NASHVILLE
HIP INSTITUTE at TOA
PRESERVATION & SPORTS MEDICINE

Return to Dance:
Suggested Activity Progressions for Post-Operative and Non-Operative Hip Injuries

Introduction and Background:

This protocol was developed as a return to activity guide for dancers with both operative and non-operative hip and pelvic injuries. If a surgical intervention is warranted, an appropriate arthroscopic approach along with proper rehabilitation can lead to a successful return to competitive dance.[1] Most dancers have both hip joint and pelvic instabilities that need addressed in order to safely return to the extreme physical demands of dance of any kind.

In the initial phases, core muscle activation and pelvic control along with functional gluteal strength must be established in order to improve hip stability and address dysfunctions above and below the hip. Orientation of the acetabulum and therefore pelvis can affect joint stability.[2] As Janda describes in the Lower-Crossed Syndrome, tight hip flexors, lumbar paraspinals, and lower thoracic paraspinals often coincide with weak abdominals, weak core musculature, and weak gluteal muscles. The Lower Crossed Syndrome is associated with increased anterior pelvic tilt, increased lumbar lordosis, and knee hyperextension which is commonly seen in dancers. Proper core muscle strength and pelvic control are often lacking allowing for not only hip pain, but lumbar pain and dysfunction as well. As patients progress with activity, it is important to address all different aspects of each movement to ensure proper function throughout the kinetic chain leading to efficient and pain free movement execution.

Dance requires extreme hip range of motion correlating with soft tissue laxity which research shows allows dancers' hips to be in unstable and impinging positions even with normal bony structure.[3] One of the most common positions dancers strive to achieve, grand e'cart or split, put over 60% of subjects of one study into femoral acetabular impingement.[4] Extreme hip flexion, extension, and abduction are often combined with turnout, or extreme lower extremity external rotation. These end range positions are then incorporated with dynamic and ballistic movements.[1] Sufficient strength and endurance throughout the core, hip abductors, adductors, deep rotators, and flexors are key in tolerating these demands without pain. Landing mechanics and plyometric training are also important in both parallel and externally rotated positions in order to prepare for the demands of jumps, leaps, and turns.

Our clinicians have broken down common dance movements into multiple components in order to address isolated weaknesses. This protocol refers to common strength and mobility exercises as well as dance related exercises utilizing varying postures to improve strength and control of each desired muscle group or segment. We have found that through patient education and exercise focused on core control and hip strength we are able to not only safely get our patients back to dance, but they also return with a better sense of body awareness and overall confidence.

1. Larson CM, Ross JR, Giveans MR, et al. The Dancer's Hip: The Hyperflexible Athlete: Anatomy and Mean 3-Year Arthroscopic Clinical Outcomes. *Arthroscopy* 2019; 1-7.
2. Dumont, G. Hip Instability: Current Concepts and Treatment Options. *Clin Sports Med* 2016; 35:435-447.
3. Weber AE, Bedi A, Tibor LM, et al.The hyperflexible hip: Managing hip pain in the dancer and gymnast. *Sports Health* 2015; 7:346-358.
4. Charbonnier C, Kolo FC, Duthon VB, et al. Assessment of congruence and impingement of the hip joint in professional ballet dancers: A motion capture study. *Am J Sports Med* 2011;39:557-566.

NASHVILLE
HIP INSTITUTE at TOA
PRESERVATION & SPORTS MEDICINE

Return to Dance:
Suggested Activity Progressions for Post-Operative and Non-Operative Hip Injuries

Weeks 1-4: Focus on core control with pelvic tilting and basic glut strengthening.

- General post operative protocol if applicable
- Pelvic tilts in varying postures
- Straight plane glut strengthening

Weeks 4-6: Focus on weight bearing transitions and proprioception/single leg balance.

- Stacked posture balance activities with dynamic challenges
- Pelvic tilts in tall kneeling and standing
- Calf raises in parallel
- Bear pose progressions
- Single leg balance activities on stable and unstable surfaces.

Weeks 6-8: Introduce non loaded rotation for deep rotator activation.

- Coretex controlled IR/ER, flexion/extension and abduction/adduction
- Prone, quadruped, and AAROM IR/ER with and without resistance
- Continue core progressions in functional positions
- Clams/reverse clams
- Crawling progression

Weeks 8-10: Initiate functional activities in modified turned out positions.

