HEALTH MOTION
PHYSICAL THERAPY SERVICES

Stretching Basics

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Stretching is a fantastic form of exercise in and of itself. It has many benefits including:

- Improved range of motion
- Injury prevention
- Improved posture
- Improved performance – athletic or otherwise
- Limited muscle imbalances by breaking the patterns of daily life
- Improved body awareness
- Reduced muscle soreness from working out
- General relaxation

It is becoming more popular as a way to exercise. There are stretching classes at the health clubs. Athletic teams are stretching more. And there are entire schools of exercise devoted by-in-large to stretching like yoga, pilates, and resistive stretching. There is so much information out there it is difficult to know how much flexibility is enough and what stretches to do when.

To start with there is no 'normal' amount of flexibility. It is completely dependent on function. For example a gymnast needs a lot more flexibility than someone who walks for exercise. So to determine how much you need, look at your functions. How do you move? How far do you move? Can you move far enough? Ideal flexibility would be just a little more than is necessary for normal function. That little more provides a cushion to help prevent injury.

Too much flexibility can be just as bad as too little. It is important to have strength to be able to function in the available range. Otherwise the person is prone to injury in that range. For example a person who has the range to be able to put their foot behind their head but cannot contract the muscles around the hip joint in that position risks dislocation of the hip.

If you are in one position much of the day it is important to do stretches that take you out of that position Let's look at a cyclist who rides his bike 6 or more hours per week. He also sits at a desk all day when he is working. Then he drives his car, sits at dinner, etc. You can see a majority of his time is spent sitting. He will have muscle imbalances. The front of his hips will be very tight and he will loose the ability to extend them. This will make him slumped and stooped over time and can lead to pain and injury.

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Why Muscles Become Stiff and Tight

Stiff and sore muscles also respond well to stretching. Muscles can become stiff and tight for a variety of reasons. One is **adaptive shortening**. This was described above. A muscle that is kept in a shortened position for a long period of time will lose its ability to lengthen. This is the most common cause of inflexibility that is handled with stretching.

Another reason muscles get tight is **overuse**. This occurs when a muscle used repeatedly over and over again without adequate time to recover. For example, how do you feel after raking leaves all day long? This also responds well to stretching. When overuse has gone on too long or when there is a very quick stretch this can tear a muscle beyond its ability to recover and **injury** results. Injuries also make muscles tight but do not respond to stretching alone and usually need treatment to regain flexibility and decrease pain.

Finally muscles will get stiff and tight if they are **guarding for another injury.** Muscles protect us by immobilizing the area when an injury has occurred. If this is the case the muscles in the area get tight and will not relax or regain their flexibility until the original injury is handled. An example of this is the hamstrings going into spasm after meniscus injury in the knee. All the stretching in the world won't fix that until the meniscus has been handled.

Types of Stretching

All that being said, what type of stretching is best and when? There are basically three different types of stretches with endless variety of ways to perform them. Below I have defined each one, how to perform them and when.

- **Static stretching** involves lengthening the muscle and holding that position for a period of time to allow the muscle and surrounding tissue to lengthen. Stretches are usually held for 10 or more seconds. No increased benefit has been found to holding the stretches longer than 30 seconds. This is then repeated 3-4 times.

  Static stretching is **great for improving the length of shortened muscles**. However static stretching done before athletic performance has also been shown to worsen the performance by reflexic inhibition of the muscles stretched – in other words it makes muscles weaker for a time.

  Avoid static stretching before activities – especially if they require speed, strength or agility. Static stretching is also not good in excessive positions. Avoid this if you are hyperflexible and not strong in that position. .

  At this time there is no evidence that shows that static stretching prior to activity decreases the likelihood of injury. It is best performed after activity.

- **Dynamic or rhythmic stretching** involves movement through a range without stopping or holding. This can be done more quickly – an example of this is rhythmic leg swings that some runners do to warm up or arm swings for swimmers (remember Michael Phelps?). This can also be done for a count of 4 moving through the range smoothly reaching the end range before moving back out of the stretch. These are usually repeated multiple times. I recommend 4 – 5 times for the 4 seconds stretches and 10-15 times for the shorter stretches.

