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Patient education: Arthritis and exercise (Beyond the Basics)

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ARTHRITIS AND EXERCISE OVERVIEW

Exercise is known to have benefits for people with arthritis. However, many people with arthritis do not exercise, often because of joint or muscle pain, weakness, fatigue, or joint swelling. This can lead to loss of joint motion, stiffness, and muscle weakness and tightness. These problems can worsen fatigue and can cause joints to become unstable.

However, exercise can decrease pain and can enhance quality of life. Exercise is most beneficial if it is done on a regular basis. Most people can find a way to exercise without increasing their symptoms.

This topic describes the benefits of exercise for people with arthritis, including disease-specific exercise recommendations.

SUCCESS WITH EXERCISE

Stick with it — A number of factors can improve the chances of sticking with an exercise program long-term, including:

- Following a simple regimen
- Setting attainable goals
- Understanding the importance and benefits of exercise
- Interacting with others while exercising (ie, with exercise groups)
- Following up regularly with a health care provider, such as a physical therapist or personal trainer, to provide encouragement and make adjustments to the regimen

Exercise in a supervised setting may improve the chances of continuing long term, compared with unsupervised, home-based programs. However, people who are self-motivated and exercise at home may enjoy the benefits of equal effectiveness, lower costs, and more convenience.

Information on general exercise can be found elsewhere. (See "[Patient education: Exercise \(Beyond the Basics\)](#)".)

Benefits of daily activities — Some people are not interested in a formal exercise program but are able to perform daily activities such as light housework, shopping, gardening, clearing walks and driveways, caring for a child or grandchild, caring for an older person, leisure walking, or exercising in a pool. There are health benefits (largely cardiovascular) from these activities.

Exercise can be broken up into three or four 10-minute sessions per day; it does not need to be continuous to produce health benefits. Moderate-intensity exercise is most effective if it is performed on most days of the week. However, exercising only one or two days per week is better than not exercising at all. Reducing prolonged sitting and sedentary activities can be beneficial. Consider standing up or short walking breaks after 30 minutes of sitting and decreasing time spent watching television.

Benefits of exercise include decreased pain and increased strength, mobility, and fitness, leading to an improved ability to perform daily functions. Exercise can also help to reduce depression and anxiety in people with arthritis and other conditions.

HOW CAN I PREPARE TO EXERCISE?

All people, especially those with arthritis, benefit from a balanced program of flexibility, strengthening, and endurance or aerobic exercise.

Talk to your doctor — Many people with arthritis can successfully exercise on their own. Before beginning an exercise program, contact your doctor or other health care provider to be sure it is safe. Specific questions to ask include the following:

- Are there specific exercises or movements that should be avoided? For example, after hip replacement, patients often have hip movement restrictions early in the recovery; patients with inflamed joints may be told to do range-of-motion exercises only.
- Are there specific exercises that should be included to maintain optimal health? For example, people with rheumatoid arthritis (RA) benefit from regular hand and wrist exercises to maintain range of motion and function. (See ['Disease-specific exercise suggestions'](#) below.)
- Do I need to be evaluated by a physical or occupational therapist before starting to exercise? If you answer "yes" to the questions below, an evaluation may be helpful.
 - Do stiffness, limited motion, or joint deformities make it difficult or painful to move?
 - Have past exercise attempts been unsuccessful due to pain that does not go away with rest or a reduced exercise program?

Pain, stiffness, and fatigue are barriers to exercise success for many people with arthritis. Preparing for exercise can minimize these issues. Some people benefit from a warm shower prior to exercise. Cardiovascular warm-ups and cool-downs are recommended for all exercisers.

Warm up — The purpose of the warm-up is to improve circulation and to increase the temperature of muscles and joint structures so that the body is less stiff, movement is easier, and risk of injury is decreased. If you are successful, your body will feel slightly warmer than when you started. Stretching is best done after your exercise session as part of your cool down. Some people like to stretch after their warm-up.

People with arthritis may need a longer warm-up and cool-down. A three- to five-minute warm-up is recommended for the general population, while 10 to 15 minutes is optimal for people with arthritis. However, if you are walking slowly or exercising less than 10 minutes, you do not need a separate warm-up and cool-down.

Sample warm-up activities:

- Walk or bike at half normal speed
- Sit and perform range of motion exercises/flexibility exercises starting at the head and neck and progressing to the feet and ankles (ideally using the same muscles that will be involved in the exercise)
- March in place

Cool down — The purpose of the cool-down is to return your heart rate to a few beats above normal. This prevents a sudden drop in blood pressure, feelings of nausea, fainting, and dizziness.

