

Exercise Safety: Preventing Injury and Protecting Joints

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Regular exercise is important for good health. The negative health outcomes of being sedentary far outweigh the injury risks from being physically active, especially for older adults. You can take steps to reduce your risk of injury and protect your joints by following a few safety guidelines.

The first step to preventing injury is to warm up before exercising. A warm-up increases your body temperature and can reduce injury risk. Warming up for several minutes before starting to exercise, generally five to 10 minutes, will increase body temperature and blood flow to muscles. It also helps lubricate the joints. A good warm up should raise your heart rate a bit, but should not be so intense that it makes you tired.

Joint pain is very common. Painful joints may result from conditions like arthritis. Joint pain can also result from injury or overuse. Proper form or technique during exercise can help reduce risk of joint injury. The shoulder and knee joints are two joints prone to injury from incorrect form.

Shoulder Joint

The shoulder joint is the most mobile joint in the human body (Figure 1). This is what makes the joint susceptible to injury. Four tendons make up the rotator cuff.

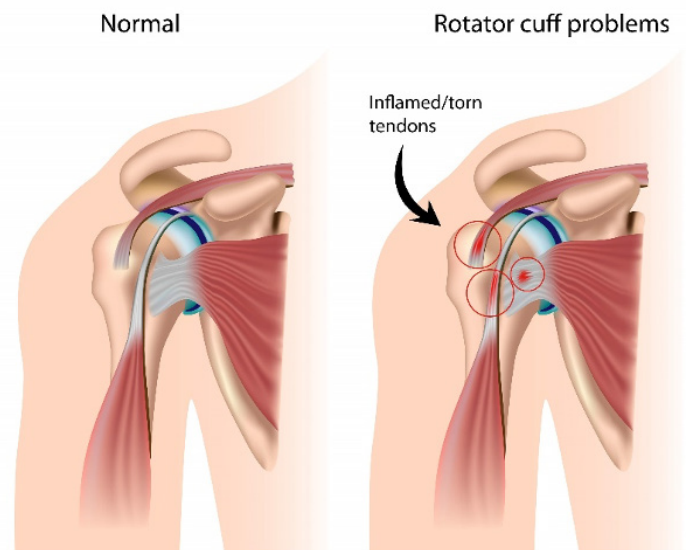


Figure 1. Normal shoulder and shoulder with rotator cuff problems.

Injury usually occurs from repetitive movements, such as those of baseball and tennis players, or when the arm is raised higher than shoulder height with excessive weight. Raising arms to this height with too much weight pinches or traps the rotator cuff tendons. This leads to compression, inflammation and possible damage.

The front raise and side lateral raise are two common strength training exercises using the shoulder joint (See Figure 2). Both exercises are often performed incorrectly. People tend to lift the arms too high. Remember to lift the arms no higher than shoulder level to avoid pinching or trapping the rotator cuff muscles. Note: This guideline does not apply to every exercise involving the shoulder joint, like the overhead press.

Doing these movements incorrectly might not hurt at first. It may be years before negative effects are felt. However, incorrect form — lifting too high and with weight that is too heavy — can cause damage over time. Avoid “locking” the elbow joint by keeping a slight bend in the elbow for these type of movements.

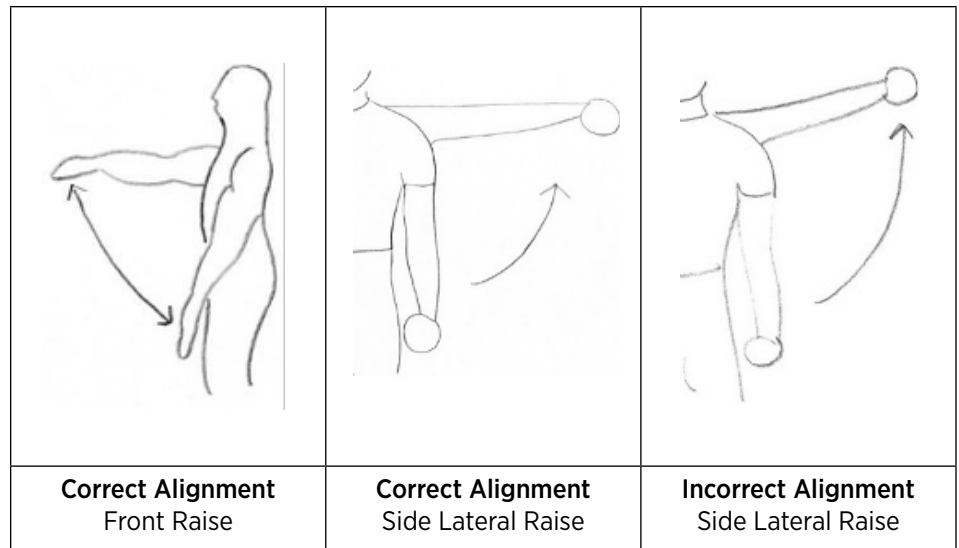


Figure 2. Correct Form for Front Raise and Side Lateral Raise.

