



BACK PAIN

## Low Back Pain in Professional Golf: A Common Muscular Relationship

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Every sport creates its own unique demands on the body. Some sports require such a myriad of body positions that assessing pathology is often difficult and unpredictable. Football, baseball, hockey and soccer players in particular have to be capable of performing an enormous array of body demands that can change at an instant. How their bodies are positioned at the point of injury can challenge typical evaluation methods.

The musculoskeletal injury can be due to poor mechanics, body positioning, a specific soft-tissue failure or some combination thereof. Predictability of injury and preventative measures that can be taken to avoid injury are often at the mercy of body position at the time of impact or unexpected collision.

Golf injury assessment takes on a different format. While body positioning, biomechanics and movement in space are all causes of injury in all sports, golf requires a tremendous amount of speed, power, mobility and stability; not to mention a need for rhythm and timing to master a specific skill set. The unique aspect of all of these body demands is that they are performed in a singular, reproducible body position.

As a clinician, it allows us to extrapolate efficient movement patterns into a sport with an elevated level of accuracy. Numerous performance demands placed on the same body position allow for better predictability of interbody relationships. Agonistic-antagonistic muscle relationships, arthrokinetic influences, mobility and stability patterns are all more apparent in assessment and treatment protocols.



Of all the conditions presented to Professional Sports Care staff over the past 17 years, 75 percent are related to the lower back.<sup>1</sup> Although this should be no revelation to those who treat golf injuries or have played golf, understanding *why* it occurs is what is significant. There are many things in the body that can go wrong to provoke lower back pain. Understanding what they are, why they occur, and how they affect the lower back is what improves the predictability of lower back pain in golfers, as well as in the general population.

### Case Study

A young, successful professional golfer presents with sharp, localized, lower back pain. His pain is along the left iliac crest approximately 4 cm from the mid-vertebral line. Pain began gradually as diffuse stiffness two weeks prior for no specific reason. Stiffness became more of a dull pain over the ensuing 10 days and was more noticeable while hitting golf balls.

The PGA golfer then took five days off to rest his back. On the sixth day, while hitting balls again, his lower back pain became sharp and prevented him from continuing. The pain was most intense right before impact through the rest of his swing. He felt he just could not follow through because of the pain.

This golfer is well-conditioned and exercises faithfully in the offseason under the supervision of a trainer. As it was the first month of the season, he wanted to get his pain alleviated as soon as possible.

The golfer's history of back pain reveals a need for periodic treatment for right mid-back pain. Hitting

too many balls, playing and practicing a lot, and traveling seemed to provoke the pain, which was usually alleviated within a day or two with manual soft-tissue therapy and spinal manipulation. He has not undergone any swing changes or altered his exercise program over the past 2-3 months.

#### Evaluation Parameters

*Examination:* Lumbar: F(60), E(30), RLF(30), LLF(30), RR(30), LR(30), with mild pain in the left lower back felt with RLF and LLF. Palpation of the left T10/11, T11/12 costovertebral joints was tender relative to the right and left quadratus lumborum.

*Orthopedic:* Positive Kemp's, Yeoman's, Milgram's and Bechterew's tests for left lower back pain. Braggard's, Gaenslen's, straight-leg raise and Mennell's tests were negative. Standing upright and leaning his torso right, then left, was positive bilaterally for left lower back pain.

*Neurological:* Unremarkable with sensory and motor evaluation of the lower extremities.

*Manual muscle testing:* Left hip extensors +4/+5 relative to right (evident after five repetitions with 3-second hold each).

