

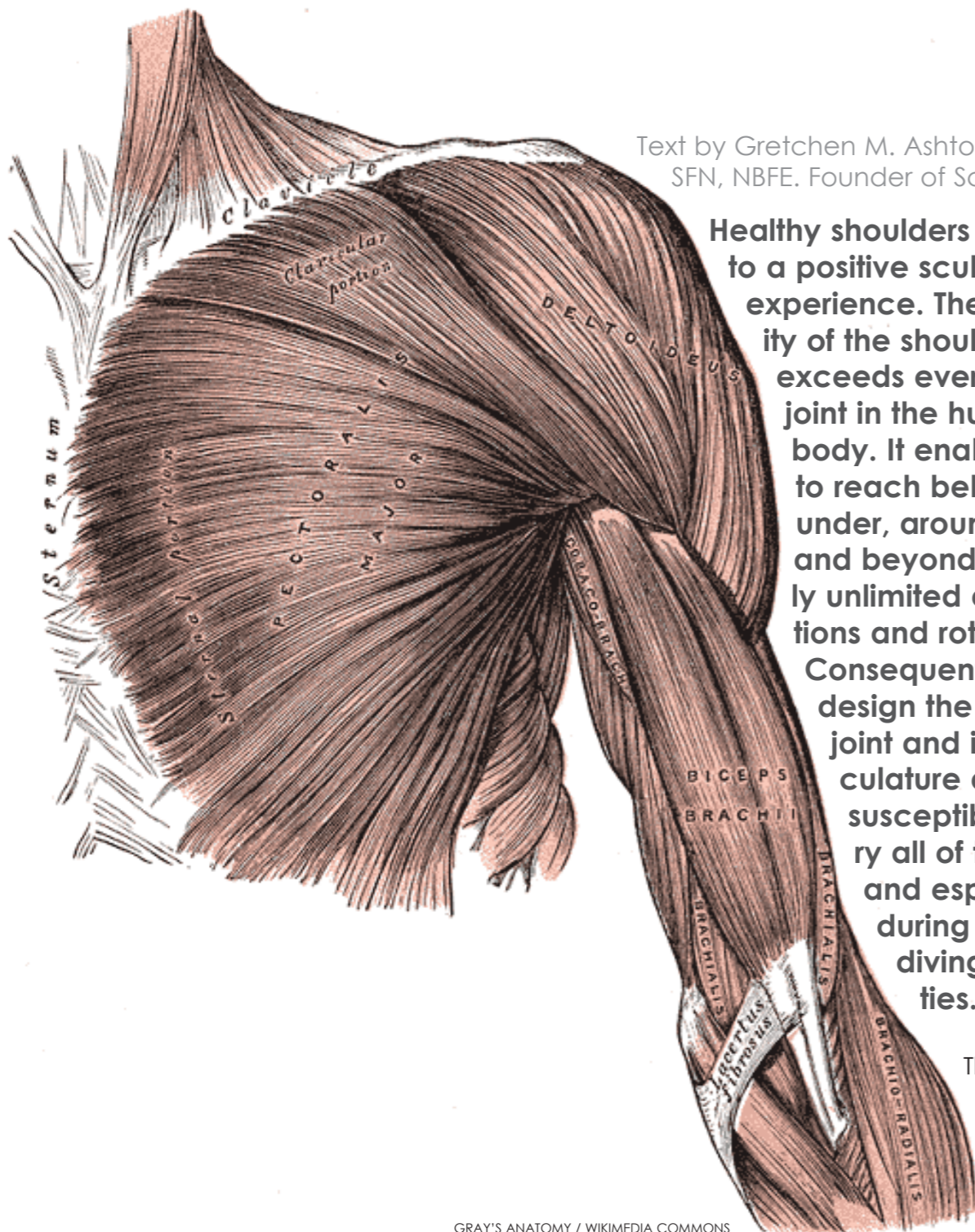


ED.— ALWAYS CONSULT A PHYSICIAN FIRST BEFORE BEGINNING ANY EXERCISE OR FITNESS PROGRAM.

Scuba Shoulders



FILE PHOTO: PETER SYMES



GRAY'S ANATOMY / WIKIMEDIA COMMONS

Text by Gretchen M. Ashton, CFT, SFT, SFN, NBFE. Founder of ScubaFit®

Healthy shoulders are vital to a positive scuba diving experience. The mobility of the shoulder joint exceeds every other joint in the human body. It enables divers to reach behind, under, around, above and beyond in nearly unlimited directions and rotation. Consequently, by design the shoulder joint and its musculature are highly susceptible to injury all of the time and especially during scuba diving activities.

The ball and socket joint of the shoulder, unlike the hip joint,

is more like a cup and saucer as the ball of the upper arm bone (humerus) is larger than the socket (glenoid) of the shoulder. Stability of the shoulder is dependent on the rotator cuff, which is comprised of tendons and small muscles that keep the cup in the saucer during movement.

To keep things moving smoothly, the joint is padded with two sacks (bursae) of lubricating fluid (synovial fluid) that reduce rubbing between the muscles and tendons and help protect the rotator cuff from other bones (like those of the acromion joint).

