Low Back Injuries and Injury Prevention for Golfers

By David Ostrow PT

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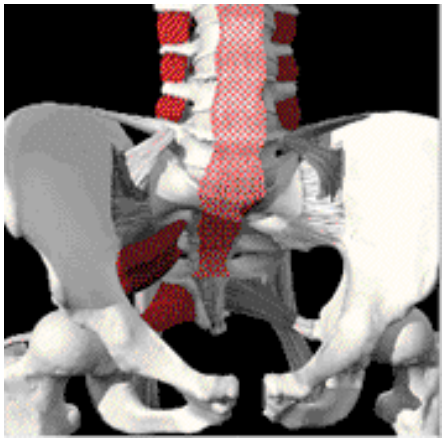
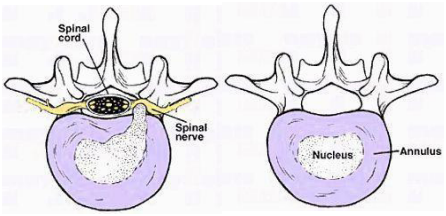


Disc Injuries Bulge vs. Herniation

The Low Back – Injures in Golf

Lower back injuries are prevalent in golf. The statistics are clear; if you stand on two feet and you play golf there's a high probability that your back will hurt. In this installment we will take up the disorders of the lower back. While there are many more injuries other than those listed here, these are the most common.

There are several important structures in the spine; bones, for example, such as the vertebrae, ligaments, nerves, and intervertebral discs. The discs' main job in the spine is to act as a cushion or shock absorber. The intervertebral discs also function to give height and flexibility to the spine.



When you think of intervertebral discs you might visualize a jelly donut. There is a soft inner core and a tough outer structure. The outer structure, called the *annulus fibrosis*, is made of a ligament-like material. The inner mass, called the *nucleus pulposus*, is much like the filling in the jelly donut.

A disc bulge is a weakening in the annulus of the disc. Due to improper loading over many years, the wall of the disc weakens and the nucleus moves into the over-stretched annulus. As the condition or degeneration progresses the annulus continues to stretch until we end up with a disc herniation. The major difference between a bulge and a herniation is the extent of the outer ring weakness.

Most research indicates that disc bulges are not a major source of pain that radiates below the lower back. If you are experiencing pain that is worse in sitting or standing still, numbness, or weakness, and other symptoms in your lower extremities, with or without lower back pain, the problem might be a herniated disc. In a herniated disc the nucleus material moves further out from the vertebral bodies and can press on the spinal nerves that run into the lower extremities.

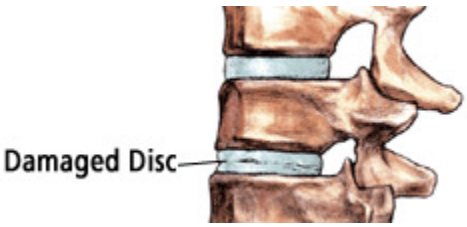
Medical research indicates that a position of increased flexion (forward bending) combined with side bending and rotation all together can lead to disc problems. Under normal circumstances the discs in the lower back can withstand several times the body weight in stress without injury or disruption. However, when the annulus is weakened by prolonged improper

loading then is it prone to injury including bulges and herniations. Mother was right when she told you to stand and sit straight. In that position there is normal loading of the discs. This prevents weakening of the annulus and maintains good health in the disc.

Disc injuries from golf seem to be related to excessive flexion of the spine at setup, reverse spine angles, lateral sways and the like. These positions and movement patterns load the discs in flexion, and then the swing superimposes high speed rotation and side bending…a recipe for disaster.

Arthritis

Spinal arthritis is a process of wearing out the spine. Many attribute this disorder to aging, other injuries, and poor conditioning. All are correct. There is, however, another reason: improper use of the body part, in this case the lower back. If there are muscle imbalances, pelvic girdle imbalances, limited hip or thoracic spine range of motion, the lower back is put under great stress. An unbalanced pelvis causes asymmetrical loading of the lumbar discs and vertebrae. It will over time lead to weakening of the annular ligaments and wearing out and change in shape of the lumbar vertebrae.



