

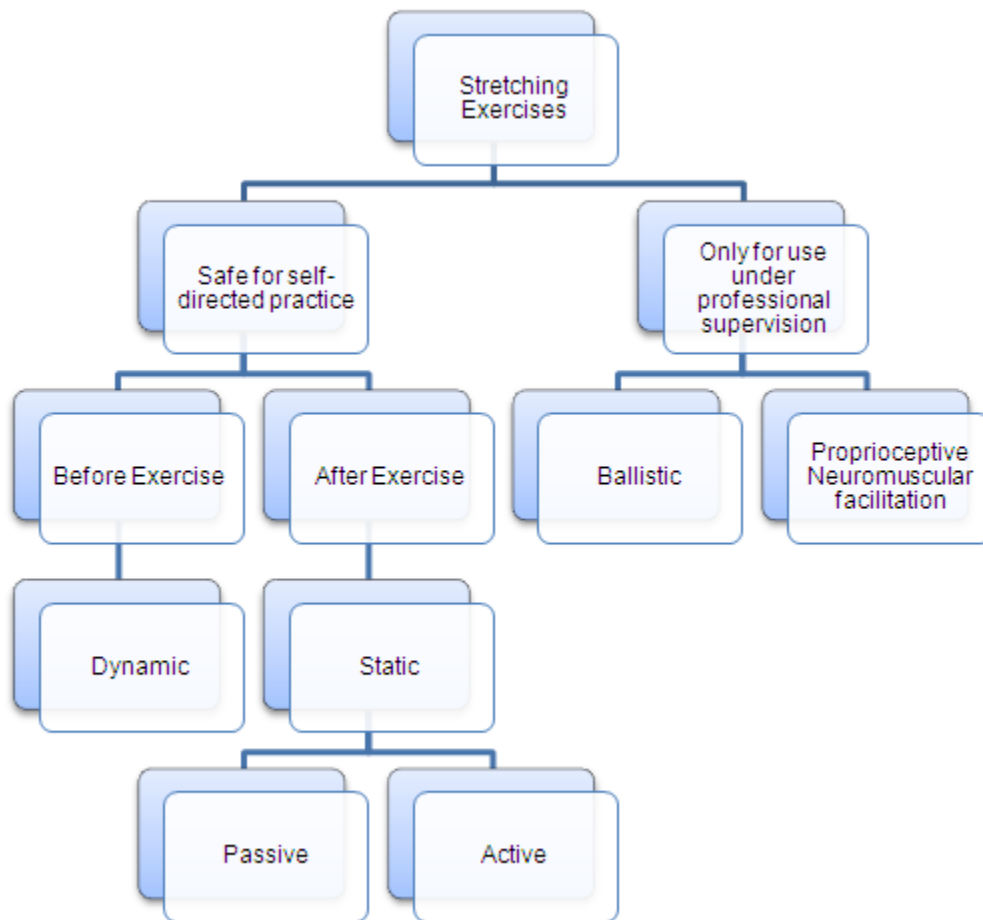
Flexibility

Paying attention to flexibility is normally an important part of any well balanced fitness regime, but this aspect may be particularly important for certain activities such as gymnastics or dancing. It is particularly important to include this component in your regime for the following reasons:

- Good flexibility aids sporting performance
- Good flexibility reduces the risk of injury
- Repeated muscle contraction during exercise leads to slight shortening of muscle fibres, which in the medium to long-term can result in a reduced range of movement and falls in performance

Types of stretching exercise

Recent research has shown that when performed before exercise, static stretching exercises both reduce sporting performance and have no effect on preventing injuries. On the other hand, dynamic stretching exercises performed before exercise both boost sporting performance and reduce the risk of injury. This is almost certainly because dynamic exercises raise the pulse rate, bringing more blood to the muscles and ligaments which warms them and makes them more supple in readiness for vigorous exercise. Static stretching exercises are, however, suitable for use after exercise whilst the muscles are still warm. In this context they help significantly to prevent muscle shortening, thus maintaining flexibility and a good range of motion. Proprioceptive Neuromuscular Facilitation if not correctly performed carry with them an increased risk of injury and should therefore only be performed under the supervision of a fitness professional.



Dynamic stretching

Dynamic stretching, which should be performed before exercise and at least 2 to 3 times a week if flexibility is one of your fitness goals, in essence involves putting the muscles in question through a full range of movement that will mimic the activity about to be undertaken. The key difference between dynamic and static stretching is that the muscles are stretched during movement.

Guidelines for dynamic stretching

1. Contract agonist to stretch antagonist muscles
2. Start slowly and progress to faster movements
3. Start with a small range of movement and then increase the range
4. Incorporate whole body movements and mimic movements specific to your sporting activity
5. End the intensity of your warm up dynamic stretching at the level required for your exercise session

List of common dynamic stretching exercises

Name	Baseline movement	Progression	Muscle stretched
Balls of feet	Rise up onto the	1. Roll from heel to toe whilst	Shin (tibialis)

