

# Don't freestyle 'swimmer's shoulder' injuries

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Elite and competitive swimmers log between 60,000 and 80,000 meters weekly—swimming the length of an Olympic-sized pool 1,200 times—which places significant stress on their shoulder joints. "The upper body provides 90 percent of the propulsive force to move through the water. Due to the amount of force generated and the range of motion required to swim efficiently, the shoulder needs to have perfect mechanics to avoid injury," says Dr. Elizabeth Matzkin, lead study author of a literature review in the August issue of *Journal of the American Academy of Orthopaedic Surgeons* and assistant professor of orthopaedic surgery at Harvard Medical School.

Swimming is an endurance sport but "swimmer's shoulder"—a broad non-medical term often used to describe a variety of shoulder injuries—can affect [swimmers](#) at all levels. According to the literature review authors, many shoulder injuries are preventable with proper technique, training, stretching, and strengthening.

Shoulder pain affects 40 to 91 percent of competitive swimmers. Overuse and poor shoulder mechanics can cause muscle imbalances, decreased range of motion of the shoulder, and less efficient swim strokes, all placing athletes at greater risk for further injury. The most common swimming-related injuries include:

**Impingement** - As swimmers becomes fatigued, the pectoralis muscles (commonly known as "pecs") compensate for tired muscles, which can cause the peak of the shoulder blade to rub (impinge) against the rotator cuff (tendon and bursa), stress the anterior (front of the body) ligaments,

and create tears in the tissue that holds the top of the arm bone in place.

Scapular dyskinesis - Intense, repetitive rotation of the shoulder blade over the chest wall can overstretch and loosen the upper back muscles that keep the shoulder bones in a healthy position. Abnormal shoulder mechanics (scapula dyskinesis) can cause pain near the collarbone when the upper chest muscles tighten to compensate for the loosened upper back muscles.

Glenohumeral internal rotation deficit (GIRD) - Intense, repetitive rotation of the shoulder blade can cause the front shoulder ligaments to overstretch and loosen. This can cause the soft tissues and muscles in the back to tighten to compensate for the loosened front shoulder muscles while limiting the internal rotation of the shoulders, which puts swimmers at greater risk for rotator cuff tears. Swimmers must maintain some shoulder looseness to remain competitive. However, about 20 percent of competitive swimmers have hyperlaxity—the ability of joints to move beyond the normal range of motion—which increases the likelihood of greater shoulder instability and susceptibility to pain.

Possible and often subtle signs of shoulder injuries among swimmers may include:

- A dropped elbow during the recovery phase of the freestyle stroke.
- Excessive body roll, which may signify [shoulder pain](#).
- Drooping of the affected shoulder.

"Injury prevention is best accomplished by proper training. Most importantly, swimmers need to stretch, especially the posterior shoulder capsule, and avoid muscle imbalance by strengthening both the rotator cuff and the scapular stabilizer muscle groups," says Dr. Matzkin. When a swimmer experiences shoulder pain, a thorough physical examination

is important to diagnose the source of the pain, whether there is atrophy in the shoulder or reduced strength in the [shoulder](#) joint.

Treatment may include nonsurgical (e.g., a combination of ice, stretching, and anti-inflammatory medication, focused rehabilitation to reduce pain) or surgical (e.g., for structural injuries to manage pain rather than to enhance athletic performance) options to potentially prevent future injuries.

**More information:** Elizabeth Matzkin et al, Swimmer's Shoulder, *Journal of the American Academy of Orthopaedic Surgeons* (2016). [DOI: 10.5435/JAAOS-D-15-00313](#)

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