#### *Selective Functional Movement Assessment:*

- Pelvic tilt test: dysfunctional, no pain with pelvic flexion
- Pelvic rotation test: dysfunctional, painful – left (pain in low back, left groin)
- Shoulder rotation test: functional, no pain
- Single-leg stance: dysfunctional, no pain (left hip rotates internally)
- Single-leg rotation: dysfunctional, painful (left hip with ER and IR)
- Single-leg forward bend: dysfunctional, painful (left)
- Single hip extension: dysfunctional, no pain
- Prone active hip extension: dysfunctional, no pain
- Prone passive hip extension: functional, no pain
- Modified Thomas' test: dysfunctional, no pain (iliopsoas)
- Lumbar extension: dysfunctional, painful (left)

*Diagnosis:* Left quadratus lumborum strain secondary to left iliopsoas strain / contraction.

*Assessment:* The obvious initial interpretation was that of a strain to the left quadratus lumborum.

#### Treatment Protocol

Treatment was specific to the muscle and costovertebral articulations it influences. Advanced soft-tissue procedures utilized passive, then active release techniques. Prone manipulation of the costovertebral joints at T11 and T12 for posterior rotational restriction was performed.

After two treatments, sharp left lower back pain ceased; however, pain remained at an intensity of 4 on a scale of 0-10. To hasten recovery, additional attention was given to the left iliopsoas muscle based on the following re-examination findings:

- Standing anterior pelvic tilt
- Standing increased lumbar lordosis
- Pain with lumbar extension (left low back)
- Positive Thomas' test

- Pelvic rotation test: dysfunctional, painful (left groin)

Due to these consistent findings, the clinical judgment was that the iliopsoas was significantly involved with the PGA player's left lower back pain and may have provoked the strain in the quadratus lumborum.

### Mechanism of Injury

The golfer's pain was most evident during his swing from impact to follow-through. During this phase of the swing, his weight transfer onto the left hip would require internal rotation of the left hip; activation of the left gluteus medius; and extension, elevation and rotation of the left side of the thoracic spine over the pelvis.

Typically, as pelvic rotation occurs over a posted left hip, it will share in the deceleration process and allow the "belt buckle" to finish pointing to the target. In this case, the contracted iliopsoas diminished the ability of the left ilium to rotate over the left hip.

With the golfer working for an efficient follow-through, the lower left side of the rib cage continued to rotate left, elevating and extending. It is difficult enough for a muscle to concentrically perform this demand, let alone have the QL eccentrically withstand such forces.

Aberrant movement of this nature resulted in: 1) progressive strain on the left quadratus lumborum; 2) restricted posterior rotation of the left T11, T12 costovertebral joints; and 3) extension restriction of the left T12/L1 and L1/2 facet joints. Therefore, clinically it was felt that the left iliopsoas strain caused the left quadratus lumborum strain, and subsequent arthrokinetic changes in the costovertebral and facet joints. Left lower back pain and dysfunction was the result.

Re-evaluation of this nature prompted additional treatment attention given to the iliopsoas muscle on the golfer's third visit. Active release technique, stretching and muscle activation addressed the iliopsoas. Spinal manipulation for an AS left ilium was also performed.

On the sixth visit, the PGA golfer was feeling great and was able to hit 100-125 balls in a practice session – a little aggressive for typical rehab protocol, but a professional golfer is not good with downtime. Progress continued over the next seven days, at which time he was on schedule, hitting 200-300 balls per day with no symptoms and solid swing mechanics.

Exercises [see slideshow in the app version of this article] were also recommended to help maintain structural alignment and promote stabilization of the involved soft-tissue elements. The golfer was instructed on the fact that this is a common sequence of events with the demands of professional golf. As such, continued attention must be paid to an ongoing exercise regime to enable him to efficiently handle his professional demands.

### Reference

1. Data compiled by Professional Sports Care, 2006-2012. For the past 17 years, PSC has provided chiropractic services to PGA and Champions Tour golfers at every PGA and Champions Tour event. Data has been compiled throughout this time period involving the examination and treatment of many golfers on both tours. An extensive amount of information has been gathered regarding injuries they have experienced striving to perform as professionals. The causes of these injuries and the effectiveness of nonsurgical manual treatment have been well-

documented. During the past 17 years, Professional Sports Care's staff have averaged more than 3,700 visits per year.

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