

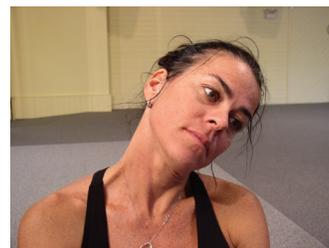
## Range of Motion, Stretching, and Musculoskeletal Alignment

Stretching for a few seconds takes the muscle into the elastic phase, after which the muscle returns to its pre-stretch length. Stretching for 15 to 30 seconds or more takes the tissue into the plastic phase, after which the muscle tends to remain in its stretched length. Stretching every day brings at least 3 lasting benefits – the muscle grows longer, lubrication in the muscles and joints is increased (due to increase in lubricating molecules), and elasticity is improved (due to an increase in elastic proteins). It is possible that long stretches just before athletic competition will compromise elastic recoil in the muscles and tendons.

**Head Rotation**--Sit or stand with head erect. Turn your head to the left as far as you can and hold that position for 10 seconds, then turn your head back past the starting point as far to the right as you can and hold that position for 3 seconds. (10 times)



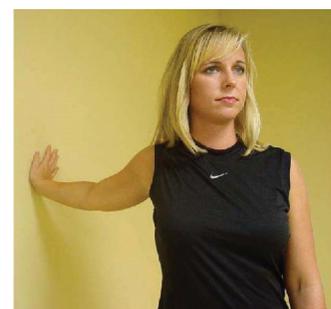
**Head Side Tilt**--Sitting or standing with head erect, tilt your head to the left side as far as you can and hold that position for 3 seconds. Slowly lift your head to the starting point, and then tilt it to the right side and hold that position for 3 seconds. (10 times)



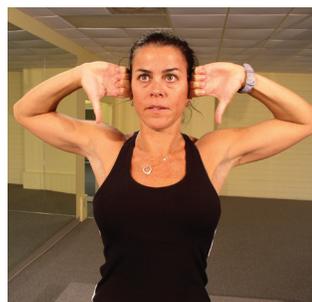
**Chin Press**—Sitting or standing with shoulders back and head erect, place two fingers against the front of your chin and press gently, allowing your head to move backward as though it were sliding backward on a shelf. Don't tilt your head forward or backward; keep it level. (Hold for 20 seconds or longer)



**Pectoral Stretch**--Stand with your right hand on the wall. Slowly turn your torso toward the left until you feel a stretch through the right side of your chest and shoulder and bicep. (Hold for 20 seconds or longer)



**Elbow Curls**--Curl your fingers and place your hands, thumbs down, at your temples (the flat area formed between the first and second knuckles touching your temples). Without bending your wrists, move your elbows together until they touch in front of your face, or as far as your flexibility allows. (15 times)



**Arm Circles**—With palms down, and arms out to the side, rotate arms forward in small circles; with palms up, and arms out to the side rotate in the opposite direction. If you have shoulder pain, try lowering your hands/arms to a comfortable position. If you do this exercise in high repetitions, you may feel an “ache” in the shoulders , but is not harmful. (15-75 rotations each way)



**Side Stretch**—Raise your arm high over your head from a standing position and stretch that side of your body by reaching toward the ceiling. (Hold for 20 seconds or longer)



**Counter Stretch**--Place your hands, palms flat, on a countertop that is about waist level. Bend forward at the hips, with your arms outstretched, and your ankles and knees directly under your hips. Let your head fall between your arms, and keep a flat back by letting your chest sink toward the floor, with thighs tight and hips tilted forward. (Hold 30-60 seconds)



**Cats and Dogs**--On hands and knees, lift your head high, arching your back as though a string were pulling your naval downward, then drop your head down, rounding your back. This is for mobility; it is not a stretch so should not be forced. (15-20 times)



**Downward Dog**--From the “on hands and knees” position of Cats and Dogs, with the neck muscles relaxed allowing the head to drop down, elevate the hips toward the ceiling till your legs are straight, but not locked. Take your heels toward the floor, touching them to the floor, if possible. (Hold for 20 seconds or longer)



