

Concord Sport & Spine Newsletter



Altered Hip Function can be a Major Factor in Low Back Pain – A Lesson from Golf

Close to 50% of my work is dealing with acute or chronic low back pain (LBP). Over the years, I have come to recognise common patterns that are more prevalent in those with recurrent problems. One common pattern is excessive bending and rotation through the low back, with inefficient use of the more mobile and stronger hip joints. Such patterns are also seen in professional athletes with LBP.

A study published in the January edition of the American Journal of Sports Medicine looked at 30 professional golfers without LBP, 15 with hip rotation deficits, and 15 without. All were right handed. The authors used 3D biomechanical analysis of the low back, pelvis & hip, as well as muscle strength & length measures. Their main findings were that golfers with reduced hip rotation had:

- A compensatory increase in rotation through the lower back.
- Muscle imbalances – weaker external compared to internal rotators, weaker gluts, and tightness in the hamstrings & / or the hip flexors.
- A compensatory increase in lumbar forward & right side bending (during the downswing). The authors theorized that the increased lumbar bending could have been due to tight hamstrings resulting in increased backward pelvic tilt, or to overactive hip flexors pulling downwards on the spine. They also noted

that increased right side bending during the follow-through phase is known to be a cause of right sided LBP in right-handed golfers.

Already, in past studies, limited hip mobility has been shown to be a common cause of LBP in golfers. In particular, limited hip inward rotation in the lead leg has been shown to be significantly more common in golfers with LBP compared to those without. Studies have also shown that rehab aimed at improving hip rotation, as well as core strengthening, is very effective in relieving LBP in golfers.

Muscle imbalances in strength & length have been shown to be important contributors to hip motion deficits. Common examples include:

- Weak hip external rotators relative to internal rotators
- Weak abductors (gluts)
- Weak extensors (rear gluts)
- Tight hamstrings
- Tight hip flexors

Ways in which limited hip mobility may affect the low back include:

- Loss of efficient transfer of energy from the legs to the 'kinetic chain', resulting in excessive low back stress.
- A compensatory increase in lumbar rotation. The lumbar spine is not meant to twist - it

functions to be mobile in bending / arching, but has little rotatory mobility. Even a small increase in rotation will heighten the risk of disc and joint damage.

- Hip extensor strength deficits have been shown to contribute to LBP in female athletes.
- Hip abductor weakness can lead to loss of control over pelvic movement, and greater lateral stress to the low back.
- Hamstring tightness is associated with backward pelvic tilting and greater bending through the low back.
- Hip flexor tightness is associated with forward pelvic tilt & excessive arching through the low back.
- Weakness in the gluteals can lead to compensatory over-working of the hip flexors and hamstrings. These muscles then become tight, creating altered pelvic movement and postures.

Reference:

Kim, S et al (2015). Lumbopelvic kinematic characteristics of golfers with limited hip rotation. [American Journal of Sports Medicine](#), 43, 1, 113-120.

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