

Fitness, flexibility and correct swing mechanics



Golf is a leisure sport enjoyed by more than 60 million people of all ages across the world and has reached the 4 million mark in the UK alone. It has many health and well-being benefits. It is widely known that a typical 18-hole-round amounts to 6-8 km of walking requiring 8000 to 12000 steps and a calorie burn of 1500⁵. Golf is also a high-risk sport where injuries are common, more than rugby as recently reported¹. It requires strength, flexibility, power and endurance, and to be physically fit to produce some of the fastest ball speeds. Unfortunately, the effects of this over time can result in different types of injuries and commonly manifests as lower back pain.

BACK PAIN IN GOLF

Over 80% of golfing-related injuries result from poor mechanics or overuse. Around 40% of these are low back pain usually caused by lack of flexibility and poor technique. Non-specific low back pain implies that it is not clear which structure is causing the pain.

Stressful muscle activity can cause muscle fatigue and general aching particularly after long spells of inactivity, so it is important to stay flexible, play regularly and keep fit. Muscle fatigue can lead to further injury of the underlying joints. It is important that after an episode of low back pain the muscles are managed to ensure efficient control of the spine. Physiotherapists, Osteopaths and Chiropractors normally aim to improve symptoms through soft tissue and joint mobilisation, alongside exercises to both strengthen the stabilising muscles around the back and improve flexibility through stretching.

The modern "X-factor" swing favoured by many professionals may hit balls harder and further than the Classic Swing but it can also put extra strain on the unfit and inflexible spine.

MODERN X FACTOR SWING VS CLASSIC SWING

Swing Phase	Classic Swing	Modern Swing
Address	Similar to Modern	Similar to Classic
Backswing	Body moves in relative unison	Separate hips and shoulders
Top of backswing	Shoulder/hip rotation relatively same Body sway to trail side	X-factor (shoulder/hips separate as much as possible Pivot on trail leg
Downswing	Entire body starts downswing as 1 unit	Hips start downswing, followed by shoulders and then arms
Impact	Shoulder/hip relatively equal Minimal trunk flexion toward trail side	Hips open to target more than shoulders Increased lateral trunk flexion toward trail side
Follow-through	Lumbar spine neutral	Reverse C (lumbar hyperextension)

THE BACK SWING - THE X-FACTOR SWING

An X-factor golf swing tries to get maximum rotation of the player's shoulders relative to their hips at the top of the backswing. This big rotation creates wound-up potential energy - the X-factor - but *Dr Corey Walker*³ considers it may come at a cost of twisting the



lumbar spine. This 'modern-swing', over time, can result in a damaging process that the authors call "repetitive traumatic discopathy" (RTD).

THE DOWN SWING – WEAR AND TEAR

During an explosive downswing, lateral flexion can result in a 'crunch' of the side of the spine, putting strain on the disc and facet joints on one side of the spine. The degeneration of the lower back is now seen more often in younger players in the circuit.



It is therefore important for all golfers to have regular conditioning and strengthening exercises to improve flexibility and muscle strength.

REHABILITATION OF LOW BACK PAIN IN GOLFERS⁷

As people age, spinal mobility and the ability to absorb forces applied to the spinal column decrease, making older golfers more susceptible to injury. There has been much research on the frequency and incidence of golf injuries, and as new retirees seek golf as a leisure activity, the need for injury prevention and effective golf rehabilitation programs has never been higher. Low back pain is the number one injury sustained by golfers, accounting for up to 34.5% of all injuries in the US. Since the average injury lasts between 2 and 4 weeks, it is costly to the golf industry, the health care system, and the workforce at large. Of the practitioners involved with treating injured golfers, the general practitioner, physiotherapist, chiropractor and osteopath are the most commonly sought health care professionals.

Commons back problems in golfers include include non-specific low back pain, stress fractures, lumbar disc herniation, early degeneration of discs, repetitive stress disorder and facet irritation.

The golf swing produces large loads in the spine, particularly during downswing to follow-through. These intense loads can strain muscles, injure facet joints and lumbar discs, and cause spondylosis. In older populations, vertebral and rib stress fractures are more likely than they are in younger populations, due to osteoporosis. Paraspinal muscle injury is common in golfers. The risk for paraspinal muscle tears and strains are inherent, as the paraspinal muscles are compromised by fatigue and stress imbalances, especially in the amateur golfer. Tears can be seen on MRI. Conservative treatment can consist of rest with cessation of golf and initiation of core strengthening and movement pattern correction. It should also include evaluation of golf swing mechanics. Facet arthropathy is also treated with rest from golf. Discogenic back pain is another type of injury usually treated conservatively with a hiatus from golf, use of nonsteroidal anti-inflammatories, and physical therapy. Spondylolysis which is common in young athletes, treatment usually consists of refraining from golf, core strengthening and correction of muscle imbalances.

