

<http://www.spine-health.com/conditions/sports-and-spine-injuries/sport-injuries-back-injuries-and-back-pain>

<http://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000519.htm>

Sport Injuries, Back Injuries, and Back Pain

By: Thomas E. Hyde, DC, DACBSP, CKTP, FCCSS (Hon)

Exercise is an important part of a healthy lifestyle, and sports are one approach many people choose to use to get their exercise.

- For people with back pain, sports can still be a viable option if they pay attention to their back.
- For others who participate in sports, knowing the type of strain various sports place on the back may help prevent a back injury.

This article gives specific information about sports injuries and back pain from bicycling, weight lifting, running, swimming, skiing, golf and tennis.

Types of Sports-Related Back Injuries

When participating in any sport, injuries to any part of the spine are possible, as well as injuries to the soft tissue and fascia that help comprise the makeup of the body. Up to 20% of all injuries that occur in sports involve an injury to the lower back or neck.

Lower Back Injury

The lower back is subject to a great deal of strain in many sports. Sports that use repetitive impact (e.g., running), a twisting motion (e.g. golf), or weight loading at the end of a range-of-motion (e.g., weightlifting) commonly cause damage to the lower back.

Neck Injury

The neck is most commonly injured in sports that involve contact (e.g., football), which place the [cervical spine](#) (neck) at risk of injury.

Upper Back Injury

The [thoracic spine](#) (mid portion of the spine at the level of the rib cage) is less likely to be injured because it is relatively immobile and has extra support. Injuries seen here can involve rib fracture and intercostal neuralgia as well as intercostal muscle strains in sports that involve rotation of the torso (e.g. weight training with rotation), swimming, golf, tennis and even skiing.

While static stretching prior to any type of exercise used to be recommended, a number of studies in recent years have shown that stretching the muscles prior to exercise is not needed. A number of studies have shown that it does not help prevent injury, and likely does no harm either.^{1,2,3}

For every sport, a thorough warm-up should be completed before starting to play. The warm-up will target the muscles used in that sport, but it should also prepare the back for the stresses to come.

The warm-up used should be specific to the sport to be played. A typical warm-up should include:

- Increase circulation gradually by doing some easy movement (such as walking) to increase blood circulation to the [muscles and ligaments of the back](#)
- Stretch the lower and upper back and related muscles, including hamstrings and quadriceps
- Start slowly with the sport movements (e.g. swing the golf club, serve the ball)

<http://www.spine-health.com/conditions/sports-and-spine-injuries/bicycling-and-back-pain>

Bicycling and Back Pain

Biking is a popular form of aerobic exercise, and is often a favored form of exercise by people with low back pain conditions. Biking may be a good exercise option for many reasons:

- Biking is less jarring to the spine than many other forms of aerobic exercise, such as jogging or aerobics class. Stationary bicycling is particularly gentle on the spine, and the variety of spinning classes now available can provide a vigorous aerobic workout with minimal stress to the low back.
- Some people with certain back conditions often feel more comfortable in the forward-leaning position of sitting on a bicycle seat and leaning forward on the handlebars. [Lumbar spinal stenosis](#) is an example of a condition in which most people feel better in a forward leaning position.
- For those with a low back condition in which a reclining position feels better, a reclining bike, also called a recumbent bike, may be preferable. [Lumbar degenerative disc disease](#) is an example of a condition in which many people feel better in a reclining position.

How Biking can Cause Back Pain or Neck Pain

- Little conditioning is provided to the back muscles by bicycling
- Back posture on the bicycle can [strain the lower back](#), a result of the [lumbar spine](#) flexing or pulling up)
- Position on the bicycles, with the neck arching back, can strain the neck and upper back, especially when the bicycle is equipped with aerodynamic bars
- Rough terrain increases jarring and compression to the spine, which can lead to back pain

How to Prevent Back Injuries or Neck Injuries from Biking

- Select the best bicycle for your purpose. For casual bike riders, a mountain bike with higher, straight handle bars (allow more upright posture) and bigger tires (more shock absorption) may be a better option than a racing style bicycle
- Adjust the bicycle properly to fit one's body. If possible, this is best achieved with the assistance of an experienced professional at a bicycle shop
- Use proper form when biking; distribute some weight to the arms and keep the chest up; shift positions periodically
- Periodically gently lifting and lowering the head to loosen the neck and avoid [neck strain](#)
- Discuss and review your pedaling technique with a personal trainer or other knowledgeable professional in order to get the most out of the exercise
- Use shock absorbing bike accessories including seats and seat covers, handlebar covers, gloves and shock absorbers on the front forks (front shocks or full suspension shocks depending on the type of riding you plan to do and the terrain)

Biking does not specifically strengthen the core body muscles – the abdominals and the back muscles – which various authorities feel are a critical component of preventing and alleviating lower back pain.

Therefore, it is also important to do some [back strengthening exercises](#), and [core body exercises](#) in conjunction with your bicycling routine to provide strength and conditioning for the back.

