Fitness Career Opportunity

Certified Athletic Trainers and Physical Therapists

Certified athletic trainers teach people how to do the right exercises and techniques during physical training. The right exercises and techniques help people avoid injury and get the most out of their workouts. Certified athletic trainers also help injured people recover. Many athletic teams and sports medicine clinics use certified athletic trainers to develop exercise programs. Many athletic trainers are also physical therapists.

Physical therapists help injured people recover and disabled people overcome their physical limitations. Sports physical therapists usually work at sports-medicine clinics. Physical therapy is one of the fastest-growing health-care professions.

For more information on athletic trainers and physical therapists, contact:

National Athletic Trainer's Association (NATA)
2952 Stemmons Street
Dallas, Texas 75247-6916
1-800-879-6282
www.nata.org

American Physical Therapy Association (APTA)
111 Fairfax Street
Alexandria, Virginia 22314-1488
1-800-999-2782
www.apta.org

Unit 3: Flexibility

Introduction

Have you ever been inactive for a few weeks or even a few days and then found your body tight and painful to move? Have you ever worked your body hard and then awakened the next morning feeling stiff? Perhaps you had difficulty straightening or bending your back. Perhaps leaning over to tie your shoes or brushing your hair felt painful. Your body had become tight because your **muscles** and **joints** had become less flexible than normal.

Have you ever watched gymnasts do splits or backbends? They can contort their bodies into pretzel-like shapes because they regularly work to develop and maintain **flexibility**.

Flexibility is the ability to move your muscles and joints through a full **range of motion** without pain or injury. When you lose flexibility, your body can no longer move or bend the way it once could. Your body may no longer be able to run or walk smoothly. Your body may even lose its ability to sit straight in a chair. The aging process decreases our levels of flexibility. Flexibility is a health-related fitness component that is important for good health and physical fitness.

How flexible you are depends on how far your muscles will stretch and the distance your joints will move without pain or injury. *Muscles* are the tissue surrounding bones. Muscles lengthen and shorten to move joints. *Joints* are the places where two or more bones connect.

Different joints and muscles in the body move in different ways. Bone structure determines the direction the joints move. Your knees, for example, are hinge joints, and move back and forth like a gate opening and closing. Your neck rotates or turns from side to side. Your hips and shoulders are ball-and-socket joints that can move up and down or around in a circle. The distance that any joint can move without causing pain or injury is called its *range of motion*.

By regularly **stretching** your muscles, you can maintain and even increase your flexibility. Stretching for flexibility is an important part of a balanced physical fitness program. Flexibility keeps your joints and muscles in good working order and helps to prevent injuries.

Flexibility: Factors You Can and Cannot Control

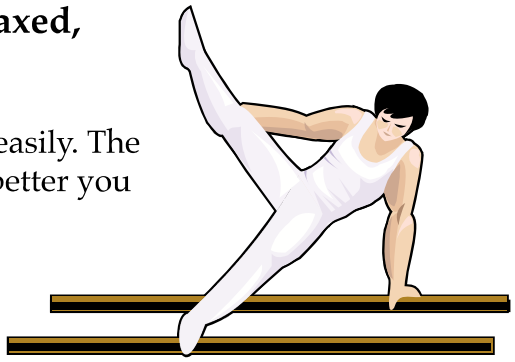
Your flexibility is determined by the bone structure of your joints and by the soft tissues that surround your joints. The range of motion of your knees, which only move back and forth, is limited by the way the bones fit together. It is difficult to improve the range of motion of knees.

The range of motion of joints that move in many different directions, such as your ankle and hip, are determined both by the way the bones fit together and by the soft tissues that surround them. Soft tissues include muscles, **ligaments**, and **tendons**. Care must be taken to avoid injury to your muscles, ligaments, and tendons. Ligaments are strong tissues that attach bone to bone. They can be stretched, but if they are stretched too far, they will tear. Tendons are strong tissues that attach muscle to bone. They cannot be easily stretched. By stretching the muscles around joints such as your hips and ankles and shoulders, you can improve their range of motion.

Your flexibility will be increased or decreased by other factors. Note which of these factors you can control and which you cannot.

- Physically active people usually have greater flexibility than those who do not exercise.
- Females are generally more flexible than males.
- As you age, your flexibility naturally declines. However, with regular stretching, this loss of flexibility can be slowed down.
- Overweight people tend to be less flexible than those of average weight.
- Other factors that influence flexibility are genetics, body temperature, and injuries.

