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Pool Therapy Protocol



Pool Therapy Protocol

Using a pool for introducing partial weight bearing (PWB) activities helps normalize walking, increase endurance, and optimize movement patterns while removing the stress WB places onto the hip and pelvis. You will be able to perform greater ROM, advanced balance activity, and a greater volume of exercises on your feet in the water than you will on land. As your body relearns how to move in a PWB position, transition to similar activities on land will occur with decreased pain, compensation, and improved proficiency.

Stage 2: Intro to Weight Bearing Activity, Light Conditioning, Proprioception: Refer to Video

Week 3-4+ Patients without microfracture:

Week 6+ Patients with microfracture unless otherwise advised by Dr. Mei Dan:

Week 8+ Patients with PAO or DFO unless otherwise advised by Dr. Mei Dan:

Walking forward, backward, and sideways in waist deep water or higher, so long as you experience no limp or hip pain. Up to 5 minutes each.

Bicycle motion while floating in deep water using pool noodles, or other floatation assistance, or seated in the shallow end of the pool. Focus on ROM more than increasing heart rate. Begin with up to 5 minutes duration.

Pull buoy swimming for upper body conditioning, if you have good swimming technique, and hip pain is not elicited.

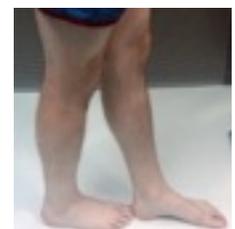
Stage 2: Introduction to Weight Bearing and Proprioception

Double leg squats: Begin by holding onto side of pool, feet approximately shoulder width apart. Perform a hip hinging motion to initiate the squat, keeping toes in view beyond the plane of your knees. Work within a tolerated, pain-free range and progress to not holding, as you are able. Perform 2-3x20 reps to start.

Heel/toe raises: Stand with your feet hip width apart. While keeping your knees straight, raise onto toes then back onto heels, minimizing the sway of your body back and forth as you move from your toes to heels. Perform 2-3x20 reps to start.



Tandem Stance with each foot forward: Standing with feet in a line, and balance. Increase challenge by closing eyes, then eyes open with adding arm movements or head movements. Perform with each foot in front. Focus on maintaining equal weight between feet. Engage your gluts and core to assist. Perform with 3x30" each foot forward. Increase the standing time, as desired.



Single leg balance: For further challenge from the tandem position, stand on one leg only. Progress to closing your eyes or perform with eyes open and moving your arms. Core and gluts should be engaged to help stand in an upright posture. Perform 3x30" each side. Increase the standing time, as desired.



Progression to Stage 3 Pool Therapy Criteria:

1. Tolerance of at least 50% WB on surgical side, provided no microfracture performed.
2. Minimal to no pain with ADLs while using crutches.
3. Tolerating all Stage 2 pool therapy exercises with minimal to no pain.
4. Achieve up to 90 degrees of passive hip flexion with minimal to no pain.

Stage 3: Pool Therapy: ROM and WB Progressions: Refer to Videos

Week 4-5+ Patients without microfracture:

otherwise advised by Dr. Mei Dan:

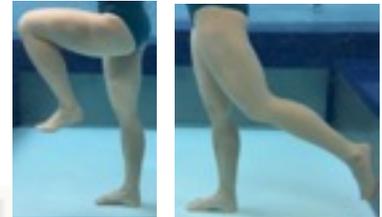
Week 8-9+ Patients with PAO or DFO unless otherwise advised by Dr. Mei Dan:

Week 7+ Patients with microfracture unless

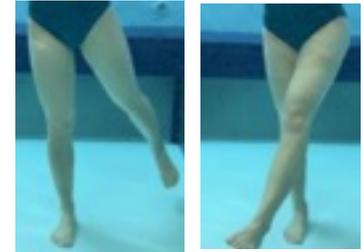
Begin with holding side of pool and progress to no balance assistance with the following exercises.

Patient may add resistance band around ankles for increased challenge.

Hip flexion/extension: Engage core to support low back. Begin with small kicks, and maintain neutral spine throughout entire motion. Initiate with surgical side kicking only, progress to performing on each side. Perform 2-3x20 reps.



Hip abduction/adduction: With one leg straight, kick back to 45 degrees behind the trunk, then return the leg and cross midline. While core is stable, maintain neutral spine position. Initiate with surgical side kicking only, progress to performing on each side. Perform 2-3x20 reps.