Just because you are older you do not have to have arthritis. With proper activity, including training that promotes symmetry in the pelvis, and the muscles of the trunk, arthritis can be mostly prevented. There have been some studies that looked at the relationship between back pain and arthritis. The research was inconclusive except in severe cases of arthritis. Just because your doctor tells you that you have a little arthritis, this does not mean it is the cause of your back pain.

Spondylolisthesis

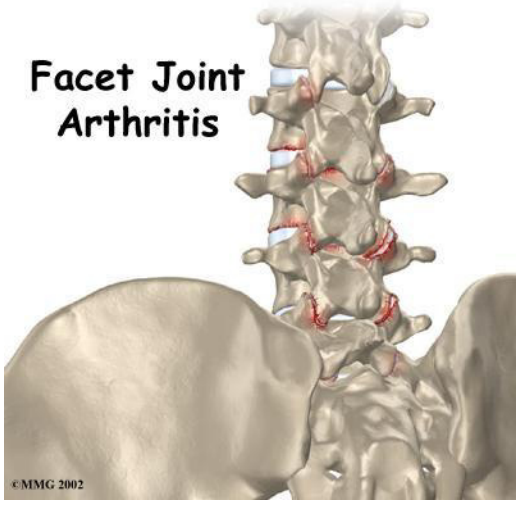
Spondylolisthesis is an interesting condition. It is basically a deformity by birth or injury in which the posterior structures of the spine called the pedicles do not form correctly or are fractured. This fracturing allows slippage of one lumbar vertebra on the one below it. The problem here is that spondylolisthesis can lead to or cause an unstable spine. One vertebra slips on the other. In severe cases it can lead to spinal cord compression. Spondylolisthesis can be progressive, with the slippage increasing over time and with stress or strain. Extension, or backward bending is a problem for people suffering from spondylolisthesis as it can increase the forward slippage of the upper vertebra on the lower one. Flexion activities are the treatment of choice for this disorder. Once again, muscle imbalances, pelvic girdle imbalances, and limited hip or thoracic spine range of motion puts the lower back under great stress. An

unbalanced pelvis causes asymmetrical loading of the lumbar spine and can aggravate the slippage in spondylolisthesis. In golf, "S" posture at setup will lead to increase symptoms in spondylolisthesis because this position increases the extension of the lumbar spine.

Facet Impingement

Facet impingement is a challenging diagnosis. The back of the spine has small joints called facet joints. These joints are generally the diameter of your thumb nail in the lumbar spine. The facet joints control motion. In the lower back the facet joints allow flexion, extension, and side bending, but are generally thought to prevent lumbar rotation. Once again "S" posture can cause facet impingement.

Extension of the lumbar spine leads to compression of the facet joints. This, in turn, causes inflammation of the lumbar facets which is the cause of the pain. Facet pain is generally localized to the affected area of the back with little radiation into the legs. Activities like standing and walking or backward bending are also a problem with this disorder because they create lumbar extension and increase the facet compression.



Typically, there is supposed to be a small backwards curve in the lower back. The operative word is small. The anatomy texts indicate that eight to ten degrees is considered normal lumbar curve. On most of us that amount of curve is not very noticeable. If you were to put your back against the wall with your feet twelve inches from the wall and stood comfortable you should be able to get your fingertips in the small of your lower back. If you can get your entire hand in there, you might be a candidate for facet joint problems.