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Dynamic stretching improves blood flow to the area and increases the neural activation of the muscle preparing for activity. In other words, a muscle is generally stronger after dynamic stretching. It is good for relieving general stiffness and will improve muscle length but not as well as static stretching. **Dynamic stretching is the best type of stretching to do prior to activity. It is also very beneficial and safe for hyperflexible people.** Mark Verstegen's book (referenced below) has some great examples of total body dynamic stretches.

- **Resistive stretching** is a newer term (coined by Bob Cooley). It involves contracting the muscle and lengthening the muscle at the same time. While the term is new the principle is old. Yoga involves many resistive stretches – times when the muscle being stretched is also being contracted. This is thought to stretch adhesions within the muscle itself. It also builds strength at the same time. Cooley recommends anywhere from 2-8 repetitions at 100% maximum contraction. This makes his type of resistive stretching very **difficult to do independently**. Gains can still be made with less force.
  Because a constant contraction has to be maintained **it is very difficult to overstretch and cause injury with this technique.**

  Resistive stretching is very beneficial for athletes, those who are very inflexible, and those who are in the later stages of recovery from an injury.
  Big gains can be made with resistive stretching once the proper technique is learned. If you are interested in more you can search meridian stretching or resistive stretching on the web or do a yoga class.

How To Stretch

- Always stretch when you are warmed up. The tissues are more flexible when they are warm. This can be done by walking, jogging, light calisthenics or any other exercise that involves large muscle groups in the area you want to stretch for approximately 5 minutes.
- Pre-activity perform dynamic stretches specific to the activity you will be performing. For example runners/walkers can do leg swings or dynamic leg stretches and swimmers can do arm swings or dynamic arms stretches.
- Post-activity perform static stretches focusing on the areas worked to decrease muscle soreness and speed recovery and/or any specific areas of tightness to increase muscle length.
- General stretching (not pre or post activity). Warm up the body first. Do static stretching unless you are hyperflexible (then do dynamic stretches). Focus on stretches that break the patterns that you are in every day. Yoga is great for this!!

*****If stretching isn't working – or if it hurts** you could have a more serious problem. Muscles get tight for several reasons as described above. Two reasons, injury and muscle guarding, cannot be handled by stretching alone,. If you are having trouble, come in for a free consultation with one of our therapists. They will help determine why you are tight and recommend a solution specifically for you. Call our office today to schedule your free consultation.

References:
Anderson, Bob. *Stretching*. 1980.
Verstegen, Mark and Williams, Pete. *Core Performance*. 2004.

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Stretches for Commonly Tight Muscles

Precautions

All of the stretches described below can be done statically, dynamically, or with resistance. No pain should be felt doing any of these stretches. DO NOT DO THEM IF THEY HURT. Consult a physical therapist if you have pain during any of these stretches.

Calf Stretches

There are two primary muscles in the calf. It is important to stretch each one.

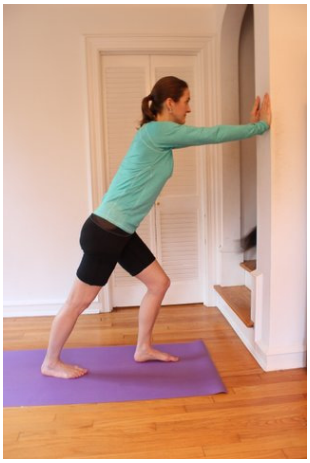

Fig 1

Figure 1. With one foot in front of the other lean forward and rest your hands against a wall. Keep your back heel down and toes pointing straight forward. Keep your back knee straight. Lean forward till you feel a stretch in the back of the calf.

Figure 2. Perform as above in fig. 1 except bend the knee on the back leg. You will feel the stretch lower in the calf.

