrier such as Glad Press and Seal, waterproof bandaids or plastic wrap with the edges taped down to protect them from getting wet.

2. **What if there is drainage from my stitches?**

   This is normal. Fluid is put into the joint in order to perform the surgery, so this fluid can slowly seep out into the soft tissue of the hip and may subsequently leak out of your incisions after surgery. It should be mostly clear but may look a little yellow or be slightly bloody. It should not have an odor.

3. **What if my incisions open up slightly after sutures are removed?**

   This can happen after suture removal. As long as there is minimal drainage, this is ok. Place bandages over the incision until it fills in on its own.

4. **When will my numbness go away?**

   Numbness resolves slowly over a few days to a few weeks.

5. **Is it normal for my leg to feel cold and look a little discolored?**

   Yes, this can be a normal occurrence following hip arthroscopy. This is usually more related to the decreased weight bearing and limitation in movement after surgery than to the surgery itself. As your activity level normalizes the temperature and color changes resolve as well.

6. **When can I drive?**

   You must be off all opioid pain medicine (such as hydrocodone) during waking hours before you can drive. This applies even if the hip you had surgery on is not your driving leg. Tylenol, naproxen or other nonsteroidal anti-inflammatory drugs are okay to take while driving. If the surgery does involve your driving leg, you must be able to move comfortably from gas to brake and be able to get in and out of the car easily. This often takes 3-4 weeks, corresponding to the time when you are able to get off crutches, but can take as long as 6 weeks.

7. **When will I be released for sports?**

   This will be determined by your surgeon with input from your rehab provider. Starting at 10 weeks there are tests at various intervals that your rehab provider will have you perform to make sure that your pain, strength, and range of motion are progressing at an appropriate rate. Most patients will be released to full, unrestricted activity anywhere between 4 and 6 months after surgery.

PHASE I (Surgery to 3 weeks)

Appointments	• Rehab appointments begin 1– 3 days after surgery, weekly after
Rehabilitation Goals	• Protect the post-surgical hip through limited weight bearing • Restore normal hip ROM within ROM restrictions, gentle grade I-III joint mobilizations can be used as needed • Normalize gait • Restore leg control
Precautions	• Avoid hip flexion past 90° for six weeks, avoid external rotation past 20° for six weeks, avoid hip extension past neutral for six weeks, avoid abduction past 45° for six weeks • May initially weight bear with 20% of body weight for all procedures
Labral Repair Precautions (Including Osteoplasty for FAI)	• Use axillary crutches for normal gait. Begin with toe touch weight bearing and progress to 20% body weight at first PT appointment. Wean from crutches slowly when gait is normalized and pain free (without pain medications), which normally takes 2 -3 weeks • Avoid exercises that engage the iliopsoas during the first several weeks after surgery. Iliopsoas tendonitis is a known side effect of hip arthroscopy but can be avoided with appropriate post-operative care, including avoiding exercises that have high activity of the iliopsoas (straight leg raises, clam exercises and resisted hip flexion) • Avoid passive unilateral extension for 6 weeks (prone lying and prone on elbows is okay)
Iliopsoas Lengthening Precautions	• Perform prone lying 3-4x/day for 2-4 minutes to prevent tightening of iliosoas • Perform active knee flexion while in prone position
Microfracture Precautions	• Weight bearing is 20% of body weight with axillary crutches for 4-6 weeks • Avoid impact exercises and activities for 12 weeks **NOTE:** The precautions may vary depending on the size and location of the area undergoing the microfracture procedure
Abductor Repair Precautions	• No active abduction for 6 weeks • No passive adduction, internal rotation (IR) or external rotation (ER) for 6 weeks • Partial 20% weight bearing with crutches for 4-6 weeks

Range of Motion and Suggested Therapeutic Exercises	At the first postoperative appointment the following activities are appropriate:
	• Quad sets and gluteal sets
	  • Hip IR/ER isometrics
	  • Bridging
	  • Seated knee extension
	  • Prone or prone on elbows stretch
	  • Prone knee flexion
	  • Gentle prone hip internal rotation
	  • Prone heel squeeze
	  • Quadruped rocking to approximately 90° of hip flexion
	  • Quadruped upper extremity lift
	  • Quadruped cat-camel/cow lumbopelvic ROM
	  • Standing combined hip extension and abduction in oblique plane
	• When patient has advanced to WBAT the following are appropriate (2 weeks postoperatively)
	  • Partial squats
	  • Single leg or tandem balance
	  • Gait drills
	  • Sidestepping in partial squat position
	  • Quadruped bird dog

Cardiovascular	• Upper body circuit training or upper body ergometry (UBE)
Progression Criteria	• Normal gait without assistive device on level indoor surfaces with full weight bearing and minimal to no pain • Good leg control at low velocity of movement • Functional ROM without pain • At least 3 weeks post-op (must stay in Phase 1 for 6 weeks if a microfracture was performed)

PHASE II (begin after meeting phase I criteria, about 3 weeks)