Knee Joint

The knee joint includes several muscles and carries a tremendous amount of stress and weight (See Figure 3). Exercises that push the knees forward over the toes when performed incorrectly, like squats or lunges, increase stress to the joint.

Knee anatomy

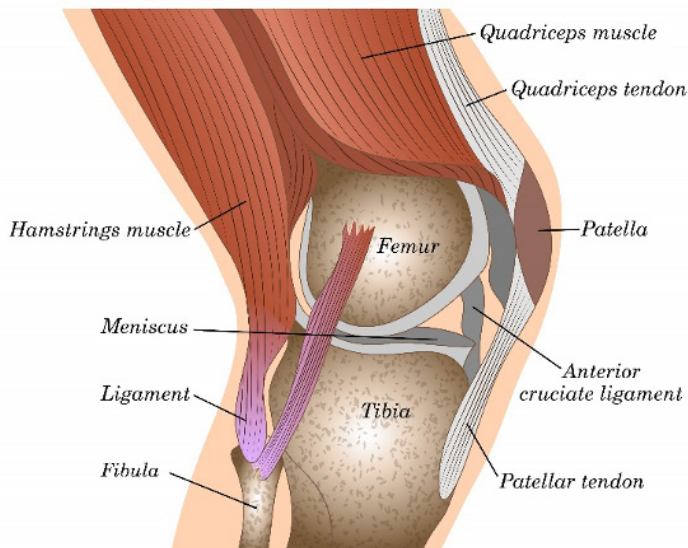


Figure 3. Knee Anatomy

When performed correctly, the squat and lunge are two of the most effective lower body exercises. Both exercises incorporate many muscle groups in the lower body including the hips, thighs, buttocks and calves.

The squat mimics the movement of sitting down and getting up out of a chair — an important movement as we age. The lunge helps to improve balance and stability.

Proper form during the squat and lunge means the knee is lined up over the ankle. This helps keep the bulk of body weight distributed through the heels. When form is incorrect and the knees are pushed past your toes, more body weight is placed in the front part of the knees.

Squats

Prevent excessive stress on the knee joint when doing squats by maintaining proper form (See Figure 4).

- Keep a flat back. Do not lean the torso forward. Keep the chest lifted.
- Avoid excessive forward movement of the knee by keeping your knees aligned over your ankles. Knees should not extend past toes. The movement should start at the hips, not the knees.
- Avoid locking your knees when standing.
- As you lower your hips, push back as though you are going to sit down in a chair. Keep your weight in your heels.

Keeping your weight in your heels may make you feel a little off balance. This is okay. Your stability will improve as strength in your ankles, knees and legs increase.

Lunges

Prevent excessive stress on the knee joint when doing lunges by maintaining proper form (See Figure 4).

- Keep a flat back. Do not lean the torso forward over the bent knee. Keep the chest lifted.

