

Advanced Functional Exercises for the Hip and Low Back

Jeffrey Tucker, DC, DACRB

Movement assessments have become a clear, comprehensive evaluation approach to my chiropractic therapy. It begins with me looking at each patient's standing posture. I then ask them to perform a series of postures. You know this as a range-of-motion evaluation. For example, I say to the patient, "Bring your chin to your chest," or "Bend forward to touch your fingers to the floor" or "Raise both arms over your head." It is old school, but I realize the need to document how far they can move and if any sensations present themselves.

I have become a keen observer of these movements. I am not just interested in how far the patient can move, but more interested in the way they move and what that can tell me. The evaluation continues with a series of dynamic and static postures to observe how the muscles and joints move. Through this process, I generate a sequence of home-exercise programs for my patients. Please realize that the movement assessments can be performed prior to any hands-on work you do, or they can conclude with a mobilization or manipulation, if necessary.

If you have read my previous articles, you know that I start with the squat assessment. Observe the patient performing a squat several times. Simply say, "Let me see you do a squat with your arms out in front of you." The benchmarks I look for on this evaluation are that the upper torso is parallel with the tibia or toward vertical (back is relatively upright), the femur is below horizontal, the knees are aligned over the feet, the toes point forward and the knees don't turn in. If the patient cannot accomplish the above criteria, I start the correction process.

The 120 degree knee-to-chest maneuver. The patient lies supine in the 90/90 position. The knees are over the hips and the legs are parallel to the floor. Stand at the feet of the patient and use a knife-edge contact along their ankle crease. Resist at the ankle crease while instructing the patient, "Pull your knees to your chest." Allow them to move into a knees-to-chest-position. You are providing resistance, not overpowering the patient, whose lumbar region should remain in the neutral spine. Instruct them to focus on using the lower abdominals, especially the area slightly above and below the inguinal region. Allow the hips to get to at least 120 degrees. This maneuver is a great way to get patients to reawaken this area. Bring awareness of tightness to this area while you tell the patient to release tension or resistance in other areas not needed for this maneuver, such as the neck or shoulders. Repeat this maneuver as many times to patient tolerance.

The next progression is a pose called "*Find your stance.*" This is used as a foundation of all standing postures and movements. I want this to become the patient's natural way to stand. It cultivates a sense of strength and stability. The patient should begin with their feet (shoes off) between their hips and shoulders - tell them to go with what feels natural and comfortable, and to slightly angle the feet outward with their weight *evenly* spread through the balls, lateral edge and heel. Avoid the arches collapsing inward. They should feel the medial and longitudinal arches lift up.

Assisted squats. Doctor and patient face each other. While in the "find your stance" position, or

with feet spread to shoulder-width apart (or slightly wider if needed), the patient should hold their arms and hands out in front of their body. Hold hands with the patient as they perform a squat. The command is, "Pull your butt down." You are providing assistance so the patient doesn't fall down. However, they may fall to the floor the first or second time, and that is perfectly normal. Tell them to get back up and attempt it again. The idea is to allow the patient to go as deep as possible. Get the patient to engage the groin crease muscles to pull themselves down. The goal of doing this squat is to reach back with the buttocks and down, as one would when sitting back on a chair with control. If you have a rope or exercise band (at least the strength of a black theraband), you can wrap it around the patient's back and underarms while you hold the ends in front of the patient and ask them to "sit down" against that resistance. Coach the patient to keep their back straight - in this case, as vertical as possible.

"Pull the hips out of the socket" routine to squat. This maneuver requires you plus an assistant. Instruct the patient to squat down in a wider-than-shoulder stance. The doctor is to the left of the patient and the assistant is on the right side. You and the assistant should each place one flat hand behind the posterior leg of the patient, just below the knee crease. The other hand is placed in the inguinal fossa/ligament crease with a knife-edge contact. Use just enough pressure to guide the patient into a deeper squat. Ask them to feel as if they are pulling the hips out of the socket as they descend. This allows the patient to understand and feel the proper joints and muscles to use to accomplish this squat.