Sacroiliac Joint Pain

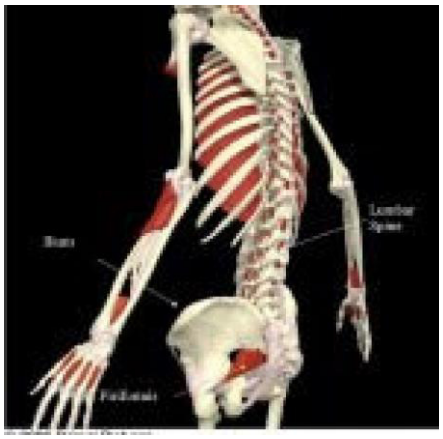
The sacroiliac joint is the joint at the base of the spine between the sacrum and the pelvis. The sacrum is a series of five fused vertebra at the bottom of your spine. There are two sacroiliac (SI) joints. There is great controversy about whether or not these joints are capable of motion. Our experience suggests that these joints have a small amount of motion (two to 4 degrees). When one or both of these joints get irritated they can cause pain in the very lower back that might even radiate into your hip joint area.

The muscles that attach to the pelvis, hip flexors, hamstrings, abdominals, and lower back muscles, when out of balance, can cause the SI joint to become irritated. If you have SI joint pain you will probably hurt getting out of a chair, standing, walking, or during loading of the hips. In golf this is a real problem because the hips are constantly being loaded; we walk, and if we ride a cart, we get out of that cart for every shot. This disorder is generally easy to remedy. The remedy only includes restoring normal balance to the muscles of the pelvis and mobility in the hips. It is our experience that the majority of us who have back pain have dysfunction of the SI joint and its associated muscles.

The bottom line is that self-diagnosis rarely works. If you have back pain you could have any of these disorders. All of these disorders are aggravated by imbalances in the muscle of the pelvis, hips, and lower torso. Remedying these imbalances in most cases will reduce the strain on the structures of the lower back and lead to less pain.

Lower Back Anatomy

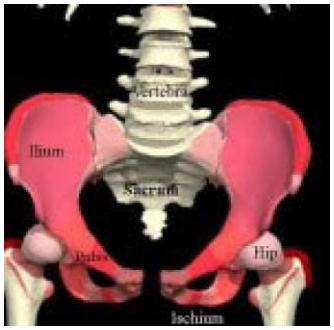
Anatomy, a study of how the body is built, is a key to understanding the role of the low back in the golf swing. In this segment we are going to study the anatomy of the lower back and pelvis. There are many important structures in this area. There are vertebrae; discs; pelvic bones; hip joints; a multitude of muscles, ligaments, and tendons; nerves; and more.



When we look at the boney structures of the lower back we find a stack of bones called vertebrae, which are separated by intervertebral discs. The discs add height to the spinal column and act as cushions between the vertebrae. There are several important parts to a vertebra. The vertebral body is the weight-bearing structure in the spine. The spinous process is the point of bone you can feel in the middle of your back. The pedicle connects the posterior parts of the vertebra to elements of the vertebral body. The transverse process is a site for muscle attachment and the facet joints are the small joints off of the lamina that control motion of the spine.

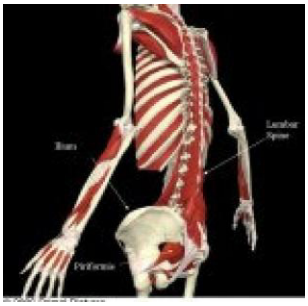
The Pelvis

The pelvis is a ring of bones at the bottom of the spine. It has two sides and each side is comprised of three fused bones: the ilium, the ischium, and the pubis. The sacrum, a combination of five fused vertebrae, sits between the left and right ilia and under the last lumbar vertebra and is the base of the torso. It functions as the bucket that supports the abdominal contents and transmits forces from the lower extremities to the torso and vice versa. The hip sockets, or acetabula, are located on the outside of the ilia and have a slight downward and forward orientation.