The Flexible Body: Healthy, Relaxed, Alert, and Aware



A flexible body moves gracefully and easily. The more easily your body can move, the better you will feel about yourself. So flexibility is good for the body and the mind! To maintain or increase your flexibility, you must stretch regularly.

Regular stretching …

- helps make your daily activities easier and your physical movements more comfortable.
- helps prevent injuries by increasing the range of motion around joints.
- improves performance in physical activities. Athletic skills become smoother and more coordinated as you become more flexible.
- lowers your risk for back pain. Back problems are often the result of poor flexibility in the lower back, hips, and legs.
- minimizes muscle soreness. Stretching after exercise can help to decrease muscle soreness.
- increases relaxation, reduces emotional stress, and reduces muscle tension.
- improves your awareness of your body and body image.
- feels good!

The Inflexible Body: Pain, Pain, and More Pain

When you lose your flexibility, your muscles become short and tight. Everyday activities can feel burdensome because your body is not loose and does not easily bend. It is difficult to move from place to place when you feel stiff. The following are a few of the more common problems tight muscles can cause:

- extreme muscle soreness
- joint or muscle stiffness
- muscle pulls or tears
- lower back pain
- neck, shoulder, or back ache
- bad posture
- athletic injuries
- muscle tension and stress
- difficulty moving your body in normal, daily activities
- muscle imbalance.

Methods to Improve Your Flexibility: Static, Passive, Dynamic, and Ballistic Stretching

The only way to improve your flexibility is to do regular and proper stretching. Consistently lengthening the muscles through stretching increases your flexibility. There are several methods of stretching used to increase flexibility: **static stretching**, **passive stretching**, **dynamic stretching**, and **ballistic stretching**.

Static Stretching: Holding a Position

Static stretching involves slowly moving to a **stretching point** and holding that position for 15-30 seconds. The stretching point is the point at which your muscle is being lengthened. It is a safe point that is slightly uncomfortable but *not* painful. Static stretching is the *safest* method of stretching to increase flexibility. There are many benefits to static stretching. It requires little energy to perform, it relieves muscle tension and soreness, and it promotes relaxation.

Passive Stretching: Using a Partner

Passive stretching is a type of static stretching in which you rely on a partner for assistance in the stretch. Partner stretching can be an effective method of stretching for tight, sore, or weak muscles. Caution should be taken to prevent the partner from pushing too hard and causing an injury. This type of stretching is *not* recommended.

Dynamic Stretching: Moving Slowly past the Stretching Point

Dynamic stretching is a type of stretching that involves slow, controlled movements past the stretching point. Dynamic stretching can be helpful for specific sports and activities. It is *not* recommended for the average individual.

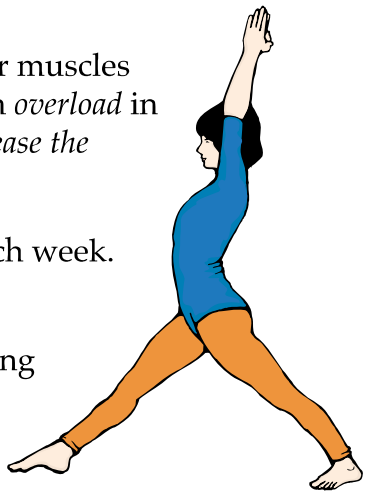
Ballistic Stretching: Bouncing into a Stretch

Ballistic stretching is a type of stretching that uses the body's weight to bob, bounce, or jerk past a muscle's stretching point. While some advanced athletes may find this method beneficial, it is considered risky and dangerous for most people. When performing ballistic stretching, it is easy to overstretch, which can cause extreme muscle soreness, muscle pulls, or tears. For health-related personal fitness, ballistic stretching is *not* necessary, nor is it recommended.

Improving Flexibility Using Training Principles: Overload, Progression, and Specificity

You can improve your flexibility by using some of the same training principles that are used by professional and collegiate athletes and dancers. The principles of **overload**, **progression**, and **specificity** will help you continually improve your flexibility and work specific joints in your body that are inflexible.

The Principle of Overload—F.I.T.T.: Frequency, Intensity, Type, and Time



To increase your flexibility, you must stretch your muscles farther than they normally stretch. To accomplish *overload* in flexibility training, use the **F.I.T.T.** *formula* to *increase the demand* on your body beyond its normal level.