Notes: A biomechanically efficient, athletic set-up not only increases the efficiency and power of key golf muscles, such as the abdominals and hip muscles, but also reduces the risk of injury to the lower back.

- During the set-up, the spine needs to be held relatively straight (neutral) alignment. The trunk will still have to tilt forward 25-30 degrees when setting up to hit the ball, but this movement should come mostly from flexion of the hip joints.
- In order for the hips to powerfully rotate through the backswing and follow-through, BOTH feet need to be rotated outwards approximately 25-30 degrees at set-up.
- A knee bend of about 25-30 degrees is also necessary to allow the clubhead to be brought down to the ball without excessively flexing the spine.

Recommended Golf set up Posture for a Stable Effective Swing (Right handed golfer aiming towards reader). *Source: Lindsay and Vandervoort, Asian Journal of Sport Medicine 2014.*

GOLF TIPS FOR A HEALTHY BACK

- Fitness is a must stronger muscles, the stronger your swing!
- Compulsory warm up Loosen muscles, joints and the back preventing long term damage to the spine
- Be aware of old injuries and pace yourself
- Overweight affects your performance Exercise and Flexibility play a vital role to get that perfect swing
- Playing too much golf? Assess yourself
- · Maintain good hip rotation mobility
- Wear the right shoes maybe free-release or rocker-soled to alleviate back pain.
- Prevention is the best thing and following some simple tips may decrease stress and strain on the lumbar spine –
 - o Hydrate frequently
 - After an episode, treatment usually includes No Golf -> Core strengthening exercises -> Correction of your golf swing mechanics
 - o Carry a dual 'backpack strap' type of golf bag which distributes weight evenly across your shoulders.
 - o Having proper clubs which fit your body specification
 - o Playing regularly
 - o Utilizing a long putter
 - o Improve Trunk Rotation more pelvic turn may avoid excessive spinal torsion
 - o Asymmetry in trunk rotation Golfers are encouraged to take practice swings both left and right handed

GOLF FACTS

- Golf with other leisure sports have an injury rate of 1.8 per thousand persons per year as opposed to 1.5 per thousand persons per year in rugby and other team sports according to the National Centre for Health Statistics¹.
- Low back injuries account for 15.2% to 34% of all golf injuries, followed by injuries to the elbow (7% to 27%), shoulder (4% to 19%) and wrist 10%.

- Incidence of injury among amateur golfers is between 15.8% to 40.9% annually; among professionals, the incidence ranges between 31% to 90% annually.
- Golf is a repetitive strain sport With an average of 300 swings per golfplaying-day which can cause minor traumatic injuries to the spine.
- Low back pain is the number one injury sustained by golfers, accounting for up to 34.5% of all injuries in the US.
- A study of professional golfers¹ showed that the most frequently injured regions of the spine are – Lumbar (22-34%) followed by Cervical (3-25%) and Thoracic (0-22%) and fewer injuries to the arm and shoulder. Both male and female golfers sustained approximately 2 injuries per player over a career. However, the average golfing careers for female golfers were shorter by 13 years as they were more prone to lumbar spine injuries than male golfers.

"A long swing with passive wrists and light grip pressure can prevent back issues." US COLFER PHIL MICKELSON

At 45, Mickelson has played without any serious back pain unlike most of the major champions like Justin Rose, Lee Westwood, Rory McIlroy and Jason Day. Back injury has sidelined several former champions like Tiger Woods and Fred Couples.



Tiger Woods 'back' on the course – The champions inspiring back pain story

- He won the US Masters at Augusta in 1997 with a record score, aged 21, making him the youngest man and the first black American to earn the title.
- His lower back pain began about 2010. He withdraws from the final round of the player's championship due to a bulging disk.
- In March 2014, he withdrew from the final round at the Honda Classic because of lower back pain and spasms.
- Later that month, he had surgeries to relieve nerve compression.
- He needed more surgery to his spine in 2015.
- In 2017, he had his fourth back operation spinal fusion to stop the pain.
- Back on Course Swinging at the speed of 129mph in April 2018 Masters Tournament he appears to be back to physical fitness.
- He won the Masters championship in Augusta for the 5th time in April 2019 after 8 knee and back surgeries.

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