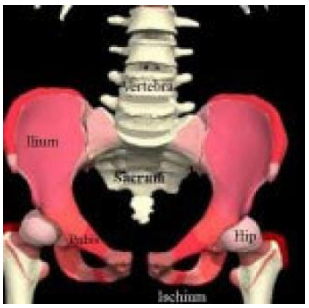


Muscles that course from the thighs to the pelvis include the quadriceps (front of the thigh),~~;~~ hamstrings (back of the thigh), hip flexors (on the front of the hip), glutes, or hip extensors, hip rotators, and stabilizers. Muscles that course from the pelvis to the torso include the abdominals in the front, the *erector spinae* (in the back), and the *quadratus lumborum*, (in the lateral lower back). These muscle groups create pelvic stability and hip mobility in life and in the golf swing.

The Spine



Muscles and ligaments attach to all the boney prominences of the spine. These muscles course from one vertebra to the one above or below. Some connect from transverse process to transverse process (these are generally side benders of the spine). Some connect from spinous process to transverse process (these are rotators of the spine). Some connect from lamina to lamina (these are extenders of the spine). Different combinations of muscle contractions create the different motions of the spine. These muscles are very small. If you look at the web-space between your thumb and index finger, you will see a muscle that is similar in size to these small spinal muscles.



The hip internal rotators course from the front of the pelvis to the front of the hip. These small but powerful muscles are responsible for creating hip internal rotation in the golf swing. They are commonly very weak in golfers. The hip external rotators generally course from the buttock area to the back of the femur. These muscles are generally very tight in golfers. One external rotator, the *gluteus medius*, is also a lateral stabilizer. It is generally very weak in golfers, and as a result, golfers exhibit lateral stability problems in their swing.

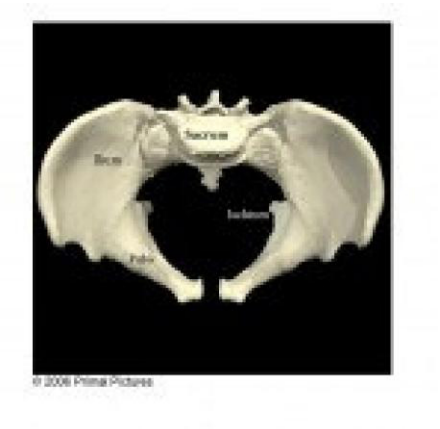
While this all sounds very complicated, it is really quite simple. There are pairs of muscles on opposite sides of a joint or bone. These muscles act in opposition to one another to create mobility and or stability of the area where the muscle resides. The key to a good golf swing and a pain-free lower back is to make sure the pairs of muscles are working in sync with one another, in the correct sequence, and balanced in their tension and strength. This is the realm of golf fitness and preventing golfing injuries.

Low Back Biomechanics

Biomechanics - the study of motion in living organisms—is the topic of this lesson. Thousands of people are researching how the human body moves, and why it moves the way it does. At FitGolf Performance Centers we have taken on this study relative to the motions of the golf swing. Let's take a look at the biomechanics of the lower back, pelvis, and hips. To do this we need to apply here what we learned earlier about low back anatomy.

The vertebrae of the lumbar spine are uniquely shaped and oriented. These vertebrae are stout compared to the cervical and thoracic vertebrae. This stoutness is consistent with the large forces they must withstand. The facet joints are vertically oriented in this part of the spine. To understand this orientation, position your hands with the palms facing one another, the fingers pointing upward, and your thumbs slightly closer together than the little fingers. In thinking about this orientation, you might envision that the facet joints would allow forward, backward, and side bending but also that they might inhibit rotation. That is exactly the case. The biomechanical studies of motion in the lumbar spine indicate that there is only about one to two degrees of rotation between any two lumbar vertebrae, but side bending is three to four degrees. Flexion and extension are the most extensive motions in the lumbar spine. This is not coincidence. The facet joint anatomy causes these motion limitations. From this data that supports these statements we can conclude that there is little rotation in the lumbar spine in any activity, including the golf swing. So where does the necessary rotation happen…in the hips and thoracic spine…we will take that up later.