(F) Frequency—stretch at least three times each week. Stretching daily is best.

(I) Intensity—stretch the muscle to its stretching point, then hold the stretch in a static stretch for 15 seconds.

(T) Type—change the type of stretching exercise from normal to advanced movements.

(T) Time—increase the length of each stretching session, the amount of time a position is held, or the number of times an exercise is executed.

The Principle of Progression: Continually Improving Flexibility

To continually improve or *progress* in your flexibility, the *amount of work* performed by the body needs to gradually increase by doing a series of overloads applying the *F.I.T.T. formula*.

(F) Frequency—increase the number of stretching sessions for each week (stretching daily is best).

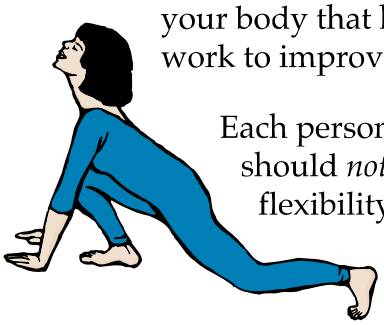
(I) Intensity—increase the distance you stretch each muscle as your body becomes more flexible.

(T) Type—increase the type of stretching exercise from static to passive stretching.

(T) Time—increase how long the position is held and how many times you perform each stretch.

The Principle of Specificity: Measure and Work Each Joint Separately

You may be flexible in one joint or area of the body and inflexible or tight in another part of the body. Work particularly hard on stretching areas of your body that have poor flexibility. Of course, you should work to improve the flexibility of all your muscles and joints.



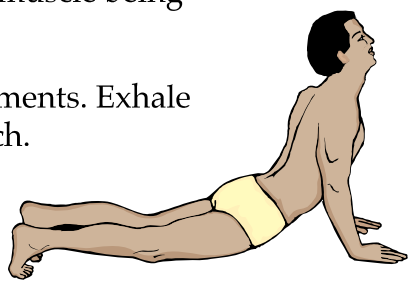
Each person has a different degree of flexibility. You should *not* compare your own flexibility with the flexibility of others. Instead, keep track of how well your flexibility increases in each area of your body.

Guidelines for Safe Stretching: Be Patient and Treat Your Body Well

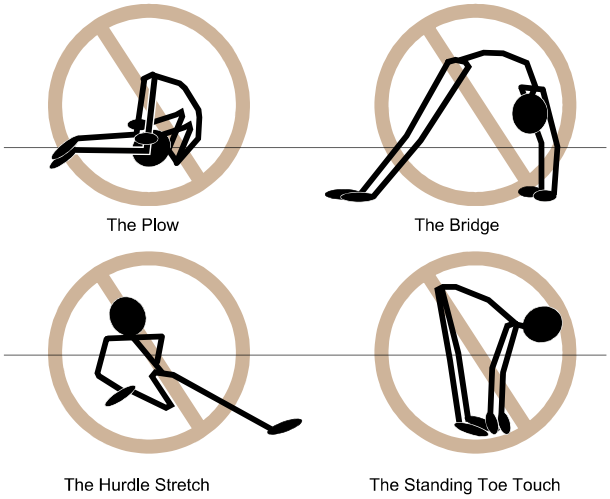
Anyone can begin a flexibility program. But if you over-stretch or go beyond your body's limits, you will end up injuring your muscles and joints. Take satisfaction in your long-term commitment to fitness and don't try to remake your body in a day. Follow the guidelines for safe stretching below.

- Always begin an exercise session with a **warm-up**. It is important to warm up the body before stretching. Increasing the body's temperature helps to increase circulation needed for the muscles and joints to work properly. A typical warm-up might include some easy jogging or brisk walking before running.
- Perform gentle stretches before workout.
- Perform longer and deeper stretches during the **cool-down**, or the end of your workout.
- Perform static stretches only. Move slowly and smoothly into each stretch, holding each position for 15 seconds.

- Perform each stretch one to three times each.
- Release each stretch as carefully as you moved into it.
- Stretch to a point of tension, not pain.
- Stretch within your own limits. Listen to your body—its limits may be different each day.
- Avoid fast stretching and bouncing while stretching.
- Avoid locking your knees or other joints when stretching.
- Relax into the stretch and focus on the muscle being lengthened.
- Breathe naturally throughout all movements. Exhale when moving more deeply into a stretch.
- Use proper form and body alignment for all stretches.



