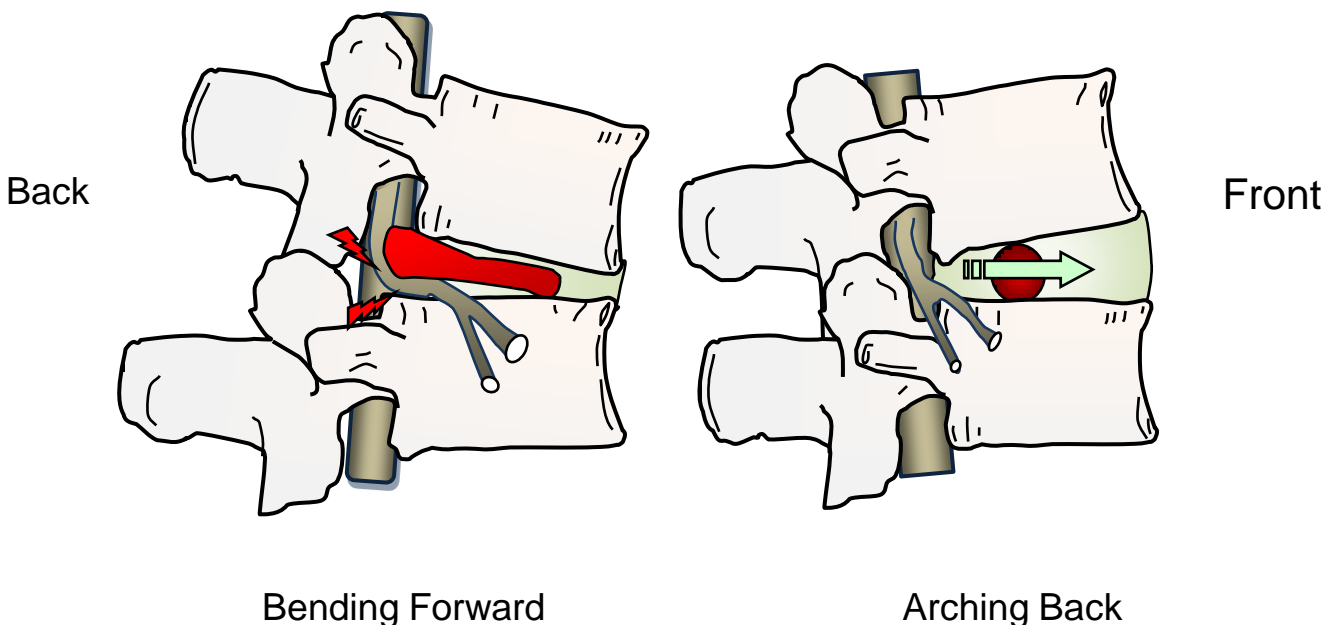


# Stop Injuring Your Back with Sit-ups and Crunches

For decades our culture has been told by medicine that back pain results from weak stomach muscles and that we needed to do more sit-ups and crunches. In addition to strengthening our stomach muscles, we have been told that we need to stretch our backs more, so many people have been performing exercises such as toe touching in an attempt to reduce their lower back pain. Unfortunately for most people these exercise prescriptions were ill advised. We now know that repeated bending at the waist increases the pressure of the spinal discs and increase the likelihood of causing disc damage such as herniation. We have been performing exercises that actually provoke back pain, instead of reduce it.

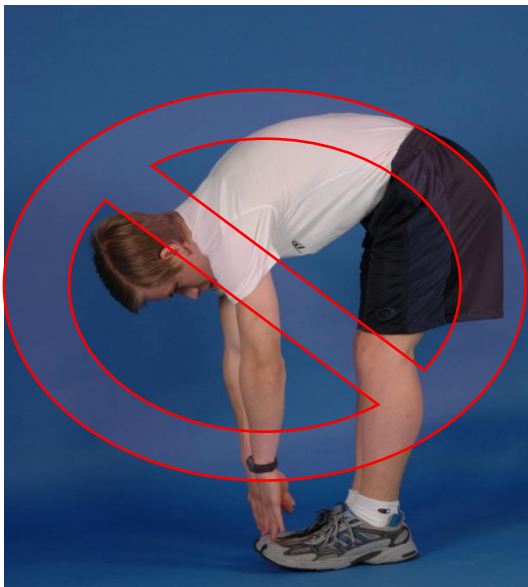
## Disc Mechanics

Disc Mechanics: Bending at the waist compresses the lumbar discs causing a migration of the disc material back towards the nerves. This is the mechanism for most disc injuries. Extension (leaning backwards) has been shown to have the opposite effect and is commonly used to treat uncomplicated disc syndromes. Ironically when we perform sit-ups or toe touching, we are duplicating the most common mechanism of disc injury.





Repeated spinal flexion contributes strongly to disc injuries. Sit-ups and crunches should be avoided for this reason.



Toe touching greatly increases the pressure in the intervertebral discs and can be a strong contributor to disc injuries.

## Athletic abdominal muscles

Most athletes realize that there is a benefit to having strong reactive abdominal muscles, but have been misinformed about how to develop these muscles. The common misconception that sit-ups or crunches are useful in developing athletic abdominals contributes to spinal injuries. Sit-ups do not replicate athletic use of the abdominal muscles. In fact, the repeated bending at the waist that is required in sit-ups and crunches will increase the likelihood of disc injury in those intolerant to this motion.

True athletic use of abdominal muscles is a synchronization of all of the core muscles, not just the rectus abdominis muscles (the six pack muscles). The abdominal muscles are designed to transfer power through stiff short-range contractions.

“Nice abs.”

If you want to have your abdominal muscles visible as a “six pack,” then you need to reduce the body fat over the muscles through aerobic exercise and diet rather than performing lots of sit-ups or crunches.

## **Curl-up**

This exercise is intended to work the abdominal muscles, while protecting the lumbar discs. The key to this exercise is the isolation of the abdominal muscles while avoiding spinal flexion. Lay on your back with your arm or a towel under your lower back. This is intended to maintain the normal curve of the lumbar spine. Remember that flexion (bending at the waist) increases the pressure within the lumbar disc. Keep one knee bent and the other straight, alternating legs at the midpoint of repetitions. The exercise is performed by curling the upper back up while maintaining the neutral spinal curve. Avoid jutting the neck or head forward while performing this exercise. Concentrate on maintaining good form. As fitness improves you may increase abdominal involvement by concentrating on the purposeful contraction of the abdominal muscles.

Hold contractions for up to 8 seconds. Build muscular endurance by gradually increasing the number of repetitions.



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