Looking at the pelvis, we see three major joints. There are two sacroiliac (SI) joints and a pubic symphysis. The SI joints are in the buttocks. If you put your fingers on your belt line in your lower back about 4 inches apart and then slide down to the upper buttocks where you will feel two bumps (one on each side). These are the approximate location of the SI joints. There is great controversy in the medical community about the biomechanics of these joints. One school of thought claims that these joints do not move because of their shape, the orientation of the joint surfaces, and the ligament structure. Another school of thought points out that there is about 3 to 4 degrees of forward and backward rotation in these joints. The SI joints are oriented similarly to the lumbar facet joints. The upper half of the joint surface is similar in structure to any synovial joint, such as the knee or shoulder joints. This structure is consistent with movement. The lower half of the joint is similar in structure to the sutures of the skull and are consistent with no movement. Which camp is correct? This clinician has witnessed motion in these joints. This does not make the motion camp correct; it is just what I have observed.



Based on these observations, I believe there is a limited amount of motion in the SI joints.
If you once again hold your hands like we did for the lumbar spine demonstration, you

will be able to simulate the motion of the SI joint and the pelvis. If you rock your hands toward the little fingers and then back to the thumbs you generally have the motion of the SI joints and the pelvis. If the little finger represents the front of the body, then movement toward that side of the hand would be called anterior torsion or rotation, and the opposite motion would be called posterior torsion or rotation. In golf these motions are important because if one side of the pelvis is positioned in forward torsion and the other is not, we see significant muscle imbalances that prevent correct movement in the swing. We also see this positional problem at the root of a large percentage of the back pain felt by golfers. In this position the hip flexors and low back muscles are shortened, the hip extensors and abdominals are lengthened and weakened. We can even see inhibition of the glutes…and this is a recipe for disaster. When this happens, it's not a matter of "If you will have back pain." it's "When."

There are some who also believe that this pelvic imbalance is responsible for improper loading on the lumbar discs and the hip joints, and this may be at the root of much of the herniations, degeneration, and arthritis seen in these areas.

Golfer, this is important to you. If you have an imbalance in the pelvis, you will develop degenerative conditions, and you will see motions like reverse spine angles, lateral sways, straightening of the backswing side knee, loss of spine angle, and most disastrous, recurrent lower back pain episodes. Our experience has told us that if we resolve these imbalances, most back pain can be resolved or prevented. Finally, improving pelvic balance will improve the efficiency of your golf motion.

The anatomy of the lumbar spine and pelvis helps us understand how the region should move, and gives us a road map for restoring normal motion; that is, the normal biomechanics of the area. Once we have an assessment of the biomechanical situation in the region, we can design and implement an exercise or training program to restore normal biomechanics and therefore normal motion. This is how we eliminate lower back and mechanical pelvic pain and improve the results of the golf swing. Biomechanics are a key, maybe *the* key, to understanding and fixing the lower back and pelvis.

Injury Inducing Swing Faults

Swing Faults and Injuries—there is a relationship between swing faults and injuries, and poor biomechanics and swing faults. In this lesson we are going to look at how several common swing faults are related to injuries. We will also look at how abnormal biomechanics can create swing faults that create the pain.

Research indicates that a reverse spine angle is the number one swing fault that causes injury to the lower back. When we look at the majority of golfers they have pelvic torsions, muscle imbalance, and limited thoracic rotation. Generally there is mild to significant weakness in the glutes and abdominals. If we think back to the lesson on biomechanics, we find that this is a recipe for disaster. The disaster is that when these biomechanical conditions exist they create abnormal motion in the swing. When you have weakness in the glutes, with or without limited hip rotation, you will sway to the back swing side. That sway moves the hips up on the backswing side and creates a tilt of the spine toward the target…this is a reverse spine angle. From there you will begin a downswing, side bending, rotation, and flexion, under load from the opposite position of side bending, rotation, and extension…look out spine…you are going to be injured. If your golf swing has even slight reverse spine angle, you are prone to lower back injuries.