- Vary your stretching routine by learning new ways to stretch muscles.
- Focus on the tight muscles in your body, but include stretches for the entire body.
- Stretch daily. Frequency and consistency are the keys to improving flexibility.
- Avoid harmful stretching positions. The plow, hurdle stretch, bridge, and standing toe touch are just a few of the more common positions that can create stress on the back or knee joint.



- Always end each exercise session with a cool-down. Perform stretching exercises for flexibility in the warm-up and cool-down portion of every workout session. Gradually stretching the muscles helps prevent muscle soreness.

Measuring Flexibility: How Well Can You Stretch?

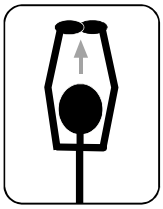
Before starting an exercise program, you should measure your flexibility. You will then be able to measure your progress and see the increase in your flexibility over time.

There is no single test that can measure your overall flexibility. Each joint is specific and must be measured individually. However, measuring areas of the body such as the shoulder, hip, and lower back will give you an indication of the flexibility you have in your major joints.

General Stretching Program

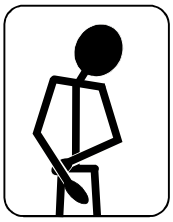
The Stretches

Follow closely the instructions for each stretch. Remember not to compare your level of flexibility with that of your classmates. Doing so will only cause you to stretch farther than you should and may cause you to overstretch your muscles. Extend your muscles only to their stretching point—or the point at which you feel a *slight* discomfort.



Overhead Shoulder Stretch. Clasp your hands together and reach above your head as high as possible. Hold for 15 seconds. Release and repeat two more times.

Chest and Shoulder Pull. Clasp your hands together behind your back and slowly lift your arms upward. Keep your body upright and your knees slightly bent. Hold for 15 seconds. Release and repeat two more times.

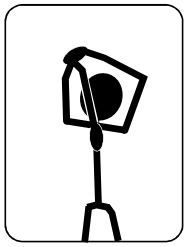


Side Neck Stretch. With your hands behind your back, pull your left arm to your right side while tilting your head to the right until you feel tension in the left side of your neck. Hold for 15 seconds. Reverse to other side.

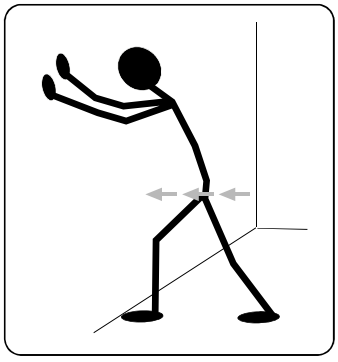
Posterior Neck Stretch. Bow your head forward. Interlock your hands on the back of your head. Gently pull your head down with your chin resting on your chest. Hold for 15 seconds. Release and repeat two more times.

Deltoid Stretch (shoulder). Bring your right arm straight across to the left side of your body. Grasp your right elbow with your left hand at chest level, and pull your elbow and arm back until you feel a slight stretch in your right shoulder. Hold for 15 seconds. Repeat on the other side.

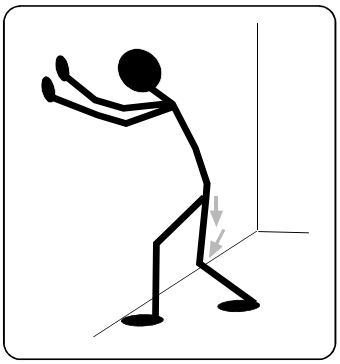
Triceps Stretch (back of upper arm). Raise both of your arms above your head. Drop your left hand behind your head, keeping your palm flat on your back. With your right hand, grab your left elbow and press it towards the center of your back until you feel a slight tension on the back of your left arm. Hold for 15 seconds. Repeat on the other arm.



Calf Stretch (two parts):

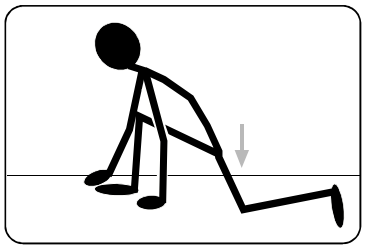


a) Stand facing a wall. Place both of your hands on the wall. Bring your right foot to the base of the wall and step back with your left leg. Keep your left leg straight and your left foot pointing directly forward with your left heel on the floor. Press your hips forward toward the wall until you feel a slight stretch in the back of your lower left leg behind the knee. Hold for 15 seconds.

