

# The Lumbopelvic Hip Girdle

The second article of a two-part series on the lower kinetic chain.

The first article of this series discussed the structures of the foot, ankle and knee. This article will address the other area of the lower kinetic chain: the lumbopelvic hip girdle. You will learn how to assess the structures in this area, discover how the alignment of these structures affects other parts of the lower kinetic chain and become familiar with some exercises to help correct any deviations.

The lumbopelvic hip girdle is the area where the lower spine, pelvis and tops of the legs come together. As the human body evolved from quadrupedal to bipedal, a lumbar curvature developed in the spine to help lift the torso on top of the pelvis. Consequently, the pelvis became wider and more compact to accommodate the increased weight of the torso and provide greater potential for locomotion. The complex array of muscles, tendons, ligaments, fasciae and joints that make up the lumbopelvic hip girdle possesses advanced movement capabilities. However, the potential for increased function brings with it a greater likelihood of muscular imbalances and structural malalignments.

The lumbopelvic hip girdle has two very important articulations: the **sacroiliac joint** and the **acetabulum**. The sacroiliac joint is where the sacrum (base of the spine, just above the tailbone) meets the ilium (back of the pelvis). The acetabulum is a cup-shaped depression in the pelvis where the end of the femur sits to form the hip socket.

## Common Deviations

The two most common deviations found in the lumbopelvic hip girdle are (1) excessive anterior pelvic tilt and (2) excessive lumbar lordosis. **Anterior pelvic tilt** refers to a forward rotation (downward tilt) of the pelvis. When viewed from the side, the

pelvis is rotated anteriorly (forward) around the acetabulum. A slight anterior pelvic tilt of 10 degrees is normal.

**Lumbar lordosis** refers to a curvature in the arch of the lower back. The lumbar spine naturally curves inward to form a concavity; however, an excessive lordotic curve can cause pain and dysfunction.

*Note:* Excessive anterior pelvic tilt is always accompanied by excessive lumbar lordosis and vice versa.

## The Assessment Process

To assess the lumbopelvic hip girdle, you must be able to see the area clearly. Instruct clients to wear shorts or form-fitting workout pants. Females should wear a sports bra or form-fitting T-shirt. Males should remove their shirt or at least lift it above the waistline or tuck it into their pants. The assessment process includes a verbal, visual and hands-on evaluation. Always make note of your assessment findings.

### Verbal Assessment

A verbal assessment can provide some insight into a client's condition.

Ask the following questions:

1. Do you ever experience pain in your hips, buttocks, low back or groin?
2. Have you ever been diagnosed with arthritis of the hips or spine? (This helps you gauge the integrity of the joints of the lumbopelvic hip girdle.)
3. What is your occupation? How much physical activity do you get? (This gives you an idea of the daily stress experienced by the structures in this area.)
4. If you are experiencing pain, what aggravates the condition? What makes it feel better? Does the pain coincide with other pains in the body?

*Remember to stay within your scope of practice; only a physician can diagnose a*

*medical condition.* Rather than attempting to make a diagnosis, use your client's responses to your questions to choose exercises that strengthen or balance weak areas or, if the imbalances are severe, to avoid exercises that might be contraindicated.

### Visual and Hands-On Assessment

Use a visual and hands-on assessment to further assess the structures.

**Excessive Anterior Pelvic Tilt.** Look at the client's pelvis from the side. When the back of the pelvis appears to be much higher than the front, an excessive anterior tilt is indicated. The way the waistband sits on the hips (high at the back and low at the front) can also help you assess the position of the pelvis.

**Posterior Pelvic Tilt.** If the front of the pelvis appears higher than the back, a posterior pelvic tilt is indicated. This deviation is not common.

**Excessive Lumbar Lordosis.** To check for excessive lumbar curvature, ask your client to stand with heels, buttocks, shoulders and head touching a wall. Slide your hand, palm toward the wall, behind the client's low back and evaluate the space between the lumbar spine and the wall. You should be able to slide your fingers only up to and in line with the second knuckles. If you can slide your entire hand under the back, the client has excessive lumbar lordosis.

*Note:* If your client has excessive body fat or muscle on the buttocks, the lumbar spine will appear farther away from the wall. Take this into consideration when making your assessment.

## Teaching Neutral Position

Use the following technique to teach your client how to achieve neutral pelvic position while your client is standing

against a wall, instruct him to tilt his pelvis posteriorly, engaging the abdominals to assist with the movement. You should feel the space between the wall and the lumbar spine decrease.

Now ask the client to step away from the wall and to place one of his palms on the bony protuberance on the front of each hip. His index fingers should touch and be parallel to the ground. Coach the client to look down at his hands and posteriorly tilt his pelvis until he can see both the index and second fingers of both hands. This is neutral position for the pelvis.