<http://www.spine-health.com/conditions/sports-and-spine-injuries/golf-and-back-pain>

Golf and Back Pain

In general, golf is an excellent form of [low impact aerobic exercise](#), especially if one walks the golf course instead of riding on a golf cart.

The exercise encourages blood flow, which in turn helps maintain a healthy back. However, due to the repeated twisting and force inherent in the golf swing, the sport also leaves the lower back susceptible to injury.

How Golf Causes Low Back Pain

- The full golf swing (backswing and follow-through) rotates the spine with a great deal of force and little control, leaving the structures in the lower back particularly open to injury
- Spinal muscles, especially the lumbar spine muscles, strain to help provide force during the golf swing
- Disc and facet joint loading increases also helping to provide force during the golf swing
- Bending over to pick up the golf bag or even the golf ball or club may strain muscles as well as carrying the golf bag

Preventing Back Injuries from Golf

- Warm up with smooth, easy swings prior to getting out on the course
- Learn proper form and posture for playing golf, including a smooth, rhythmic swing in good balance
- Choose a golf bag with a built in stand to avoid having to lift it, and dual straps to avoid carrying an uneven load
- When picking up the golf ball, bend at the knees or get a device for your putter that allows for the ball to be retrieved from the hole without bending over

For anyone with [lower back problems](#), it is a good idea to consider hiring a golf professional who is experienced at teaching golfers with bad backs. Ideally, this type of golf professional will be able to explain and help practice postures and techniques that reduce [back strain](#) and prevent back pain.

<http://www.spine-health.com/conditions/sports-and-spine-injuries/running-and-back-pain>

Running and Back Pain

Running and jogging are excellent forms of aerobic exercise and can become an enjoyable part of one's daily routine. However, running involves repetitive jarring of spine and can worsen a current or emerging back problem.

How Running Causes Back Pain

- Joints and discs are jarred and compressed by the force of the body leaving the ground and landing on every stride when running or jogging
- Back muscles have to work to keep the body upright and in good posture during the duration of the run
- Other muscles associated with the kinetic chain (this is a linkage system that connects the muscles and joints of the body through the fascial system) may also influence back pain while running

Preventing Back Injuries from Running

- Use form that reduces the "up and down" stride motion and focuses on forward motion while running; this means leading with the chest, keeping the head tall and balanced over the chest
- Wear top-quality cushioned running shoes. Many sports medicine physicians advocate running with the added cushioning of high quality running shoes to help protect the joints and spine from the jarring impact of running
- While this approach is controversial, some studies indicate that running barefoot may be preferable than running with shoes. If this is an approach that sounds attractive, it is advisable to start slowly, first by walking barefoot and on a soft surface, such as grass or sand, and slowly progressing to walking on a hard surface, running on a soft surface and possibly running on a hard surface
- Consider running on softer surfaces, such as grass, a padded track or treadmill rather than concrete or asphalt

Maintaining strong abdominal muscles and core body muscles will help stabilize the lower back while running, which in turn will help with keeping proper form and focusing on the forward motion.

- For more information on core muscle strengthening see [Back Exercises and Abdominal Exercise Recommendations](#) and [Core Body Strength Exercises](#)

If running aggravates a current back condition, or if one is experiencing a flare-up of pain from a back condition such as [degenerative disc disease](#), consider pausing the running routine and switching to a [lower impact aerobic workout](#) until the back pain subsides. Good alternatives for lower impact cardiovascular workouts include an elliptical machine, stair climber, or possibly swimming or pool therapy / water aerobics

<http://www.spine-health.com/conditions/sports-and-spine-injuries/skiing-and-back-pain>

Skiing and Back Pain

By: **Thomas E. Hyde, DC, DACBSP, CKTP, FCCSS (Hon)**

How Skiing Causes Back Pain

- While skiing, the body's core muscles – [lower back muscles and abdominal muscles](#) - are used to keep the body in the proper form
- Carrying the heavy skis, boots and other equipment can be awkward and lead to [lower back strain](#)
- Falling while skiing can jar, twist or otherwise stress the spine and soft tissue structures connected or supporting the spine
- Self-correcting to avoid a fall can lead to a lower or mid back strain or other injury
- Skiing on moguls or other bumpy terrain can be particularly jarring to the spine and soft tissues around the spine

Preventing Back Pain and Sports Injuries from Skiing

- Begin exercising to prepare for skiing at least six weeks before getting on the ski slopes. If one is particularly out of shape, begin a preparatory exercise program several months before skiing.
- Always take one warm-up run down the easiest hill each time before beginning skiing on more challenging terrain
- Ski on slopes that fit within one's individual ability level

If one has a back problem, consider taking lessons from a ski instructor who has experience providing ski instruction for individuals with back pain.

Ice the painful areas following each day of skiing. If preferable, take a whirlpool or hot tub after skiing to ease muscle pain.

Swimming and Back Pain

By: **Thomas E. Hyde, DC, DACBSP, CKTP, FCCSS (Hon)**

In general, swimming is an excellent form of [low impact aerobic conditioning](#) that is easy on the back and spine. Unlike running or many other forms of aerobic exercise, with swimming there is practically no impact on the spinal structures. The water supports the body, relieving stress on all joints in the body. For many with [osteoarthritis](#) or other forms of joint pain or severe back pain, pool therapy and light swimming is part of the recommended therapy.

