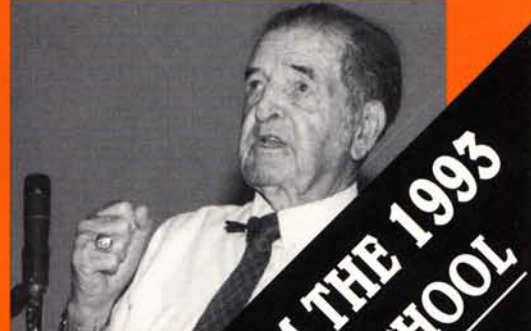
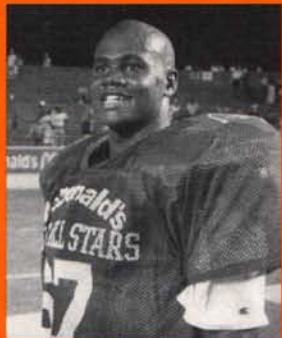
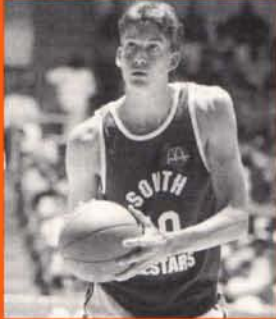


# TEXAS Coach

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# PREVENTION OF NECK INJURIES

Matt Brzycki, CSCS  
Strength Coach  
Princeton University

Because the neck is not a "show" muscle — like the biceps and triceps — neck exercises are typically de-emphasized or neglected altogether. Yet, a strong, thickly-muscled neck is extremely important in protecting the cervical area from traumatic injury in contact sports such as football, wrestling, boxing, rugby, soccer and judo.

Injuries primarily occur when an outside force acting upon a joint momentarily exceeds the structural integrity of that joint such that the muscle has been forcefully stretched or extended beyond its existing range of movement. Therefore, in order to reduce the potential for neck injury, coaches must require their athletes to strengthen their neck musculature.

## Basic Anatomy and Muscular Function

Regardless of the length of the neck, all mammals — with the exception of several species of sloths — have exactly seven cervical vertebrae. Even a giraffe has seven cervical vertebrae — although each vertebrae of the giraffe is about as long as your leg bone! (In a bizarre twist of fate, a sparrow has more cervical vertebrae than a giraffe!) In humans, the primary muscles of the neck — the sternocleidomastoideus and the trapezius — provide support and act to produce a variety of different movements.

The sternocleidomastoideus has two parts or "heads" located on each side of the neck that start behind the ears and run down to the sternum (breastbone) and clavicles (collar-bones). When both sides contract at the same time, the sternocleidomastoideus flexes the head toward the chest; when one side acts singly, it brings the head laterally toward the shoulder or rotates the head to the side.

The trapezius is a kite-shaped muscle that covers the uppermost region of your back and the posterior section

of your neck. The primary functions of your "traps" are to elevate your shoulders (as in shrugging), to adduct your scapulae (pinch your shoulder blades together) and to extend your head backward.

So, these two muscles act upon the neck in seven different ways: flexion of the head forward, extension of the head backward, lateral flexion of the head to the left and the right, rotation of the head to the left and the right and elevation of the shoulders. In order to develop the neck properly, exercises should be prescribed for as many of the various functions as possible.

## General Guidelines

The following general guidelines apply when training the neck musculature:

- 1. Exercise your neck at the beginning of your workout.** It's important to focus your full attention on performing exercises for your cervical area. Far too often, the neck is exercised at the end of a workout almost as an afterthought. Instead, you should exercise your neck at the beginning of your workout while you're fresh — both physically as well as psychologically.

- 2. Perform all exercises in good form.** Good form is raising the weight without the use of momentum in about 1 - 2 seconds, pausing distinctly in the contracted (or mid-range) position and lowering the weight under control in about 3 - 4 seconds. This will ensure that the targeted muscles are raising the weight (rather than momentum) and that your chances of incurring an injury while strength training are minimized.