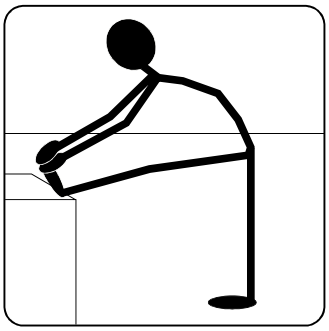


b) Next, slowly bend your left knee and slide your hips back as if preparing to sit down. You should feel the tension shift to an area just above your left heel. Hold for 15 seconds. Switch legs and repeat both parts of the calf stretch.

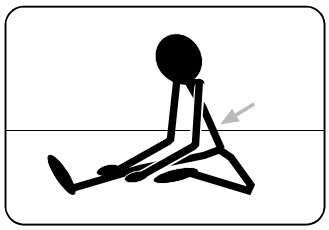
Runner's Stretch (hip flexors). Lunge forward with your right leg. Place your hands on the floor, one on each side of your right leg. Keep your right knee directly over the ankle. Do *not* allow your knee to go past your toes. You should feel a slight tension in the front of your upper left leg. Hold for 15 seconds. Repeat on the other leg.



Hamstring Stretch (back of upper leg):

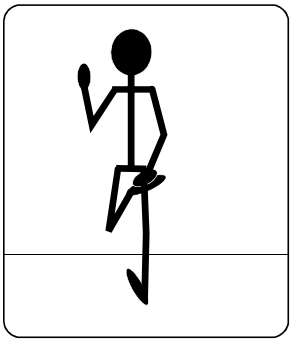


a) Standing Hamstring. Place your left leg on a chair with your toes pointing straight up. Bend forward at the hips, keeping your back straight. Lead with your chest as you fold down towards your thigh. Lean until you feel a slight tension on the under-side of your upper left leg. Hold for 15 seconds. Release slowly. Repeat on the other leg. This can also be done from a chair or a wheelchair. Remember to always keep a slightly bent knee.

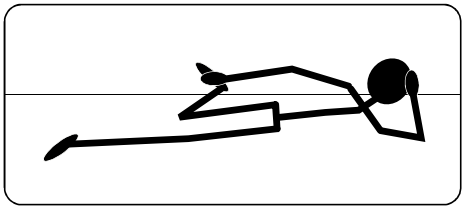


b) Seated Hamstring. Sit on the floor with your right leg extended and your left leg bent with the sole of your left foot touching the inside of your right knee. Place your hands on the floor on each side of your right leg. Keeping your back straight, slowly bend forward from your hips, bringing your chest towards your right knee. Hold for 15 seconds. Release slowly. Repeat on the other leg.

Quad Stretches (front of upper leg):



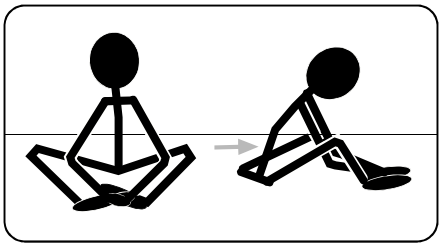
a) Standing Quad. Stand near a wall and place your left hand at shoulder level on the wall. Grasp your left foot with your right hand. Keeping knee, hip, and ankle in alignment, pull your left heel towards your buttocks until you feel a slight tension in the front of your left thigh. Hold for 15 seconds. Repeat on the other leg. This can also be done lying on your stomach.



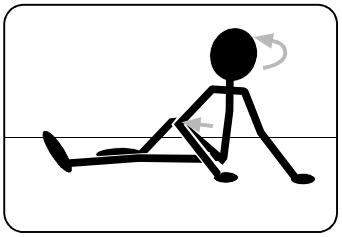
b) Side-Lying Quad. Lie on your left side with legs extended and on top of one another. Support your head with your left hand. Reach

with your right hand and grab your right foot, pulling the heel towards your buttocks. Hold for 15 seconds. Repeat on the other leg.