Name	Baseline movement	Progression	Muscle stretched
	balls of one foot then lower. Alternate each foot	walking forward or back to achieve full extension of the ankle ² . Jog slowly whilst pointing the toes of the raised foot at the floor in front	anterior)
Straight legs	Fully extend the leg at a 45 degree angle and pull toes back fully	While walking, on the leading leg pull toes back and extend heel whilst maintaining a straight leg	Calf (gastrocnemius and soleus)
Knee hug	Pull alternate knee to chest in a controlled manner	Walking then jogging bringing knees to chest	Buttocks (gluteus maximus)
Hamstring curl	Bring heel to buttock with minimal hip flexion	Bring heel to buttock in a jogging or running action	Thighs (quadriceps)
Bowls stretch	Put one foot about 6 inches in front of the other and pull toes back. Bend from the waist and mimic a bowling action	With leading leg straight and support leg bent, lean forward as if stretching the hamstring but keep walking forward. Repeat with opposite leg	Hamstrings
Lunge	Adopt a lunge position	As you are striding adopt a lunge position on the move. Do this moving forwards and backwards.	Hip flexors
Forward hurdle	Mimic the trailing leg of a hurdler as if going over a hurdle.	Do the movements whilst walking or jogging forwards and back	Adductors
Knees across	Raise your knee high and across your body. Alternate	Do these movements whilst walking or jogging forwards and back	Abductors
Arms across	Swing both arms across the body at different angles	Repeat whilst moving forward or back	Latissimus dorsi, trapezius and shoulders
Arms out	Swing both arms away from the body at different angles	Repeat whilst moving forward or back	Chest (pectoralis major) and shoulders

Static stretching

Static stretching, which does not involve movement, may be either passive or active. In passive stretching no voluntary muscular effort is made for the generation of the stretching force. For example, when performing a seated hamstring stretch it is the weight of the body leaning forward that accomplishes the stretching force not the voluntary contraction of a

specific muscle. Active stretching, on the other hand, involves a voluntary contraction of one muscle to stretch another. For example, active contraction of the shin muscles will stretch the calf muscles.

Guidelines for static stretching

1. Adopt a position for the target stretch
2. Ensure that the spine is in a neutral position and maintain good posture throughout
3. Slowly increase the length of the muscle to the point of tightness but without pain
4. Hold the stretch at this point for 15-30 seconds
5. If the tightness subsides during this time period, the stretch can be taken a little further
6. Repeat this procedure 2-4 times for each muscle
7. Carry out the entire stretch routine at least 2-3 times per week when your muscles are fully warm

List of common static stretching exercises

Name	Description
Neck	Stand tall and bend your head directly to the side, to stretch out the side of your neck. To increase the stretch, take the opposite hand over your head and gently pull the head further to the side.
Back	Stand with your feet hip-width apart and your knees slightly bent. Link your hands together in front of you. Push away through the shoulders and upper back, rounding your back into a C-shape.
Chest	Clasp your hands behind your back and gently pull your arms away from the back, keeping them as straight as possible and your shoulders down.
Shoulders	Stand tall with your feet hip-distance apart. Take your right arm across the body, grasping it just above the elbow with the crook of your left arm and gently pulling it to the chest. Don't hunch your shoulders up. Now swap sides. To stretch the front and middle of your shoulders, go on to all fours, sit back on your haunches and then bend your torso forward, extending your arms out on the floor in front of you.
Forearm	Extend both arms out in front of you, turning your left hand upwards and using your right to gently press the fingers down and back towards the body. Feel a stretch along the underside of your arm and wrist. Then swap sides.
Triceps	Extend your right arm above your head and then bend the elbow, dropping the forearm behind your head. Now gently push the elbow back and down with your left hand. Swap sides.
Side	Stand with your feet hip-distance apart and, keeping the hips central, take your torso directly to one side, sliding that hand down the outside of your leg. To increase the stretch, bring the opposite arm up beside your ear. Now swap sides.
Lower back	Lie on the floor and bring your knees into your chest, grasping hold of your shins. Lift your head to your knees to increase the stretch.
Modified cobra	Lie face down on the floor and raise yourself up on to your forearms, elbows directly below shoulders, forearms pointing forwards. Press your hipbones into the floor and allow your back to extend, looking forwards and not up or down.

Name	Description
Quadriceps	Standing tall, grab your right foot with your right hand, bending the leg and taking the foot behind you up to your bottom. Keep your legs aligned and don't arch the back or tip the pelvis forwards as you press the foot to the bottom.
Calf	Take a big step (about 1m) forward with your left leg while keeping your right leg straight. Bend the left knee and press your hips forward, keeping the right heel pressed into the floor. Ensure the right toes are pointing directly forwards. Now bring your back leg closer to the front one and bend both knees, to stretch the lower part of your back calf. Swap sides and repeat both stretches.
Hip flexors	Adopt a lunge position and take your back knee to the floor, shoe laces facing down. Keep the torso upright and lean into the front leg until you feel a stretch along the front of your hip. Make sure the front knee does not extend beyond the ankle, as this puts excessive stress on the joint. Swap sides.
Gluteal	Lie on your back with your knees bent and feet raised. Put your right foot over your left thigh and link your hands behind the left thigh, to gently pull the legs towards your torso and stretch out the right hip. Swap sides.
Hamstrings	Stand tall and extend one leg out in front of you, foot on the floor, keeping the other knee bent and resting your hands on the bent leg's thigh. Keep your back straight and abdominals gently contracted. Swap sides.
Groin	Sit on the floor and bring the soles of your feet together. Gently press down on the inner thighs with your elbows. Then, extend your legs out straight to the sides, taking them as far apart as is comfortable and keeping your back straight.