- 3. Execute each repetition throughout a full range of motion.** Each repetition should be performed from a position of full stretch to a position of full muscular contraction and back to a position of full stretch. Exercising throughout a full range of motion will

allow you to maintain (or perhaps improve) your flexibility, which reduces your potential for injury. Furthermore, it ensures that you're exercising your entire muscle — not just a portion of it.

- 4. Reach concentric muscular failure between 8 - 12 reps (or 40 - 70 seconds).** Concentric muscular failure is when you've exhausted the muscle to a point where you literally cannot raise the weight for another repetition. Performing sets of less than 8 reps significantly increases your risk of injury. Likewise, if you exceed 12 repetitions, the set becomes a test of endurance rather than strength.

- 5. Train the neck 2 - 3 times per week on nonconsecutive days.** The neck muscles should be trained three times per week when not in season and twice per week when in season (but not within 48 hours of a competition). Neck exercises should never be done immediately before a practice session or a contest.

## Exercises

The following is a specific description of various exercises which can be performed to strengthen the muscles of the neck using conventional equipment. Unfortunately, it's rare to find a device nowadays to exercise the rotary movement of the neck. Therefore, neck rotation will not be described. However, one side of your sternocleidomastoideus can still be used singly by performing neck lateral flexion.

- 1. Neck extension.** This exercise works your sternocleidomastoideus (both sides acting together). It is most often performed using machines (selectorized and plate-loading) or manual resistance. If you're using a machine, adjust the seat so that your face is centered on the head pads when you are sitting upright. Place your feet flat on the floor, grasp the handles and bend your head backward. If you're using manual resis-

tance, lie supine on a bench, place your feet flat on the floor and position yourself so that your head hangs over the edge. Interlock your fingers and place them across your chest. To do the movement, bring your head as close to your chest as possible during the mid-range of each repetition. Pause briefly in this position and then lower your head under control back to the starting position at the completion of each rep to ensure a proper stretch.

**2. Neck flexion.** This movement targets your trapezius and neck extensors. It's usually performed using machines (selectorized and plate-loading) or manual resistance. If you're using a machine, adjust the seat so that the back of your head is centered on the head pads when you are sitting upright. Place your feet flat on the floor, grasp the handles and bend your head forward. If you're using manual resistance, lie prone on a bench and position yourself so that your head hangs over the edge. Place your hands and feet on the floor (or position your legs across the edge). To start the exercise, extend your head backward as far as possible during the mid-range of each repetition. Pause briefly in this position and then return your head back to the starting position at the completion of each rep to obtain a proper stretch.

**3. Neck lateral flexion.** Your sternocleidomastoideus (one side acting singly) is utilized during this movement. This exercise is most often done using machines (selectorized and plate-loading). Adjust the seat so that one side of your face is centered on the head pads when you are sitting upright. Place your feet flat on the floor, grasp the handles and bend your head to the side opposite that of the pad. Without moving your upper torso, bring your head as close to the other shoulder as possible during the mid-range of each repetition. Pause briefly in this position and then return your head back to the starting position at the completion of each rep to provide a proper stretch. After performing a set with one side

of your neck, repeat the exercise for the other side of your neck.

**4. Shoulder shrug.** This is the best exercise for isolating your trapezius muscle. It can be performed with a barbell, dumbbells, trap bar or machines (selectorized and plate-loading). Use an alternating grip or a grip with both palms facing backward when using a barbell; use a parallel

grip with other equipment. To begin the movement, keep your arms and legs straight and pull the resistance up as high as possible trying to touch your shoulders to your ears (as if to say, "I don't know") during the mid-range of each repetition. Pause briefly in this position and then lower the weight back to the starting position at the completion of each rep to ensure a proper stretch. Avoid throwing the resistance by using your legs or by swinging your upper torso back and forth — movement should only occur around your shoulder. Finally, don't

roll your shoulders as you perform this exercise.

*Matt Brzycki is the Strength Coach and Health Fitness Coordinator at Princeton University. He has authored more than 90 articles on strength and fitness and a book, **A Practical Approach to Strength Training**, which is in its second edition. He has also co-authored the book **Conditioning for Basketball** with Shaun Brown, Strength Coach for the University of Kentucky basketball team.*



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