Lateral sway is movement of the pelvis to the back swing side of the golf swing. It is caused by hip rotation, gluteal weakness, tightness in the lateral aspect of the thigh, and/or anterior pelvic torsion. You do not have to have all of these physical problems, just one, and you will be at risk for lateral sway. Lateral sway as we mentioned earlier is related to reverse spine angle. The knee bone is connected to the leg bone….the leg bone is connected to the hip bone…the hip bone is connected to the pelvic bone…it's all related and all works together.

Lateral slide is the down swing counterpart to lateral sway. It has the same physical causes as lateral sway: tight hip motion, weak glutes, etc. Lateral slide is related to hooks, and pulls, and a myriad of other swing faults. Lateral slide puts huge forces on the back swing side of the lower back. When the pelvis slides to the down swing side with flexion and rotation of the spine superimposed, there are huge forces put on the backswing side lower back. These forces cause disc and facet joint injuries. These injuries will get worse and worse over time.

C-posture and S-posture are opposite extremes of the same problem. C-posture or forward bending of the spine puts huge forces on the lumbar discs. C-posture is related to loss of spine angle in the golf swing. S-Posture or backward bending of the spine puts great forces on the lumbar facet joints. S-posture is related to reverse spine angle as well. If you move into the rotation position of the back swing, and then move into S-posture or backward bending of the lumbar spine, you end up in reverse spine angle and you have back injury. Neutral spine is paramount to a healthy back and to biomechanically sound golf swings.

When one side is in torsion, unbalance pelvis, leads to reverse spine angles, lateral sways, and back injuries. As we reported earlier, unbalanced pelvis is caused in many cases, by tight hip flexors and lower back muscles and weak glutes and abdominals on one side of the body. Are you beginning to see a trend? All of these swing problems are related to one another, and all of these swing problems are related to poor biomechanics of the lower back, pelvis, and hips. Do you want to fix the hook or the slice? Do you want to hit the ball long and straight, consistently? Do you want to play golf without injuries to the lower back? The key to accomplishing this is to get rid of the swing faults. The way to get rid of swing faults is to correct the biomechanics of the lumbar spine, pelvis, and hip. Proper training will do this.

Lower Back Fixes and Prevention

By now I hope you are seeing a trend…that there are only a few problems responsible for most of the lower back injuries and swing faults golfers experience. It is very simple. Level the pelvis, free the hamstrings and hip rotation, improved stability in the hips, create a neutral spine and pelvis, and improve core strength. Simple, right? Here is the process.

Level the pelvis. This is not so difficult to do. Get rid of unilateral lower cross syndrome. That is all there is to it. How? Most uneven pelvises are the result of muscle imbalances in the region. Hip flexors are tight and inhibit glutes. *Quadratus lumborum* is tight. Lower abdominals are weak or inhibited by the *quadratus lumborum* tightness. It's all reflexes. There are direct neurological connections among these groups. When one muscle becomes tight it sends a signal to the opposite to shut down. This signal actually causes weakness in the antagonistic muscle. A perfect example is *iliacus* (hip flexor) and glutes (hip extensor). They are reflex inhibitors of one another. To fix the lower cross syndrome, you need only to restore balanced activity to BOTH muscles of the pair.

Leveling the pelvis requires nothing more than this: lengthen the hip flexor and *quadratus lumborum*, facilitate and strengthen the glutes. Take advantage of these reflexes to correct the problem. Restoring normal biomechanical forces on the pelvic bones will relieve the torsion. If done correctly, this process will take no more than a week or two.

These four exercises should help you improve the pelvic imbalance. Each is hyperlinked to the exercise library on FitGolf.com. Please click the link for full details on each exercise.

Hip Flexor Stretch

Side Stretch on Ball

Glute Bridge

Pelvic Tilts

Free the hips by improving flexibility in the hip external rotators and by improving muscle activity in the hip internal rotators. This can be accomplished in several weeks to two months depending on how tight the hips are. How? Releasing, Stretching, strengthening, facilitating, balancing muscle tensions, then onto functional training.