How Swimming Causes Back Pain or Neck Pain

- The lower back can remain hyper-extended during front strokes (the crawl or breaststroke and butterfly) while swimming.
- The upper spine (neck) may be jerked backward repetitively during front strokes while taking breaths when swimming.

Preventing Back Pain from Swimming

- Use proper form for front strokes, such as the crawl or breaststroke, while swimming; keep body level in the water (hold lower abdominal muscles up and in) and keep the head straight rather than lifted
- If preferable, swim with side or back strokes instead of front strokes
- Roll the body to the side and keep the chin in when taking breaths during the crawl, rather than jerking the head backward, to reduce the amount of movement in the neck while swimming
- Use a snorkel to eliminate the need to move the head for breaths
- Wear goggles to reduce improper head movements when trying to keep water out of the eyes
- Use flotation devices (noodles, boards, life preservers, wet vest) to maintain proper form when swimming

Pool Therapy

If swimming causes or worsens an existing back or neck condition, consider changing to pool therapy. With pool or water therapy, one still has the benefit of the water supporting the spine and other joints in the body, but without the possible adverse effects of repetitive motion of certain strokes. Simply walking from side to side in the pool in at least waist deep water may also be beneficial.

<http://www.spine-health.com/conditions/sports-and-spine-injuries/tennis-and-back-pain>

Tennis and Back Pain

By: **Thomas E. Hyde, DC, DACBSP, CKTP, FCCSS (Hon)**

While tennis elbow and wrist problems are common sports injuries associated with tennis, the sport can also create or worsen lower back injuries.

How Tennis Causes Back Pain

- Front- and back-hand shots require a large amount of trunk rotation and twisting in the spine when playing tennis
- The tennis serve hyper-extends the lower back and can compress lumbar discs. This hyperextension of the lower back can stress the small joints in the spine, lumbar discs, as well as the muscles, ligaments and tendons around the spine
- Back muscles must support continual sudden forward and lateral movements and start-and-stop motions during a game of tennis

Preventing Back Pain from Tennis

- Learn about different racket tensions and be fitted by a professional for the appropriate tennis equipment; a more flexible tennis racquet requires more trunk rotation than a stiffer tennis racquet with less tension in the strings. Racquets must also be properly sized by hand size to reduce stress on the elbow which in turn may alter the biomechanics of the swing and ultimately result in back pain.
- Consider using a slice serve rather than a kick serve to reduce the degree of back arch
- Use proper form during tennis, bending the knees, holding in the abdominal muscles
- Have a tennis professional check that proper form is being used
- For new players, professional tennis instructors can teach proper form and make suggestions on how to avoid back injuries, back pain or stress on the back

As in all sports, strong core body muscles are essential. A program designed to increase [core muscle strength](#) can help minimize or prevent lower back injury from tennis.

Bodybuilding, Weightlifting and Back Pain

Like most forms of exercise, weight lifting has many potential benefits for spinal health, but also has the potential to create or worsen back injuries.

- Extending or flexing the back muscles against resistance (the weight) during weightlifting and bodybuilding may result in a number of injuries, including [muscle strain](#) and ligament injury
- Certain types of weightlifting exercises can be particularly stressful to the joints and soft tissues, such as:
 - Clean-and-jerk
 - Dead-lift
 - Snatch
 - Squats
- Older persons (e.g. many over 50 years old) who do weightlifting may already have some disc degeneration and [osteoarthritis in their spines](#), which may make them more susceptible to the strains while lifting weights

Preventing Back Injuries from Weightlifting

As a general rule, before one begins or makes changes to a weightlifting routine, it is important to know the condition of one's back and keep weight amounts within personal limits. If anyone has experienced back pain, it is advisable to first get an evaluation from a primary care physician, chiropractor, physiatrist or other spine specialist before beginning lifting weights.

Specific guidelines that are useful in helping to prevent back injury include:

- Use less weight, but do more repetitions when lifting weights
- Consider using a training machine rather than free weights for certain weightlifting exercises. This point is important to discuss with both a spine specialist and trainer, understanding there is a trade-off
 - A machine may reduce stress on the back (for example, quadriceps done sitting at a machine versus squats holding weights) and can generally be used by someone with little or no supervision
 - But free weights add proprioception (self-regulation of posture and movement in response to the free weights) that a machine does not. Proprioception is an added benefit in helping enhance the body's balance and stability.
- Use a spotter when working with free weights to protect the back from possible sudden movement or excess strain
- Consider wearing a belt for weightlifting (first ask the recommendation of an athletic trainer or spine specialist, as there are conflicting studies on the merits of belts). Some spine specialists maintain that while there is no concrete evidence that a belt protects the back while weightlifting, it does help as a reminder to maintain proper form
- Do not perform exercises such as the clean-and-jerk, dead-lift, snatch or squat without proper supervision, because these exercises may pose greater risk for back injury and back pain