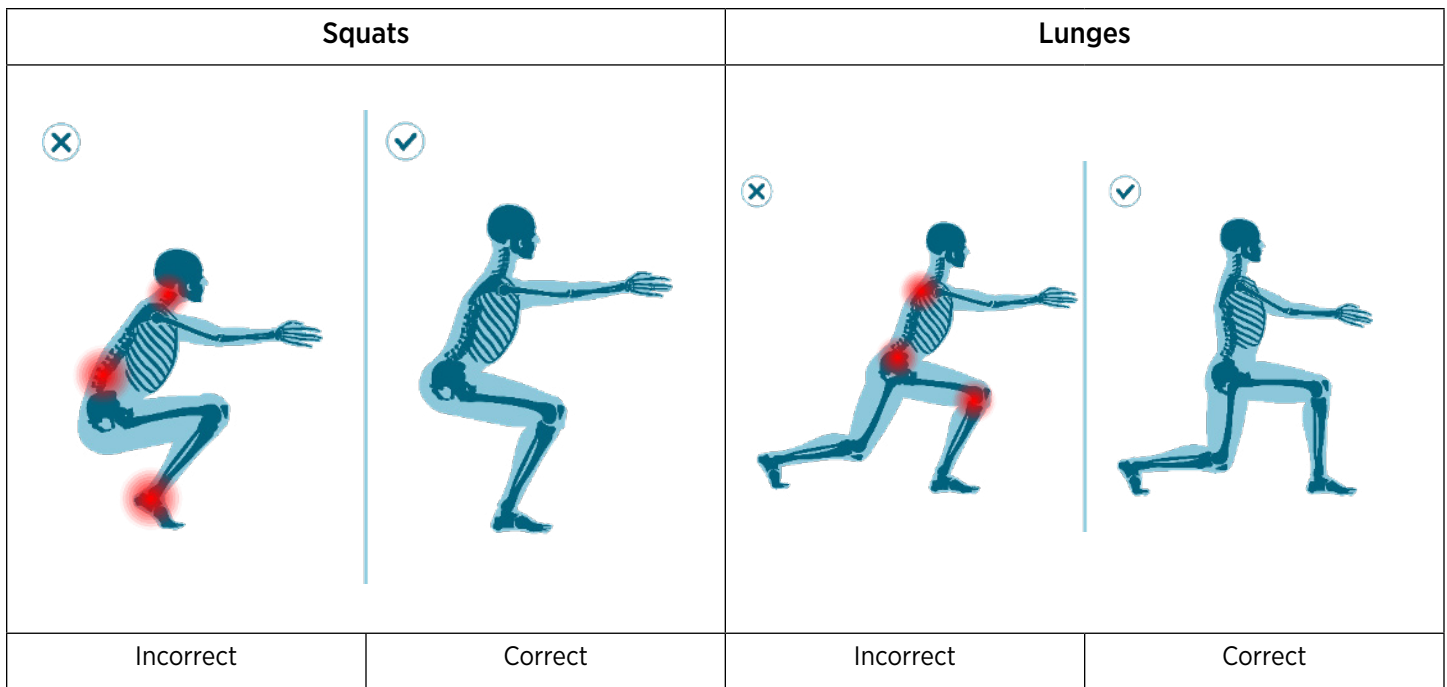


Figure 4. Correct and incorrect form for squat and lunge exercises.

- Keep your knees aligned over your ankles. Avoid extending the bent knee past your toes.
- Make sure front knee is not collapsing inward. Try to keep the knee aligned over the second toe.

Flexibility and Stretching

Proper form and technique are also important when doing stretching or flexibility exercises. These exercises help keep your body flexible by enabling more freedom of movement (range of motion) for regular physical activity. They also help with activities of daily living, such as getting dressed, tying your shoes, and reaching for objects overhead.

Stretching exercises can also help prevent injuries, reduce muscle tightness, help with relaxation, and even help with coordination. Flexibility exercises can be standalone or performed after other types of exercises as a cool-down. For example, stretching is recommended after aerobic and strengthening exercises to reduce muscle soreness and stiffness. If done improperly, stretching exercises can increase risk of injury to a muscle, joint, ligament or tendon.

Follow these guidelines for safe stretching:

- **Always warm up** for 2 to 5 minutes before stretching. A warm-up should increase blood flow to muscle tissue and increase overall body temperature. A warm-up should not be intense enough to cause fatigue.
- **Stretch slowly** into a position. Stretch as far as you can without feeling any pain. Relax and hold the stretch for 10 to 30 seconds. It is a good practice to repeat a stretch a second time. You can repeat more

if you like. The first stretch “wakes up” the targeted area. You should be able to go farther into the stretch the second time.

- **Do not bounce or jerk into a stretch.** This can cause stretching beyond what your muscles are ready for and lead to injury.
- **Keep joints “soft.”** This means to protect your joints by keeping a slight bend in your elbows and knees. Do not lock your joints.

Exercise Safety Pointers

The following exercise pointers can help reduce injury risk and make exercising more enjoyable:

- **Avoid excessive joint flexion (bending) or extension.** Joint flexion is narrowing of a joint. Lowering the hips below the knee joint in a squat is an example of excessive flexion. Joint extension is opening or widening a joint. Excessive extension, or hyperextension, opens a joint beyond the normal, healthy range of motion. Elbows frequently hyperextend in moves like plank; the elbow joint bends too far backward, beyond being straight. This causes ligament and cartilage damage over time.
- **Avoid locking your joints.** This can damage the joint and it can restrict blood flow.
- **Maintain the natural curvature of your spine.** Engaging your core muscles can help.
- **Work within your comfortable range of motion.** Recognize the difference between pain and muscle tightness or tension.

- **Breathe.** Inhale and exhale with every movement. Not breathing, or holding your breath, can increase blood pressure; strain your heart and arteries; and cause dizziness, headaches and even blackouts.

- Low back pain/Sciatica
- Neck pain
- Pregnancy
- Shoulder pain

A Note of Caution

Not all exercises are appropriate for everyone. Some health concerns can increase risk for injury. Some exercises are not recommended for people with certain conditions.

Always check with your health care provider to make sure exercise is appropriate, especially if you have any of the following health concerns:

- Cancer
- Diabetes
- Heart disease
- High blood pressure
- Hip replacement
- Knee pain/knee replacement

Acknowledgements

- Some content in this publication was developed as part of Extension Get Fit, a program of the University of Arkansas System Division of Agriculture, Cooperative Extension Service.
- Figure 2 pencil illustrations were drawn by Jessica Vincent, University of Arkansas System Division of Agriculture, Cooperative Extension Service.



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