



REHAB / RECOVERY / PHYSIOTHERAPY

Functional Impingement of the Hip (Part 2): Rehab Exercises

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I find functionally impinged hips that don't move properly on so many of my patients. (See part 1 of this article for a description of the condition.¹) Without correcting this anterior hip pattern, these patients are probably doomed to recurring hip pain, medial knee pain and/or lower back problems. Fortunately, we can help.

Why is proper hip motion so important? The hip does not have to hurt when it is dysfunctional. My patients are often surprised by their lack of hip motion. Here is Mike Boyle's take on this from his "joint by joint" approach to [training](#):² "The interesting part lies in the theory behind low back pain. My theory of the cause? Loss of hip mobility. Loss of function in the joint below (in the case of the lumbar spine, the hip) seems to affect the joint or joints above (lumbar spine). In other words, if the hip can't move, the lumbar spine will. The problem is that the hip is built for mobility, and the lumbar spine for stability. When the supposedly mobile joint becomes immobile, the stable joint is forced to move as compensation, becoming less stable and subsequently painful."

Step 1: Assess Hip / Pelvic Motion

I am assuming you have already performed the exam, including ROM, palpation and muscle strength testing for the hip itself. Now let's outline functional tests in all three motion planes, focusing on the hip and pelvis.

Start with the sagittal plane. Can the patient begin a squat by hinging at the hips? A little coaching is OK if they understand it quickly. If not, they need to work on this basic motion. This piece is critical for both the hips and for any flexion-intolerant back.



Does the patient have stability in the transverse plane? Can they lie on their back and raise the foot of one bent leg slowly, without rotating their pelvis? A more advanced version of this test is a single-leg bridge, looking at form and watching the pelvis. If the patient fails these tests, it indicates a lack of proper gluteal and lumbar stabilizer muscle firing, impacting the ability to control axial rotation.

Let's move on to the frontal plane. Test the gluteus medius by observing gait; by observing as the patient performs one-leg standing and one-leg squats. Does the non-stabilizing leg drop inferior in the frontal plane? If so, the gluteus medius on the stabilizing side is weak. Place the patient on their side and muscle test the gluteus medius. Is it weak? Test their ability to hold a side plank. If they cannot hold a straight-leg side plank with good form for 60 seconds, their "side core," the quadratus lumborum and associated muscles are not doing their job.³

When I find functional hip impingement, addressing all three motions around the hip simultaneously seems to be very effective. If I am working with an exerciser, a yogi, an athlete, etc., I may move directly into the two complex, multi-directional functional exercises described in the next few paragraphs. If I am working on a sedentary patient, I probably need to peel back and start with simpler, unidirectional exercises.

Step 2: Newer Rehab Approaches

For years, I have been addressing the hip by teaching the patient to strengthen their gluteus medius and psoas, and to activate the whole posterior chain. But I was unsatisfied with the effectiveness of the rehab component. The goal: exercises that would dramatically and immediately change the hip motion pattern. When the patient sees and feels this, compliance improves immensely.

The following two exercises address the hip in a more functional manner, moving the pelvis against

a fixed thigh. Both are complex multi-muscle, multi-function, multi-joint exercises. These exercises can dramatically and immediately change hip function in the right patient.

In the app version of this article, I've included a short video of a brief before-and-after exam of a 73-year-old patient who recently underwent left hip replacement surgery. After five months of hip pain, he worried his hip replacement had failed and had new X-rays taken. The surgeons reassured him the bones were OK. Yet he still experienced hip pain, with one episode bad enough that he could not bear weight. The only treatment between the before and after assessment videos: two repetitions of the side plank "plus" (described in the next section and also called the low diagonal oblique sit). This exercise produced dramatic changes in all of the indicators: strength, ROM and tenderness.

I do wish this exercise were simpler to perform, but it is definitely worth teaching. If you demonstrate to the patient how effective it can be, they will do it. Within a few weeks, three visits and daily performance of these exercises, his hip motion had normalized. (Now it's time to address his inhibited and atrophied glutes and psoas, another side effect of five months of pain.)

What is different about these two exercises? Quoting from Craig Liebenson and Koichi Sato's recent article: "Hip and groin issues are common in both sedentary and active people. Most exercises for this region involve moving the thigh (femur) in/out (adduction/abduction) or forward/backward (flexion/extension). In each of these motions the thigh moves against the pelvis. Yet, in walking, running, kicking, throwing, etc. much of the athleticism or power comes from pelvis moving against a fixed thigh."⁴

These two exercises fit the above criteria. They both have the pelvis moving on the fixed thigh, activating the glutes, adductors and trunk in a different way.

I have become a teacher and proponent of activating and waking up the muscles, to produce length with strength. I rarely teach passive stretching. I've talked about this [before](#),⁵ and the more I learn, the more convinced I am of the utility of this approach. In relation to the dysfunctional hip, the tight adductors need to wake up with activity, not just stretching.

Two Great Multi-Function, Multi-Directional Hip Exercises

Side Plank Plus (Low Diagonal Oblique Sit): This is not a simple exercise; it has multiple distinct steps. It includes a bent-knee side plank (activating the QL area), a roll of the hips in the transverse plane, an activation of the glutes to isometrically push the thigh forward, and activation of the adductors. It may be ideal to stage this - to first teach the patient a side plank and then add the additional motions.