Groin Stretch (inner thigh). Sit on the floor with both of your legs bent at the knee and the soles of your feet touching together. Grab your feet with your hands, and pull your feet as close as possible to your body. Slowly lean forward, keeping your back straight and bending from the hips. Bend forward until you feel a slight tension in the inner-thigh area. Hold the position for 15 seconds without pressing or bouncing into the stretch. Release slowly. Repeat.

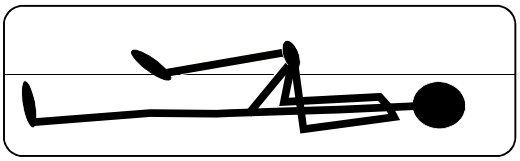


Seated Spine Stretch. Sit on the floor and extend both of your legs out in front of your body. Bend your left leg and cross it over your right leg, placing your left foot on the floor on the outside of your right knee. Turn your upper body to the left using your right elbow to press against the outside of your left thigh. Press against the thigh until you feel a slight tension. Hold for 15 seconds. Reverse your legs and repeat.

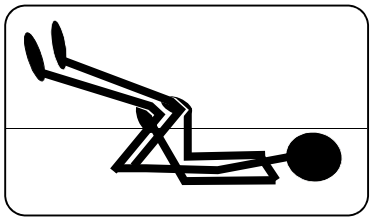


Lying Tuck Knee Stretches (lower back relaxer):

a) Single-Knee Tuck. Lie on your back with both of your legs extended straight out on the floor. Pull your left knee to your chest, holding your leg just below the knee with both hands. Hold for 15 seconds. Repeat using the other leg.

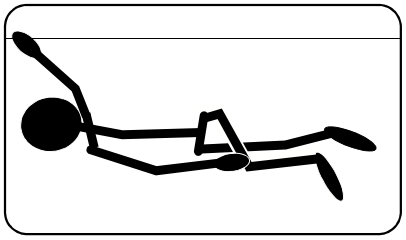


b) Double-Knee Tuck. Lie on your back and tuck both of your knees to your chest. Place your hands behind your knees, and hug them into your chest. Hold for 15 seconds. Relax and repeat two more times.



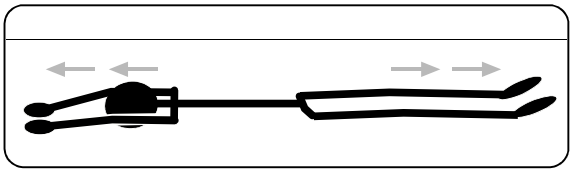
Lying Spine Stretches (lower back stretch):

a) Single Knee. Lie on your back with your arms extended straight out to your sides and your legs extended out on the floor. Tuck your left knee into your chest and bring it over to the right side of your body. Grab your left upper leg with your right hand and bring it as far as possible to your right side. Relax, and repeat on the other side.



b) Double Knee. Lie on your back with your knees tucked to your chest, and your arms extended straight out to your sides. Slowly roll your lower body to your left side, keeping your arms flat on the floor. Relax into the stretch. Slowly roll body to right side.

c) Lying Total Stretch (whole body stretch). Lie on your back. Extend your arms straight above your head and extend your legs on the floor with your toes pointed. Reach and stretch your arms as far as possible above your head, and stretch your toes and feet as far as possible away from your body. Relax and repeat two more times.



Summary

Flexibility is the ability to move muscles and joints through a full *range of motion* without causing pain or injury. Flexibility is important for good health and contributes to overall physical fitness. Proper and regular *stretching* can reduce injuries, lessen the chance of back pain, decrease *muscle* soreness, and help in daily physical activities. Stretching also helps relieve stress and enhances relaxation.

Proper and regular stretching can reduce injuries.

Static, *dynamic*, *passive*, and *ballistic* stretches are all methods of stretching. Static stretching, or moving to a point of tension and holding that position, is the safest way to improve flexibility. Ballistic stretching involves bouncing while stretching. It is considered high risk for injury and is not recommended.

To continually improve your flexibility, you must apply the F.I.T.T. training principles: increase the (F) frequency, the (I) intensity, the (T) type, and the (T) time you spend stretching.

Following some basic guidelines will help you improve your flexibility. Perform all stretches one to three times each, holding each stretch for 15-30 seconds. Push only to the *stretching point*, or the point of slight discomfort. Do not stretch your muscles to the point of pain, or you may overstretch your muscles. Try to stretch every day. Relax and enjoy the good feeling stretching creates!