These exercises can help:

Create a neutral spine by balancing the tensions between the abdominals and the lower back, and between the hip flexors and extensors on both sides of the body. Most of us have a bilateral forward tilt of the pelvis. Stretch both hip flexors. Stretch the lower back. Strengthen the glutes and abs. Do this lying down, sitting up, standing, and then do this in golf posture. That is all there is to it.

These exercises might help:

Do these fixes all seem similar? They should, because they are. The challenge for most of you is about knowing what side to apply the fixes to and in what sequence. That is where the FitGolf Performance Centers' team can help. We are able to help you understand and fix this. Frankly, any golf fitness professional who understands the biomechanics, neurology, anatomy, and the golf swing could easily help you get rid of back pain, and play the best golf of your life.

Try the exercises noted above to see what happens. The bottom line is that if you do not improve in a week to ten days doing these on your own, you probably will need help from a golf fitness professional with the knowledge of the areas noted in the previous paragraph. If you want to have us look at this email us pictures of you: back view in standing, toe touch with the legs together and straight, and sitting with your right ankle on the left knee, and then the left ankle on the right knee. Once we see these we might be able to guide you to a solution.

Putting into Action for Your Lower Back

Ok. You have the basics of anatomy, biomechanics, swing faults that cause injuries, and fixes. Now what? How in the world do you take what you have learned and turn that into a result that will actually achieve the outcome you want: no back pain and better golf? There are several approaches. I liken this to home projects. There are do it yourselfers; there are those who subcontract someone with some expertise to help them out; and then there are those who hire a professional and ask them to fix the problem. The same is true in golf fitness.

Many try with varying degrees of success (or failure) to resolve their problems by reading books, listening to friends, or researching on the internet. Then they implement a smattering of fixes that may or may not help them. This works sometimes. Maybe it is luck, maybe it is skill, but it can work. The key to the fix is knowing the issue and then applying the correct fix for the problem. If you have disc problems and apply the lower cross fix, you will hurt more. If you have facet impingement and apply the disc fix you will hurt more. The only way to really fix the problem is to fully understand it.

There are some golf fitness providers who are not trained in neurology, anatomy, biomechanics, or the golf swing. They know how to whip you into shape, and they are good at that. However, they do not know how to fix lower cross, or deal with a facet impingement. If you don't have these issues, this type of professional might be able to help you get into great cardio shape and build fantastic strength. Will it be functional strength that perhaps you can use in the golf swing and to prevent lower back injuries? I really don't know.

In many cases assessing and fixing these problems does not take fancy tests (MRI's, X-rays, CAT scans, Myelograms, etc.). It takes a simple biomechanical and functional assessment. The behavior of your body in this type of exam will generally tell you what the issue really is. There is a time and a place to see your healthcare provider. If you have pain at night or during sleep, tingling or numbness in the lower extremities, are experiencing focal weakness in the lower extremity, or trouble controlling bowel or bladder, you should seek medical attention immediately. If your pain is in your back and pelvis, it does not radiate into the lower leg, you do not need depends, and golf seems to aggravate the problem, a well-trained golf fitness professional can help you.

Bottom line, however, is that any activity is better than no activity, and the right activity is better than any activity where back pain and the golf swing are concerned. We have included several links to exercises that you might want to look at if you have back pain. Try these. If your symptoms increase STOP and immediately and seek help from a golf fitness professional. If they get better, you are moving in the right direction. You might still want a golf fitness assessment to help you with the host of issues in your body.