Developing and maintaining healthy shoulders can be tricky. Preventing injury is best accomplished with an individualized exercise program, but certain training activities required to protect the shoulder also present some risk of injury especially, if performed incorrectly.

Divers may best begin by knowing the current condition of their shoulders and working forward at an appropriate level of rehabilitation, stretching and strengthening. Divers should avoid exercises that are clearly not suitable for their current shoulder status. If an

injury exists, depending on the type of an injury, some therapeutic exercises may also be precluded.

Options may include strengthening assisting muscles, (i.e. biceps and triceps) to help carry the load for the shoulders, but if nearby muscle groups improve too far beyond that of the shoulder, (i.e. the chest) the shoulder may become more susceptible to injury. Other solutions include, always working with lighter resistance than other muscle groups, creating methods for stabilizing the shoulders, and allowing more time in training regimes





for shoulder muscles and connective tissue to adapt.

Allow the shoulder to improve in response to training, but never force it.

It is also important for divers to consider posture and shoulder function. Good posture goes beyond sitting up straight. The shoulder blades (scapula) are best pulled down and toward the center of the back to aid in good posture and especially during exercise.

Common injuries

Dislocation of the shoulder can occur when extreme outward pulling and/or rotation pops the cup out of the saucer (head of the humerus out of the glenoid socket).

Separation between the collarbone and the shoulder blade usually occurs as a result of bracing with an outstretched hand during a fall or a hard impact to the shoulder. Ligaments of the shoulder may be torn partially or completely.

A **rotator cuff tear** may be caused by impact or a fall on an outstretched arm and/or the result of wear and tear, lifting strain, repetitive use and aging.

Broken bones can occur in the shoulder as a result of injury.

Impingement is a compressing of the rotator cuff usually caused by a combination of factors from mild injury, wear and tear, and aging, to tendonitis where the tendons of the rotator cuff and sometimes biceps become inflamed, and bursitis when the bursa sacs become inflamed and swollen.

Frozen shoulder is when, usually because of pain, a diver doesn't move the shoulder for extended periods of time allowing adhesions (type of scar tissue) to



build up preventing both movement and lubrication of the joint.

Arthritis of the shoulder can occur as in many other joints of the body.

Shoulder pain may be constant, intermittent, localized or referred to other areas of the body. Injured divers may experience aching, swelling and immobility. Sleeping, daily activities, exercise and, of course, diving can be interrupted for extended periods of time because of shoulder conditions.

Physicians often prescribe medications to treat inflammation and pain, but these treatments should be considered short-term options as they introduce additional potential complications and side effects. Whenever possible, divers are encouraged to pro-actively seek treatment, physical therapy and, as a last option if necessary, surgery, to resolve shoulder injuries as quickly as possible so they can return to normal living. Extended periods of shoulder disuse or compromised shoulder function can have long-lasting impacts to the overall health of the diver.

Exercises for healthy shoulders

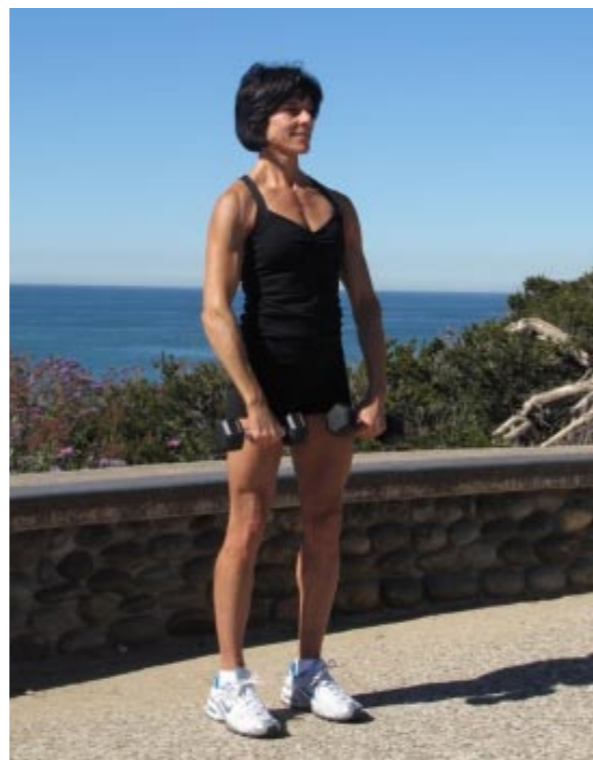
Divers will get the best results by avoiding overuse of the shoulders, training muscles in a balanced fashion for strength and flexibility, and performing all exercises with safe and proper form.

Shoulder press with dumbbells, in seated position (left), and with alternating arms (below)



Shoulder Press with Dumbbells

The seated shoulder press is a primary exercise for the shoulders. It directly targets the deltoid muscle, which has three sections (anterior, medial and posterior). These muscle sections can be seen in the vertical lines or definition of well developed shoulders. In contrast, when there



is little muscle development of the shoulder the outlines of the bones of the shoulder joint can be seen. Notice that in the start position, the elbows are at shoulder height with the bottom of the upper arms parallel with the ground. Never drop below this point when performing overhead shoulder exercises. This goes for machines as well. Many fitness center machines do not allow enough adjustment for a safe starting point for shoulder exercises. Inhale at the start of the exercise and when lowering the weights. Exhale during the press while lifting the weights. Contract the abdominals for



torso stabilization. This exercise may be performed with both arms at the same time or by alternating the press left and right. The idle arm gets great static contraction while waiting to press again.

