Dear Alice,

For as long as I can remember, I've been using my back muscles when I did sit-ups. In fact, I distinctly remember the first time we did them in second grade. After a few reps, it was already so painful that I was having trouble breathing properly. Being eight years old, however, I didn't realize this was a warning sign and assumed it was normal.

Flash forward ten years, and I have almost no strength in my abdominal muscles. I've tried to teach myself to do curl-ups properly, but no matter how hard I try, I can't even lift my head without using my back muscles. Exercise balls are no help either. Even when I concentrate on using my abs to keep myself steady, my back is still doing 95% of the work.

So, in short, I have two questions: Am I at risk for having damaged my back from years of abuse, and how can I work on strength training my abs now?

Answer

Dear Reader,

Kudos to you for considering your core. It’s good to know that your situation isn’t unique — even if you do sit-ups properly, you might risk straining your back. In fact, muscle injury from sit-ups is so common that some branches of the United States military are phasing them out of use as an indicator of physical fitness. While doing sit-ups may have caused strain, developing strength in your core can help relieve that pain without putting additional strain on your body. The good news is that there are alternative exercises that are considered safe and effective for maintaining core muscle health and building abdominal muscle. However, for any severe pain, seeking out care from a health care provider may help you to assess the situation further.

Understanding what the core is and the purpose it serves in the body can provide useful background when thinking about how to strengthen it. The body’s core muscles are the layers of muscles in your side, abdomen, and back that help to stabilize the spine and pelvis and support upper body and leg movement. A strong core helps manage and alleviate symptoms of aging, such as bone and cartilage deterioration and changes in the spine. On the other hand, a weak core can be associated with knee, neck, and back pain. The core includes abdominal muscles
such as the rectus abdominus, the muscle activated when your hips bend forward which, when strengthened, can create the defined muscles often referred to as a six pack. However, the spine relies on a balance of all core muscles to function properly, so having a six pack doesn’t necessarily indicate that your core is strong. Experts recommend exercising the abdominal wall muscles as well — the external and internal oblique (which helps you twist and bend your torso, stabilize your lower back, and breathe out of your lungs), and the transverse abdominus (which helps stabilize the spine).

Sit-ups primarily target the rectus abdominus and risk destabilizing the spine and straining the lower back. They place what may be a harmful amount of compression force on the disks of the spine and put a person at risk of overworking the hip flexors, the muscles that attach the lower back to the spine. This may pull the spine as a result. Doing sit-ups on the ground can further strain the lower back by pushing your back into the floor as you exercise, and, if you perform sit-ups with arms around the head, you may risk neck injury as well. Research also shows that height, sex, and age are all potential factors that can impact the ability to do sit-ups and risk of injury. Note that leg raises and back extensor exercises put even more force on the spine than sit-ups, so you may want to consider alternatives for these exercises, too.

If executed correctly, a number of exercises can work the entire core without leading to the back pain associated with sit-ups. Some examples, as explained by Mayo Clinic [2], include:

- **Plank exercises**: In this exercise, the body is held up by the arms. Start by lying flat on your stomach. Then, press your body up using your forearms or hands. Stay in this position for a few deep breaths. There are many other variations of plank that promote core strength and stability — you can add toe taps, do a side plank (which focuses more on the oblique muscles), or do a side plank with torso rotations. Hang out there for a while, and you'll start feeling the burn!
- **Quadruped (commonly called bird dog)**: Start on all fours, with your head and neck aligned with your back. Raise your right arm and pause for three breaths. Lower your arm and repeat with the left side. Then, lift your right leg, hold for three breaths, and lower back to the ground, repeating on the left side. For additional challenge, you can try lifting your left leg and your right arm simultaneously, holding for three breaths, and then lowering. Repeat on the other side.

When doing these exercises, concentrate on activating your core and avoid relying on momentum, as this could risk injury. Adding back strengthening and stretching exercises to your routine to prevent or ease any existing back pain may also help. However, if you’re experiencing chronic or severe back pain or have any concerns, it’s recommended that you make an appointment with a health care provider.

If you’re still concerned with injuring yourself, you may find it helpful to reach out to a personal trainer. They can help you develop the proper technique for core strengthening exercises and find the ones that feel best for your body.

Best of luck with your exercising endeavors!

Alice!

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