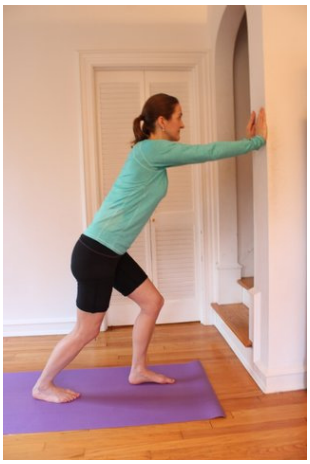

Fig 2

Hip Flexor Stretch

a.k.a. marriage proposal stretch

Fig 3

Figure 3. Kneel as shown. Tuck your bottom hip under flattening out the spine and keep your body upright. You will feel a stretch in the front of the leg you are kneeling on. Do not lean forward.

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Hamstring Stretch

This can be done many, many ways. This is just one.

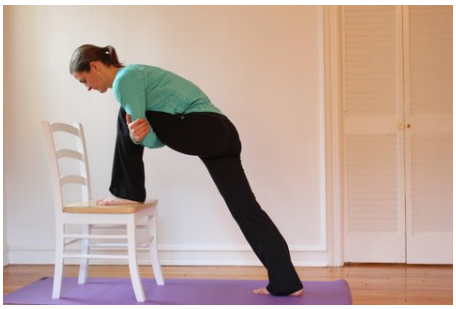
Fig 4

Figure 4 and 5. Put your foot on a chair with knee bent. Hug your leg as shown in Figure 4. Keeping your chest and stomach on your thigh straighten the same leg as in figure 5 until a stretch is felt on the back of the thigh (hamstrings).

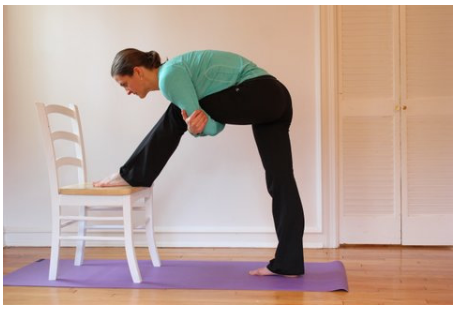
Fig 5

Piriformis Stretch

This muscle is a hip muscle located in the center of your cheek. It is very important for hip stability and often gets tight limiting motion and function. This stretch is a.k.a. sit like a man.

Figure 6. Sit in a chair crossing one ankle on the opposite knee as shown. Keeping spine straight bend forward till a stretch is felt in the center of the buttocks.

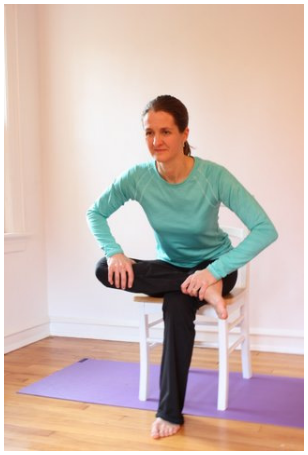
Fig 6

Groin Stretch

There are many ways to stretch the groin. The following butterfly stretch is only one.


Fig 7

Figure 7. Sit upright on the floor with the soles of your feet together. Pull them as close as you can toward your body. Press the knees down toward the floor while continuing to sit as upright as possible. You will feel a stretch in the inner thigh.

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Shoulder Stretches

Fig 8

Figure 8. is a stretch for the pectoralis major on the front of the chest. This is also called the doorway stretch. Place your arm in a door frame at shoulder height. Lean forward and turn away slightly. You should feel a stretch in the front of the chest.

Figure 9. is a stretch for the entire shoulder but primarily the latissimus dorsi. This muscle stretches from the shoulder along the side toward the back. Place your hands, thumbs up, on the wall at about eye level. Bending at the waist and keeping back straight, lean forward as shown to get your arms as high over head as possible. You will feel this in your shoulders and lats as described.