Hip openers/closers: Holding one knee at approximately 90 degrees, move thigh in and out, across the plane of the water. Move through tolerated range, maintaining neutral pelvis and spine. Initiate with surgical side kicking only, progress to performing on each side. Perform 2-3x20 reps.



Hip internal/external rotation: Keeping knees parallel, bend one knee to 90 degrees, then rotate the non-stance leg inward and outward, similar to a windshield wiper motion. Progression includes: holding both the hip & knee at 90 degrees, while rotating lower leg like an upside-down windshield wiper. Maintain neutral pelvis and spine position. Initiate with surgical side kicking only, progress to performing on each side. Perform 2-3x20 reps.



Double Leg Dead Lifts: Engaging hamstring and gluts, hip hinge forward with knees slightly bent. Stay within tolerated, pain-free range of motion. You may use a kickboard for your hands to help with balance. Perform double legged. Perform 2-3x20 reps.



Stage 3: Pool Therapy: Core Strength Exercises: use kickboard or pool noodle

Push/pulls with upper body: Hold the board or noodle partially or entirely in the water. Using core to stabilize, and the board/noodle submerged in the water, push away, then pull in toward your body. For added challenge, alter foot positions so the feet are not in the same plane. Keep your core engaged to minimize swaying of your body in the water. Do 2-3x20 reps.



Trunk rotation: Engage your core and lower extremity muscles to maintain a stable base of support. Holding the kickboard perpendicular to your body, depress the board in water, and twist your trunk from side to side using your core. Keep your pelvis stable for trunk dissociation from the pelvis. Do 2-3x20 reps.



Press downs: Place the board flat on the water, and push board down into water with your hands & upper body. Engage abdominals and gluts to control your body position as the board returns to the surface. To minimize shoulders rolling forward, contract upper back muscles and squeeze shoulder blades together. Do 2-3x20 reps.



Pull downs: Hold the board in front with arms straight. Pull the board down to your thighs, keeping arms straight. Keep your core and gluts tight to maintain your stable position while you repeat the motion. Do 2-3x20 reps.



Stage 3: Pool Exercises: Stretching Exercises

Perform each stretch on both the surgical and nonsurgical sides. Stretches should be performed only if pain-free, with adequate range of motion to complete without taxing your surgical hip.

Perform 1-2x on each side for a 15-20 second hold.

Calves: With hands on edge of the pool, stand away from the side of the pool in a stride position with one foot closer to the pool wall. Keeping your heel of the back leg down, lean forward to stretch the back of the calf on the back leg.



Hamstring: Place foot on step within pool, straighten your leg and gently lean forward from your hips to stretch the back of your thigh.



Quad: While standing on one leg, bend your knee and gently grab your ankle, until you feel a gentle stretch on the front of your thigh. Hold the pool rim, if needed, for stability.



Progression to Stage 4 Pool Therapy Criteria:

1. Completion of all pool related Stage 3 exercises for the surgical hip with full sets and repetitions painfree.
2. Completing land based strength with minimal to no pain.
3. Discontinuing the use of crutches for walking, without limping, with minimal to no pain throughout the day.
4. Weight bearing within the pool during Stage 4 will continue to be PWB, and thus you may begin single leg strength sooner than with land based stages.

Stage 4 Pool Therapy: Progressive Single Leg Strength and Proprioception:

Refer to Videos

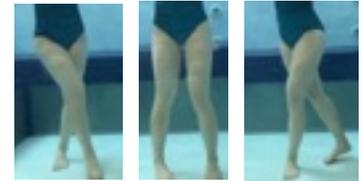
Weeks 5-6+: Patients without microfracture

otherwise advised by Dr. Mei Dan:

Weeks 10-12+ Patients with PAO or DFO unless otherwise advised by Dr. Mei Dan:

Weeks 8+: Patients with microfracture unless

Grapevine walking: Moving across the pool, cross one foot over the other then one foot behind the other to initiate low intensity WB rotatory motion through your hips. Perform up to 2-3 minutes.



Monster walks: Side stepping with a band around your ankles. Perform with your knees straight (photo on the left) and while in a mini squatted position (photo on the right). Continue with each form provided no hip pain exists. Perform 1-3 sets to fatigue.



Single leg deadlift: A progression from double legged dead lifts. Focus on hip hinge on the stance leg, reach out with the unweighted leg and the same arm for the greatest amount of elongation you can have while balancing on the stance leg. Use core, gluts and upper hamstrings to stabilize and bring you to the upright position. You may use a kickboard to help with stability or the pool rim, as needed. Perform 1-2x20 reps.