Allow them to learn in a wide stance and go as low as they can. As the patient improves strength, they can get into a narrower stance. Less core muscle is required in a wide stance than a narrow stance. Repeat this maneuver several times. Do a simple test on yourself. Stand in a wide stance and go narrower and narrower until you are in a one-legged stance. Feel how the core is participating. Eventually, we will get patients to have their feet closer and closer together, and this will demand greater core strength.

Right after this maneuver, it will help the patient if you rub your index fingers along the spinous processes while the patient does several more squats. This is performed starting at approximately the middle of the back with both index fingers. At the same time, rub one finger headward and the other caudal along the spinous process while the patient squats down and up. While you rub the spine, instruct the patient to stay in a "tall spine" posture. They need to imagine creating more room in the hip socket. Tell them to think of one thing and only one thing on the way up: the gluteals. You don't need to suck the stomach in if you elongate the spine; it will automatically come in if they are working to resist extension.

Squat against the wall. This is a new take on the old-school method of a wall squat. Once a person can accomplish the "static wall squat," also known as the "wall sit," "wall chair," "airbench" or "back-against-the-ball squat" for one minute, they are ready for this maneuver. Find the distance away from the wall so that when the patient squats down, their sacrum stays in contact with the wall. The key is to keep the sacrum touching the wall. Have them squat down with arms on the inside of the thighs until the elbows can push against the inner thighs. The patient should then put their hands in a prayer pose, push the elbows against the inner thighs and pry the hips apart as they wiggle side to side, going lower and lower. Have the patient continue this gentle rocking side to side and attempt to go lower and lower, opening the hips. They should feel this in the most proximal attachments of the adductor muscles and hamstrings. Instruct the patient to hold this pose for as long as possible and then to concentrate on getting back up using the gluteals and keeping the sacrum in contact with the wall. The patient should perform this maneuver several times. One minute in this pose really gets you feeling warm. Have the patient attempt this with a narrow stance compared to away from the wall. The next progression is to repeat the squat away

from the wall.

Pivots. These help open the hips. Patient stands with their feet more than 3 feet apart, with outstretched arms (abduction) to their sides, away from the body. The feet will need to be angled slightly outward, approximately 15 degrees. Instruct the patient to keep the torso facing forward. The patient should lunge gently to the left until their knee is bent in a right angle above their left foot. Have the patient lengthen the spine upward ("tall spine" concept) and move side to side, going more and more lateral (lower). The opposing forces of the legs provide balanced stability. Don't let the patient lean their body toward the bent knee; instruct them to try to keep the torso upright as much as possible. Imagine the hands pulling farther side to side. Allow the sitting bone to be pulled backward. The legs, both pushing forward and pulling backward, allow the hip to hinge and become stable at the same time - two opposing forces balancing one another. The shoulder blades should be kept down.

I recommend patients practice these maneuvers daily. I want them to observe subtle changes in posture, decreased pain, increased range of motion, feelings of stability, and a greater capacity for work and sport. Because individuals vary in strength, flexibility and coordination, the practice of functional exercises will be unique to each individual. Using progressive movement as assessments in your practice will tell you where the patient is strong or weak, symmetrical or asymmetrical, balanced or imbalanced, coordinated or uncoordinated, and which areas need more practice.

Resources

1. Bergmark A. "Stability of the Lumbar Spine." A study in mechanical engineering. *Acta Orthopaedica Scandinavia* 1989;230(60):20-24.
2. Caterisano A, Moss RF, Pellingier TK, Woodruff K, Lewis VC, Booth W, Khadra T. The effect of back squat depth on the EMG activity of 4 superficial hip and thigh muscles. *J Strength Cond Res* 2002 Aug; 16(30):428-32.
3. Comerford M. "Lumbo-Pelvic Stability." Course notes, 2003 and 2006. Copyright M. Comerford.
4. Tsatsouline P. "Stretch Course." Course notes, 2007, Copyright P. Tsatsouline.
5. Vermeil A. "Sports & Fitness." Course notes, 2005. Copyright A. Vermeil.
6. All the coaches, sports medicine, and sports scientists who have shared their knowledge with me.

MAY 2007