Appointments	• Rehabilitation based on patient progress, 1- 2 times every 1-2 weeks
Rehabilitation Goals	• Regain and improve muscular strength • Wean off crutches for all surfaces and distances • Single leg stand control • Good control and no pain with functional movements, including step up/down, squat, partial lunge • Can begin stretches such as hip external rotation/butterfly, 1/2 kneeling or standing hip flexor, adductor stretches at 6 weeks post op • More aggressive, grade III-IV joint mobilizations can be used to gain ROM as needed
Precautions	• Post-activity soreness should resolve within 24 hours • No ballistic or forced stretching • Avoid post-activity swelling or muscle weakness • Be cautious with repetitive hip flexion activities, such as treadmill and Stairmaster
Suggested Therapeutic Exercises	• Stationary bike • Gait and functional movement drills in pool once incisions are healed • Standing hip abduction • Split squat or elevated split squat • SPRI band work (avoiding excessive hip flexor work) • Pallof presses in squat or split squat • 1/2 kneeling balance, trunk rotation and pallof press work • Single arm rows in split stance with/without trunk rotation • Hip hinging • RDL • Single leg bridge • Sidebridge or sideplank **NOTE:** May begin to ease into hip flexor strength work, including segmental sit back with both eccentric emphasis and isometric holds, trunk curl, Sahrmann supine march work.
Cardiovascular Exercise	• Non-impact endurance training; stationary bike, NordicTrack, swimming, deep water run, cross trainer
Progression Criteria	• Normal gait on all surfaces • Ability to carry out functional movements without unloading affected leg or pain, while demonstrating good control • Be able to complete 10 single leg or split squats and pass or train for y-balance or star excursion balance testing

PHASE III ((begin after meeting phase II criteria, about 9-16 weeks)

Appointments	• Rehabilitation based on patient progress, 1-2 times every 1-2 weeks
Rehabilitation Goals	• Improve muscular strength and endurance • •Good control and no pain with sport/work specific movements, including impact activities
Precautions	• Post-activity soreness should resolve within 24 hours • Be cautious with forceful hip flexion activities such as kicking and sprinting
Suggested Therapeutic Exercise	• Multi-planar strength progression, including forward, lateral and diagonal lunges • Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot then progress from single plane drills to multi-plane drills • Dynamic control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • May use agility ladder • Progress to running program once patient can demonstrate good single leg landing control in a repetitive fashion without pain • Begin sport specific drills once patient demonstrates good control with the impact control and multi-plane exercises and can tolerate running program without pain • Sport/work specific balance and proprioceptive drills • Hip and core strengthening • Stretching for patient specific muscle imbalances
Cardiovascular Exercise	• Replicate sport/work specific energy demands
Return To Sport/Work Criteria	• Normal gait on all surfaces • Dynamic neuromuscular control with multi-plane activities, without pain or swelling • Pass progressive testing including agility, hop, jump, squat tests

These rehabilitation guidelines were developed collaboratively between UW Health Sports Rehabilitation and the UW Health Sports Medicine physician group.

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REFERENCES

1. Enseki KR, Martin RL, Draovitch P, Kelly BT, Philippon MJ, Schenker ML. The hip joint: arthroscopic procedures and postoperative rehabilitation. *J Orthop Sports Phys Ther.* Jul 2006;36(7):516-525.
2. Larson, CM and Giveans. Arthroscopic management of femoroacetabular impingement: early outcomes measures. *Arthroscopy*. May 2008;24(5):540-546.
3. Stalzer S, Wahoff M, Scanlan M. Rehabilitation following hip arthroscopy. *Clin Sports Med.* Apr 2006;25(2):337-357, x.
4. Standaert CJ, Manner PA and Herring SA. Expert Opinion and Corntroversies in Musculoskeletal and Sports Medicine: femoroacetabular impingement. *Arch Phys Med Rehabil.* May 2008;89:890-893.
5. Lee AJ, Armour P, Thind D, Coates MH, Kang AC. The prevalence of acetabular labral tears and associated pathology in a young asymptomatic population. The Bone and joint Journal 2015; 97-b(5):623-27.
6. Register B, Pennock AT, Ho CP, Strickland CD, Lawand A, Philippon MJ. Prevalance of abnormal hip findings in asymptomatic participants: a prospective, blinded study. The American Journal of Sports Medicine 2012;40(12):2720-2724.
7. Georgiadis AG, Seeley MA, Chauvin NA, Sankar WN. Prevalence of acetabular labral tears in asymptomatic children. Journal of Children's Orthopaedics 2016;10(2):149-154.
8. Frank JM, Harris JD, Erickson BJ, et al. Prevalence of Femoroacetabular Impingement Imaging Findings in Asymptomatic Volunteers: A Systematic Review. Arthroscopy. 2015;31(6):1199-1204.
9. Perets I, Chaharbakhshi EO, Mansor Y, Ashberg LJ, et al. Midterm outcomes of iliopsoas fractional lengthening for internal snapping as a part of hip arthroscopy for femoroacetabular impingement and labral tear: A matched control study. Arthroscopy 2019;35:1432-1440.
10. Domb BG, Sgroi TA, VanDevender JC. Physical Therapy Protocol After Hip Arthroscopy: Clinical Guidelines Supported by 2 Year Outcomes. Sports Health. 2016: 8(4):347-354