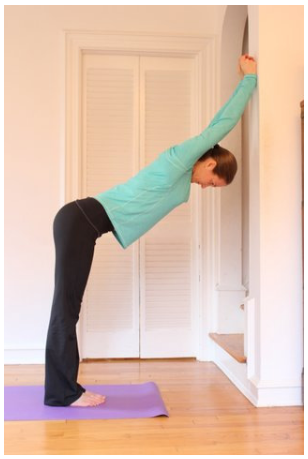

Fig 9

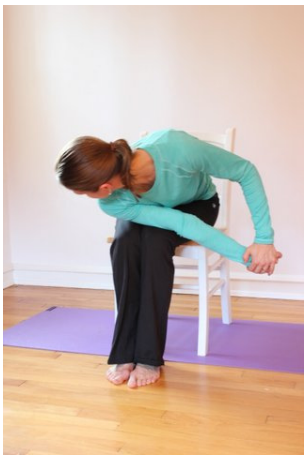

Fig 10

Figure 10. This stretches in between your shoulder blades. Sit in a chair and lean forward placing your elbow outside your opposite knee. Turn away from the opposite knee trying to get your arm as far across your chest as possible. You will feel this stretch between your shoulder blades.

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Neck Stretch

This stretch is for the most commonly tight muscle in the neck the upper trapezius. It is located at the base of the neck on top of the shoulder region.

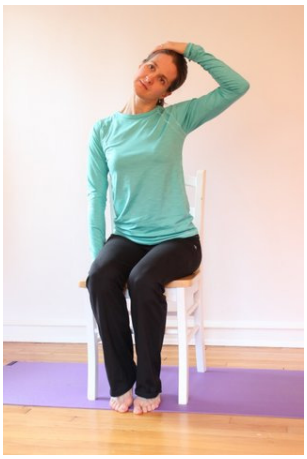

Fig 11

Figure 11. Sitting upright in a chair, lean your ear toward your shoulder. You should feel the stretch in the side you are leaning away from. If you do not feel a stretch place your hand gently on your head as shown. Do not pull.

Back Extension Stretch

This stretches the front of the body and is shown here in two different ways.

Fig 12

Figure 12. Lay on your stomach on the floor. With your hands under your shoulders press up as far as you can while keeping the front of your hips on the ground. You should feel a stretch in the abdominals.

Figure 13. Be sure you have your balance on the ball before laying backwards. Lay on your back on a ball as shown. Reach with the arms and the legs to get a better stretch.

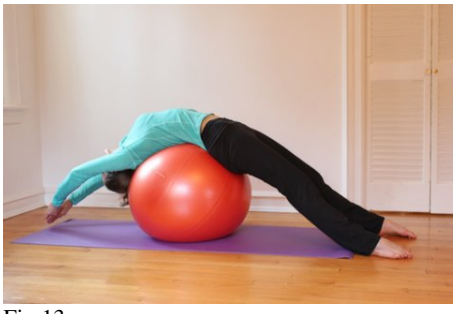

Fig 13

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Other Back Stretches

Figure 14. Stand with your feet spread apart and reach over to one side as shown. You should feel this stretch in the low back, specifically on the side and that you are leaning away from.

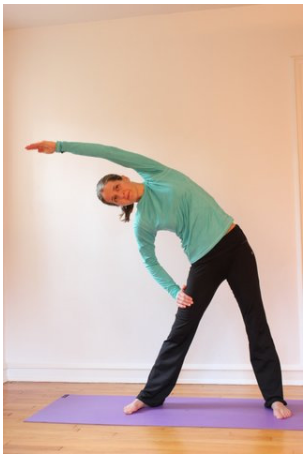

Fig 14

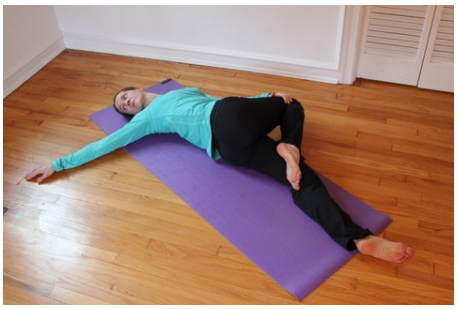

Fig 15

Figure 15. Lay on the ground bringing one knee to your chest. Place the opposite hand on the outside of that knee and drop the knee to the opposite side as shown. You will feel a stretch in the hip and low back on the side of the bent leg.

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