Single legged Squats: A progression from double legged squats. Focus on hip hinging, and seeing your toes over the plane of your knees. Reach out with your hands as you squat, pull your arms down by your side as you stand to assist balance and help engage your gluts as you stand. Perform 1-2x20 reps.



Lunges: While hip hinging, step back and lower your body. Be sure to see your toes as you look down beyond your knees. Depth of lunge is up to you provided it is pain-free. Use your gluts to help balance and power back into the upright position. Progress into lateral and/or rotatory motions achieving the lunge position. Additional progression includes stepping forward into the lunge motion to increase the dynamic load on the hip and lower extremity. Perform 1-2 sets of 15-20 reps.



Split squats: Start with your back foot on a stair and one foot in front, on the floor. Hip hinge into a squat, keeping toes in view at the end range on forward leg. Return to the start position. Perform 1-2 sets of 15-20 reps.

Option: Progress dead lift, squats, and lunges each to include trunk rotation toward or away from front leg to increase multidirectional stability.



Stage 4: Pool Exercises: Core Strengthening

Continue Stage 3 Core Exercises

Stage 4: Pool Exercises: Stretching Exercises

Perform 1-2x on each side for a 15-20 second hold.

Hip flexor: Place one foot on the 2nd or 3rd step, or on the ramp approximately knee high, if one is present in your pool. Gently lean into the leg on the step, to stretch the front of the hip on the back leg.



Adductors: Begin with a wide stance as you face the side of the pool. Place your hands on the pool rim, if support is needed. Gently lunge to one side, keeping opposite leg straight, and stretch is felt within inner thigh of the straight leg.



Figure 4/Buttock: Cross one ankle over opposite knee. While holding onto the side of the pool, gently squat on the standing leg, deep enough to stretch the outer/back buttock of the crossed leg.



Progression to Stage 5 & 6 Criteria:

1. Completion of all pool related single leg strength for the surgical hip with full sets and repetitions pain free for at least 4-6 sessions in the water.
2. Completing land-based strength with minimal to no pain.
3. Impact within stages 5 & 6 will continue to be PWB, and thus impact may begin sooner than with land based function.

Stage 5: Pool Therapy Running and Higher-Level Impact

Week 10-12+: Patients without microfracture:

otherwise advised by Dr. Mei Dan:

Months 4-5+ Patients with PAO or DFO unless otherwise advised by Dr. Mei Dan:

Week 14-16+ Patients with microfracture unless

The pool is an excellent venue to work on increasing dynamic work for return to running and jumping. Impact within Stages 5 & 6 will continue to be PWB, and thus impact may begin sooner than with land-based function. This may be initiated with patients without microfracture at 10-12+ weeks provided the surgical hip is not painful with your rehab exercises. Patients with microfracture may initiate more dynamic activities at 14+ weeks provided the surgical hip is not painful with rehab exercises, unless otherwise advised by Dr. Mei Dan. PAO and DFO progressions are much slower due to the nature of the procedure. Progressions into higher single leg impact are encouraged as a progression only when you can successfully incorporate Stage 5 activities without adverse reaction.

Double leg squat jumps: 1-2 minutes, work up to 2-3 sets of each.

- Land in place
- Lateral landing or landing side to side
- Landing with 90 degree turn



Run/jog in place, across the pool or on underwater treadmill. 2-3 minutes, work up to 2-4 sets.

Increase time by a minimum of 20% weekly, or as tolerated. Progress to using current as tolerated.

Stage 6: Pool Therapy Progressive Single Leg Impact

Week 12-14+ Patients without microfracture:

otherwise advised by Dr. Mei Dan:

Months 5+ Patients with PAO or DFO unless otherwise advised by Dr. Mei Dan:

Week 16-18+ Patients with microfracture unless

Lateral bounding: 1 minute, work up to 2-3 sets of each.

- smaller to larger width and height lateral
- diagonal bounding
- 90 degree turn



Single leg squat jumps—progression of Double leg squat jumps, focusing on hip hinging and absorbing shock, especially on your surgical side with multiplane landings, as noted above. Begin with 1-2 sets of 15-20 reps on each side, progress as tolerated.

Progress running/jogging to include backward jogging, lateral shuffles, grapevines, high knee running, high knee skipping. Begin with 1 min each, increasing volume as your hip tolerates.

Using a lazy river is an option to challenge your balance, endurance and power.