- Shuttle press in parallel and turned out
- Multi planar lunges in parallel and varying degrees of external rotation
- Calf raises in varying degrees of external rotation

Weeks 10-12: Progress functional strengthening. Incorporate hip flexion activities.

- Continue functional core strengthening: ie plank progressions, anti-rotations, core challenges in varying hook lying positions
- Squats with assistance to varying depths with varying degrees of external rotation
- Anterior chain strengthening with and without added core components
- Concentric and eccentric hip flexor strengthening.
- Band assisted and TRX assisted hip flexion activities for patterning and core control

Weeks 12-16: Progress loaded rotary strength and tolerance. Progress plyometrics for power and landing mechanics.

- Loaded rotational activities (may initiate prior to 12 weeks if non op)
- Introduce low level plyometrics beginning in parallel then slowly integrating external rotation
- Traveling jumps
- Multiplanar lunges
- Progress hip flexor and abduction strength for endurance with prolonged hip flexion activities

Return to Dance:
Suggested Activity Progressions for Post-Operative and Non-Operative Hip Injuries

Weeks 16-20: Turn preparations. Plyometric progressions.

- Anti-rotations with push off in parallel and turned out.
- Lateral turn progressions
- Turns from standing positions
- Leaps in straight planes
- Jumps with turn or rotary components.
- Isometric hip flexion activities with long lever in all planes
- Split progression with focus on pelvic stability and adductor control
- Active standing abduction and rotation with long lever in varying degrees of hip flexion

Weeks 24+: Progression of dynamic leaps, turns, and flexibility.

Suggested Timeline for Return to Dance Activities (post operatively)

Low level barre/straight plane activities below 90 degrees at 10-12 weeks
Low level open chain rotational activities with adequate pelvic control below 90 degrees at 12 weeks
Kicks/battements in tolerated range of motion at 12-14 weeks
Long lever activities at 45 degrees including lifts and holds and developes at 12 weeks
Open chain rotational activties/rhon de jambe at 45 degrees with progression to 90 degrees pending hip flexor strength and pelvic control at 14-16 weeks

Activities can be transitioned to floor/center after components are mastered pain free at barre/with assistance at 12-16 weeks

Easy hops in one position with progression to cross floor activities and leaps pending tolerance and endurance progressions at 12-16 weeks

**Progression requires full and pain free motion, full hip and core strength, adequate pelvic control. Monitor pain and compensatory tightness during and after activity. Utilize incremental time and activity progressions to ensure adequate endurance throughout all components and musculature. All post-operative restrictions must be followed.

NASHVILLE
HIP INSTITUTE at TOA
PRESERVATION & SPORTS MEDICINE

Return to Dance:
Suggested Activity Progressions for Post-Operative and Non-Operative Hip Injuries

Exercise Suggestions

Pelvic Tilts
Supine with and without adductor squeeze
Quadruped
Seated on physioball
Tall kneeling
Standing against wall
Standing with lateral resistance/anti rotation

Hip Flexion Activities/Progressions
Planks and reverse planks with varying lower extremity challenges
Side plank with physioball on wall flexion/abduction
Tall kneeling flexion/abduction completing partial and full ROM with and without TRX assistance
Standing lift overs
Eccentric hip flexion with resistance
Bridge with resisted knee drive
Tall kneeling quad extensions

Posterior Chain Strengthening
Single leg bench bridges
Eccentric hamstring sliders
Lateral step downs
Mermaid tails on physioball
Bent over kick backs
Table top slides
Cone taps
Single leg RDLs with varying assistance/resistance and varying degrees of turn out
Bridges on unstable surface
Hip extensions from varying heights and in varying positions

Bear Pose Progressions
Bear pose isometric
Bear pose with adductor squeeze
Bear pose with pelvic tilt
Bear pose with alternating extremity lift off
Bear pose with shoulder taps
Crawling progressions forward, backward, and laterally

NASHVILLE
HIP INSTITUTE at TOA
PRESERVATION & SPORTS MEDICINE

Return to Dance:
Suggested Activity Progressions for Post-Operative and Non-Operative Hip Injuries

Supported Core Progressions

90/90 adductor squeeze
90/90 adductor squeeze with ball overhead
Reverse crunch with adductor squeeze
Hollow hold variations on unstable surface; with ball overhead; with chop
Segmental rolling upper extremity and lower extremity flexion and extension based patterns

Split Progressions

Supine AAROM against wall with adductor control focus
Elevated lowers into splits with sliders
Standing split lowers with discs or sliders and torso support