Front Shoulder Raise – Standing

The front shoulder raise does exactly as described and along with working the entire deltoid targets the front (anterior) deltoid. Even more emphasis can be placed toward the front of the shoulder by rotating the arm to a “thumbs up” position. Inhale at the starting position and exhale while raising the weights. Inhale while lowering the weights and repeat.

Front shoulder raise in the standing position—starting position (far left) and ending position (left)

Diver releases surface marker buoy during a dive in the Adriatic Sea



Shoulders

FILE PHOTO: PETER SYMES



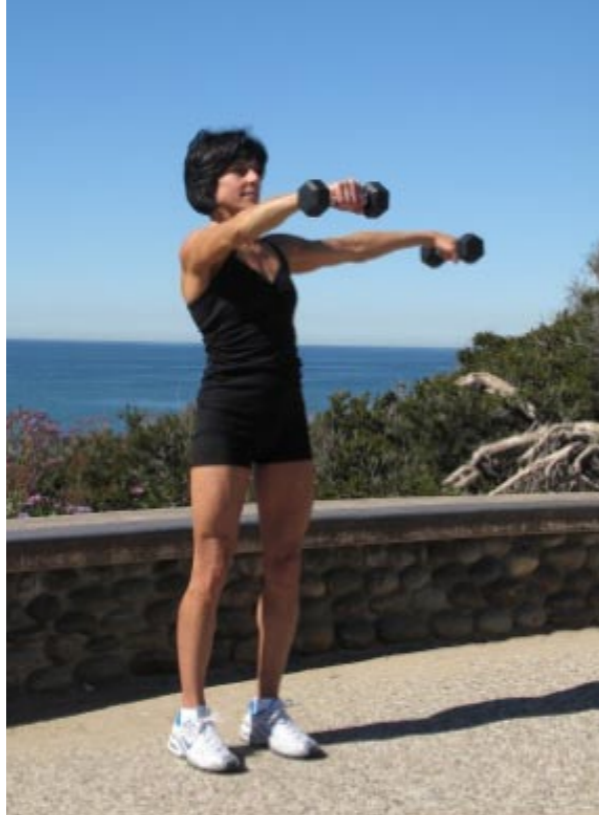


Shoulder 90's or Cheerleaders

In lieu of a true side lateral raise with both arms at the same time, combining a front raise with a side lateral raise greatly reduces the stresses on the shoulder joint that occur with the traditional side lateral raise. It is important to work both sides equally. Divers have the option of performing all repetitions on the same side or alternating from side-to-side. Inhale to begin and while lowering the weights. Exhale while raising the weights.

Shoulder Rear Deltoid Fly

The rear deltoid shoulder fly requires good concentration and control to ensure it is performed correctly and safely. The photographs demonstrate three positions for performing the rear deltoid fly, which targets the posterior section of the deltoid and recruits other small mus-



cles of the back and shoulder. To begin, position the arms in front of the body as if hugging a tree. Raise the arms until the elbows are in line with the shoulders. Do not force the elbows beyond the range of motion of the shoulder. The torso will begin to lift and neck strain can occur when trying to perform this exercise too high. It may help to imagine a lobster claw opening and closing or that there is a hinge on the center of the back. Inhale to start and while lowering the weights. Exhale while raising the weights.

Tips and Precautions

When performing overhead shoulder exercises, beginners should always sit in a chair or bench with support for the back.



Divers with certain back conditions, in particular bulging discs, should avoid pressing weights overhead or any exercises that compress the spine.

When performing side and front shoulder raise exercises, it is usually best to stand. There is some additional isolation that can occur from being seated, but it comes with added risk of injury.



Shoulder Rear Deltoid Fly in seated position—starting position (left) and raised position (above); in standing position—starting position (right) and raised position (far right); and in lying down position (upper right)

Shoulder 90s or Cheerleaders starting position (far left) and raised position with alternating arms and with both arms (left)

While divers can develop great strength in the shoulders that allow for handling significant resistance, when training the shoulders for diving it is prudent to use moderate weight and work at higher repetitions.

The exercises shown here are sequenced with purpose and best results are accomplished if they are performed in this order.



Shoulders

Contract the abdominals, keep the knees soft, not locked, and both feet placed flat on the ground when performing shoulder exercises.

Gretchen M. Ashton is registered with the National Board of Fitness Examiners. An advanced diver, International Sports Sciences Association Elite Trainer, and world champion athlete, Ashton developed

the ScubaFit® program and the comprehensive FitDiver® program, which includes the first mobile app for scuba diver fitness. Ashton is the co-author of the PADI ScubaFit Diver Distinctive Specialty course. For more information, visit: Scubafit.com