Exercise regiment

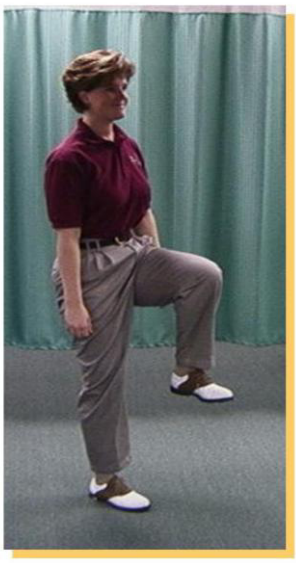
I believe there is great controversy about stretching and strengthening. There are many theories on both. Stretching theories include brief intense, long and gentle, and somewhere in between. On strengthening there is large volume of light weight, low volume of heavy weight, or somewhere in between. The facts are they are all right. Now what? Well the issue is to decide on the goal. Are you stretching to increase range of motion, or to warm up? Are you trying to build large strong muscles or strong long muscles? It is up to you. If you want more motion, then do long duration low load stretch. By the way long duration means up to five minutes or more, and low load means a barely perceptible stretch. If you want long and strong, more reps with less weight is the generally accepted standard. If you want explosive strength, then a few (6-8) fast repetitions with more weight will do that. You see, it completely depends on the goal at hand. Before you begin, you need to know your goal. The goal I refer to is long and strong vs. short and strong, warm up vs. increased motion, etc. Once you know this then you know how to exercise. These goals do not dictate what to exercise, just how to exercise. The "what" is answered by understanding the physical issues.

When do I do this? There is no good answer. Some like four in the morning, some like dinner time, some like mid-day. The best time to do this is the time of day that you will actually do it, whenever that is. You do not need to spend hours a day on this project. Usually 20 to 30 minutes a day is more than enough. In some cases that is too much time. The amount of time is completely dependent upon the issues and the goals.

How do I know if I need help from the Golf Fitness Experts® at FitGolf Performance Centers or some other well qualified golf fitness professional? Do you know what needs to be done? Do you know the goals? Do you understand how to apply the fixes for the faults? If so, then you probably do not need anyone for this project. If you are uncertain about any of this, you should consult with your local golf fitness professional or your local golf instructor. The golf instructor may know who in your community is an expert on this. If not, let me know and I will try to direct you to someone.

Bring Balance Back Into Your Swing

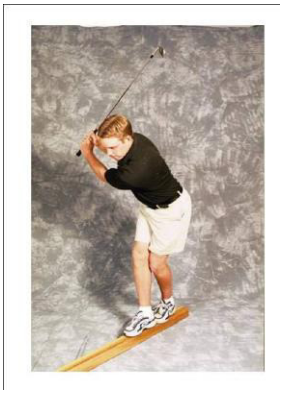
Good balance is an essential ingredient to a consistent and accurate golf swing. Golfers with poor balance typically swing with excessive lateral movement (lateral sway) and/or incomplete weight transfer (reverse pivoting) during either the backswing or follow through.



Single Leg Balance Drill

A simple way to improve your balance is by practicing the "Single Leg Balance Drill". To perform this exercise, simply stand on a flat, firm surface and place a club shaft along your spine to help achieve a straight back posture to balance on. Lift one foot off the floor by flexing the hip and knee to 90° (see photo 1) and attempt to balance on one leg for up to 30 seconds. Then, switch feet and repeat the balance drill on the other foot. Continue balancing on one foot at a time for 10-20 repetitions. Once you have mastered this drill with your ***eyes open***, then advance your balance skills by practicing the same exercise with your ***eyes closed***!

Balance Beam Swing Drill



To integrate your improving balance with your golf swing, try the "Balance Beam Swing Drill". To begin this drill, take no more than a wedge, stand with one foot behind the other on a 4"x 6" wood balance beam and assume your normal posture at address. Practice 10-20 slow, partial back and forward swings while maintaining your balance on the beam (See picture #2a,b). Then, reverse your foot position and repeat the drill. When you have mastered your ability to balance on the beam with partial swings and shorter clubs, advance to fuller swings. You can then challenge yourself more by progressing to longer clubs and attempt to perform the drill with your eyes closed.