**Kneeling Groin Stretch** (Modified runner’s stretch)--On one knee with the toes of that foot pointing straight backward, with the other foot flat on the floor in front of you with the knee at a 90 degree angle. With folded hands resting on your thigh, rock forward to stretch the groin area. Don’t allow your bent leg knee to move forward of your shoe laces. Repeat to the other side. (Hold for 20 seconds or longer)



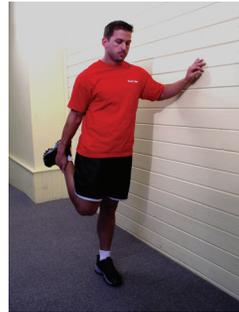
**Frog Stretch**—Sitting upright, pull your feet up, bringing the soles of your feet together and letting your knees fall outward. With your elbows, press down on the inside of your knees. (Hold for 20 seconds or longer)



**Invisible Bench**--Stand with your back against the wall and then shuffle your feet forward as you slide into a sitting position. Keep your head and back (upper and lower) flat against the wall, and do not use your hands for support. (Hold this position for 30 seconds to 3 minutes, depending on your conditioning level)



**Quad/Hip Flexor Stretch**--Standing erect on one foot, with the same side hand grasping the back of a chair or the wall for support, pull the opposite ankle up behind you toward the buttocks. Allow that knee to swing backward a few inches or so to stretch both the hip flexors and the quadriceps. Repeat to the other side. (Hold for 20 seconds or longer) The stretch can be done lying on your side.



**Hamstring Stretch**—Sitting or standing, extend your leg, with the leg straight. Bend forward at the hips, keeping your back straight, till you feel the stretch in the hamstrings. Repeat to the other side. (Hold for 20 seconds or longer)



**Calf Stretch**—Lean against the wall and place your right foot straight behind you, Keep front leg bent, back leg straight and heel to the floor. Second phase: Same stretch position except bend both knees. Switch sides. (For each, hold for 20 seconds or longer)



**Seated Trunk Twist**--Sit on the floor with left leg extended out in front of you, toes pointed to the ceiling and thigh muscles flexed. Bend the right knee 90 degrees and place the right foot flat on the floor immediately to the left of the left knee. With your left elbow planted against the outside of your right knee, twist as far as you can to the right. Do a mirror-image of the exercise to the opposite side, right leg extended, left foot flat on the floor beside the right knee, etc. (Hold for 20 seconds or longer) A caution – back specialist, Dr. Stuart McGill, states that the lower back is much more about stability than flexibility, so rotate in keeping with the range of motion necessary in your day-to-day, athletic and recreational activities.



**Piriformis Stretch, Seated**—Sit up straight on the floor, or on a chair that has a firm seat and base. Cross your right leg so that the outside of your right ankle rests on the left thigh, just above the knee. Place your right hand on the outside of your right knee; place your left hand, palm up, under your right ankle. With both hands gently lift your right leg, moving your knee across your body toward your left shoulder. . (Hold for 20 seconds or longer) Repeat to the other side, crossing your left leg.



**Foot Flex-Flex and Circles**--Lying on your back, supporting your bent leg with your hands behind the knee, lift one foot off the floor and point the toes of one foot away from you, then flex your ankle to point your toes toward your face. Move your foot clockwise in a circle without moving at the knee. Repeat with counter-clockwise movements, then follow the same instructions for the other foot. (25 times in each direction)



**Multi-Directional Wrist**—Move your wrists repeatedly in all directions, and then move your hands in a circular motion. Press backward on the hand to stretch at the wrist. (25 times in each direction)



**Lat Stretch**—Establish a secure hold with your hands on a horizontal bar or on the inside edge of a kitchen sink. (Make sure the sink is solidly anchored!) With your arms straight, bend at the waist (not the back) pushing your hips backward till your torso is parallel to the floor with your head aligned with your trunk. (Hold for 20 to 30 seconds or longer)



