



Golf Mechanics 101

Golfers are prone to a number of injuries, with low back pain (LBP) being one of the most common. It is estimated that LBP accounts for 26-52% of golf-specific injuries. It is also estimated that up to 30% of touring professional golfers play injured at any one time.

Forces On the Spine During a Golf Swing:

- Trunk twisting is a major factor for Low Back Pain and is integral during the golf swing.
- The combination of compression, torsion and lateral bending are known risk factors for spinal disc herniations.
- **During a golf swing the lumbar spine can sustain compressive loads of up to 8 times body weight** (about 6100N in amateurs and 7584N in professional golfers). In comparison, cadaveric studies indicate that disc herniations can occur at 5800N of force.
- A golf swing can produce up to $596 \pm 514\text{N}$ of shear force on the facet joints. Loads of $570 \pm 190\text{N}$ can produce spinal fractures in cadaveric studies.

The Modern swing:

- The modern golf swing emphasizes a greater shoulder turn and minimal hip turn.
- The front foot is kept planted on the ground during swing to minimize hip turn.
- Thought to increase the chances of hitting the ball with a square club face.
- This swing can cause increased trunk lateral bending (known as the “crunch factor”) and exaggerated hyperextension of the low back on follow-through.

The Classic Swing:

- Reduces shoulder turn by raising the front heel during backswing and increases hip turn.
- Reduces shoulder to hip turn, thereby reducing torque on the lumbar spine.
- Emphasizes a balanced upright form that also serves to reduce “crunch factor”.
- Is not thought to decrease club head velocity (power) or ball contact accuracy.



Other Points:

- In general, amateur and professional golfers attempt the modern swing in an effort to maximize power and distance. It is possible that they are maximizing their potential for injury!
- Few swings are perfect. Some of the best golfers utilize strategies to increase power that may lead to injuries.
- One study showed that golfers with low back pain consistently exceed their trunk rotation during a golf swing.
- Another study indicated that 55% of golfers had low back pain and that those with low back pain had significantly more “trailing-side” vertebral body and facet joint arthritis/degeneration.
- Other common golf injuries include: Golfer’s elbow, wrist fractures, tendonitis around the thumb, rotator cuff and knee injuries.

The difference between professionals and amateurs!

- Professionals practice constantly with a consistent swing, leading to overuse injuries.
- Amateurs do not practice nearly as often and demonstrate multiple inconsistencies in their swing, leading to injuries resulting from poor mechanics.

The research indicates that:

- Similar muscles are activated during a golf swing as in other athletic activities.
- Excellent core stability will reduce the detrimental forces through the spine.
- Strong gluteus maximus (buttock muscle) will stabilize the hip during a swing and increase power generation.
- Decreased lead hip flexibility is associated with low back pain.



Tips for Preventing Injuries and Improving Your Game:

- Utilize chiropractic care to prevent/remove spinal irritation and dysfunction (subluxations).
- Increase general trunk core stabilization exercises (ask us for our core golf exercises).
- Increase gluteus maximus strength by performing squats and lunges.
- Increase hip flexibility through stretching (ask us for our golf stretches).
- Perform a warm-up that consists of a light jog and several low intensity practice swings before teeing-off.
- Walk between holes to increase cardiovascular performance and keep muscles warm.
- Maintain erect posture throughout golf swing. Don't slouch over the ball!
- Focus on control rather than power during golf swing. Club head velocity is not increased dramatically by hyper-rotating, hyper extending or laterally bending your trunk.
- Speak with a certified golf professional (CPGA) so that they can analyze your swing and make corrections at the driving range.