When your client has achieved a neutral pelvic position, coach him into a neutral foot and ankle position (see

November–December 2006 *IDEA Fitness Journal*, page 31). The knees should align correctly over the center of the feet, establishing a neutral position for the entire lower kinetic chain. Although your client may have difficulty maintaining this posture, attaining kinesthetic awareness of this position is very important in order to replicate the movement during training sessions.

*Note:* Occasionally, a client's knees will not align over the center of the feet in a neutral foot and ankle position. This is usually the result of a congenital malalignment such as "bowlegs."

## Movement Patterns

The first article in this series explained

how foot and ankle pronation causes the knee to move medially, or toward the center line of the body. This displacement at the knee causes the tibia and femur to rotate inward, which has a direct impact on the alignment and movement capabilities of the lumbopelvic hip girdle. Inward rotation of the femur affects the way the head of the femur sits in the hip socket (acetabulum). To accommodate the movement of the femur in the acetabulum, the pelvis must rotate anteriorly, which increases the lordotic curve of the lumbar spine. If excessive anterior pelvic tilt and excessive lumbar lordosis persist, they will impair movements required for daily activities and exercise. For example, lumbar-spine flexion will be restricted

## exercise recommendations

Below are four possible exercises to help your clients correct structural deviations in the lumbopelvic girdle.

### Foam Roller 1

This exercise helps rejuvenate and regenerate many muscles of the gluteal complex. An imbalance of the lumbopelvic hip complex can lead to irritation of the gluteus maximus, gluteus medius and piriformis muscles. For example, when the femur internally rotates, as is the case with pronated feet and medial knee displacement, the gluteus medius muscle (which helps externally rotate the leg) is overstretched and twisted. This causes the muscle to become irritated and lose some of its functional capabilities. This exercise can help recondition this muscle and improve its function.

Sit on foam roller. Place one ankle on opposite knee, and hug that knee to chest to initiate stretching and realigning of gluteal complex. Roll on sore spots. Perform daily for 1–2 minutes per side.

### Foam Roller 2

This exercise helps recondition and align the fibers of the iliotibial band, which attaches the gluteus maximus to the outside of the tibia. An imbalance of the lumbopelvic hip girdle, such as excessive anterior pelvic tilt, can lead to excessive wear and tear on this structure.

Lie sideways with hip on foam roller. Roll from hip all the way to knee to apply pressure to outside of thigh. Perform daily for 1–2 minutes per leg.

### Hip Flexor Stretch

This exercise not only stretches and realigns the hip flexors but also helps strengthen the gluteal muscles and abdominals. Clients who have an excessive anterior pelvic tilt and/or an excessive lumbar lordosis may experience alignment issues and inflexibility of the hip flexors and accompanying weakness of the gluteals and abs.

Kneel on one knee, other foot in front for balance. Posteriorly tilt pelvis, using gluteal muscles and abdominals to assist with movement. Raise arm on same side as kneeling leg to increase stretch. Hold for about 3 seconds. Perform at least 1 set of 6–8 reps per side daily.

### Butt Lift

This exercise helps strengthen the gluteals and abdominals and also helps release tension in the lumbar erector spinae.

Place head and shoulders on top of gym ball. Lift and lower pelvis while maintaining neutral pelvis throughout. (Most clients will have to posteriorly tilt.) Perform 2–3 sets of 10–15 reps 2–5 times a week.

owing to the tightness of the lumbar erector spinae muscles; and range of movement into hip/leg flexion may be inhibited as the pelvis loses its ability to rotate posteriorly. These imbalances can make it difficult to perform simple tasks like bending over or tying one's shoes.

## Exercise Considerations

Walking, running and all forms of cardiovascular exercise that work the large muscles of the lower kinetic chain involve hip/leg flexion and extension. Excessive anterior pelvic tilt and excessive lumbar lordosis will limit the body's ability to effectively rotate the pelvis posteriorly, which is necessary to correctly move the legs forward in front of the body. This type of musculoskeletal imbalance will result in compensation patterns that may lead to problems like lumbar-disk degeneration, sacroiliac joint dysfunction and hip bursitis. Additionally, imbalances in the lumbopelvic hip girdle can lead to a disruption of movement in the knees, ankles and feet.

Practice your structural assessment skills and take time to evaluate and better understand your clients' musculoskeletal deviations. Research the potential implications their imbalances may have on their soft-tissue structures. Once you can identify the muscles, tendons, ligaments and fasciae that are being affected, you will be able to design appropriate corrective exercise programs.

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