The best description of this exercise is by Liebenson and Sato.⁵ I've also created a [YouTube video](#) demonstrating how to perform it. The following description is for the left side. The patient should be side-lying with the left side down, propped up on their left forearm. The legs are both bent, with the right leg behind the left leg.

1. Patient starts by pushing the left forearm into the floor to lift their upper trunk up. I like to add what McGill calls an anti-shrug here, activating the left-side lats to further stabilize the shoulder.
2. Lift the pelvis off the floor, as in a bent-knee side plank. Both knees remain on the floor.
3. Rotate the trunk forward, bringing the right side of the pelvis anterior (transverse plane rotation). This activates the adductors on both sides, and also provides the leverage needed for the next move.

4. Activate the left glutes to push the left thigh forward, pushing the left knee anterior. I recommend that the patient push the lower knee into a wall or couch. (The video does not show this.) Patient should hold this for 10 seconds.
5. Lift the left foot slowly up and down 3- 5 times. Some patients can barely lift the foot; for others it is easier.
6. Repeat the entire exercise sequence three times, twice per day.

Woodpecker Plus: Here's another powerful functional exercise for the hips, done weight-bearing. It is called the "woodpecker with twist" in [foundation training](#).⁶ (Description is for left side.)

1. Focus first on getting the patient into a lunge variation with 80 percent of the weight on the front leg. The front leg is only slightly bent, and the knee is over the heel; don't let the knee go too far forward. On the back leg, the patient is up on their toes, with the toes pointing straight forward.
2. Here is the challenging part; Stick the butt out and do a deep hip hinge; this is challenging to do in the lunge position. If the patient has performed proper squats, they will have a better time understanding this motion.
3. Bring the arms up to 90 degrees of flexion, straight in front. Now, rotate the trunk and arms toward the front leg's side. Most patients want to twist too far. Keep the arms framed with the trunk motion; if their trunk can twist 15 degrees, the arms twist 15 degrees. Activate the inner thighs to isometrically pull toward each other. The front / left leg is active; it stays straight ahead. The front leg's isometric activation is a hidden activity. In stabilizing against the twist of the trunk to the left, the patient is activating the left glutes and adductors; key hip muscles. They should feel this in their left glutes if done correctly.

As with most foundation training exercises, you don't just assume the position; you actively fire multiple muscles isometrically. (Watch my YouTube video courtesy of the *DC* app.) The patient should do this on both sides, with emphasis on the dysfunctional hip side. Do three reps, holding each for 15 seconds, twice per day.

Unidirectional Exercises; Everyone Has to Begin Somewhere

Earlier, I outlined hip and pelvic evaluation in three planes. It would be incomplete to just tell you about these two complex exercises. A series of simpler exercises are useful for any hip problem. I'll start with two sagittal plane exercises you may not be using. One is the *quadruped sit-back*, with the patient focused on hip awareness, from Shirley Sahrmann. This exercise is designed to increase awareness of the hip's motion within its socket in an easy, safe quadruped position. (There's [a video](#) demonstrating this exercise as well.)⁷

Another useful one is a *standing hip flexor endurance* exercise, introduced to me by Michael Boyle, who talks about why this is important in the referenced [post](#).⁸ Boyle divides the five hip flexors into two groups. The first group includes the iliopsoas and psoas, which can lift the hip above 90 degrees. The second group is the TFL, rectus femoris and sartorius.

One of the few stretches I routinely suggest is stretching of the hip flexors, based on measuring their length. I think the hip flexors, seen as a group, tend to get both weak and tight. If the hip flexors are too short, they prevent normal hip extension motion.

Other basics include *gluteal strengthening* exercises for both the gluteus maximus and gluteus medius. Gluteal function affects all three planes of motion. Remember, pain and improper motor function around the hip or lower back will contribute to gluteal amnesia. Exercises include bridges, one-leg bridges, clamshells and side steps. Don't forget the side plank for the frontal plane.

As always, I suggest an assess, treat, reassess protocol. Use exercise as the treatment. Recheck hip function after the patient has performed the various exercises. Customize your exercise prescription based on what works for them, taking into account the patient's level of motor control.

References

1. Heller M. "Functional Hip Impingement (Part 1): Evaluation, Hip Sparring and Mobilization." *Dynamic Chiropractic*, April 15, 2015.
2. Boyle M. "A Joint-by-Joint Approach to Training." Blog post available at www.strengthcoach.com.
3. Liebenson C. *Rehabilitation of the Spine*. Lippincott, Williams and Wilkins, 2007: p. 244.
4. Liebenson C, Sato K. "The Low Diagonal Oblique Sit Exercise." *J Bodywk Movement Ther*, 2014;18:643-645.
5. Heller M. "Stop Stretching - or at Least Stop Stretching the Lower Back Into Flexion and Rotation." *Dynamic Chiropractic*, Dec. 2, 2012.
6. Eric Goodman, DC, developer of foundation training (www.foundationtraining.com).
7. Fox C. "A Multi-Use Exercise: Quad Rock Back." Blog post available at www.thestudentphysicaltherapist.com.
8. Boyle, M. "Understanding and Training Hip Flexion." Blog post available at www.strengthcoach.com.

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