Sample cool-down activities:

- Slowing down your walking, biking, etc gradually
- Lifting light weights
- Range of motion activities
- Stretching exercises

Stretching — Stretching returns muscles to their full length and reduces soreness after exercise. People with arthritis need to be more cautious if they have lax joints (extra mobility or hyper-flexibility) or malaligned joints (eg, hand deformities, bowlegged). Flexibility exercises can include modified yoga and tai chi (a Chinese martial art that involves slow, gentle movements), as well as stretches.

ARTHRITIS EXERCISES

Exercises to improve muscle strength and build endurance are important components of an arthritis treatment program. Aquatic and land-based exercises are effective at improving strength, function, and physical fitness. Tai chi and yoga should be considered as possible components of an exercise program when performed carefully and should be supervised initially to make needed modifications and to prevent injury.

Strengthening exercises — Strengthening exercises can help to improve joint stability and decrease pain. Examples of exercises that build strength include the use of free weights, weight machines, or body weight (eg, modified squats to build knee strength).

People with lax or malaligned knees should use caution with certain strengthening exercises because improving quadriceps strength (the muscles in the thighs) may speed the progression of preexisting arthritis. A physical therapist who specializes in treating arthritis-related knee problems can provide specific advice and can recommend exercises to balance strength building. Treatment may include modified exercises and appropriate bracing.

Tips for success

- Movements should be smooth, not jerky.
- Care should be taken to avoid gripping the weight or exercise machine handle too tightly.
- The weight should be light enough that the movement can be performed 8 to 10 times (one set) without pain or excessive fatigue.
- To avoid fatigue and joint stress, alternate one set of arm exercises with one set of leg exercises (eg, one set of biceps curls, one set of quadriceps curls, one set of triceps curls, one set of

hamstrings curls, then repeat the circuit).

- The weight can be increased when 10 repetitions can be performed with ease and when the increased weight does not increase joint pain.
- People with inflammatory arthritis should err on the side of caution, and they should start with a lighter weight and increase slowly. For example, arm exercises can start with as little as 1 to 2 pounds (0.5 to 1 kilogram).

Endurance exercises — Endurance exercises work to increase the heart and breathing rates, which can improve heart health, lower blood pressure, and improve fitness. Exercise does not need to be strenuous; during moderate-intensity endurance exercises, you should be able to carry on a conversation.

The type and amount of endurance exercise recommended depends upon a person's current fitness level. A person who has avoided exercise due to pain or lack of success might need to begin with just five minutes of slow walking. Low-impact exercises are preferable to minimize stress on the joints. Swimming and biking are low- or no-impact forms of endurance exercise that can be safely performed by most people with arthritis.

Aquatic exercises are of particular benefit for those with severe disease and/or a low fitness level, especially rheumatoid arthritis (RA). The buoyancy provided by water decreases pressure on joints and allows a person to exercise without the constraints imposed by body weight. Aquatic exercise programs often include group exercises in the water or walking in water. If you like to swim but have shoulder or neck issues that make it difficult to turn the head, you may need to consult with a therapist to design a successful swimming program. Some people can successfully reduce neck movement by using a snorkel and mask.

In general, exercise should start at a low intensity and for a short time. It is normal to feel some joint or muscle soreness after exercising. Delayed-onset muscle soreness is common and can last up to two days. The soreness should not be severe. Repeating some light warm-up exercises, stretching, or foam rolling can help with this.

Protect the joints — People with arthritis need to take a few extra precautions to protect their joints while exercising. The following tips are recommended.

- Walk on flat, level surfaces, especially if prone to hip, knee, foot, or ankle problems.
- Wear supportive footwear, such as athletic shoes, and use a shoe insert that supports the arches and provides cushioning (eg, Spenco) to reduce impact on hips, knees, and feet. The shoe's

original liner may be fine, although an insert with additional cushioning is often helpful for people with foot or knee pain.

- Avoid jarring movements and high-impact activities such as running.
- Respect pain, do not ignore it, and monitor for pain during exercise.
- Start slow and increase activity gradually.
- Pay attention to posture and alignment.
- Do not take excess pain medication prior to exercise; this can mask pain and cause you to over-exercise.
- Caution is recommended after a knee or hip replacement. High-impact sports such as running, football, baseball, basketball, and soccer are not recommended. However, participation in low- or no-impact sports such as swimming, cycling, or walking is encouraged.

Specific exercise instructions — Instructions for specific exercises for people with arthritis are available from the following resources:

- [Everyday guide to exercise and physical activity](#), available on the website of the National Institute on Aging
- The Arthritis Helpbook by K. Lorig and J. Fries (Perseus Books, Cambridge, 2006)
- Living a Healthy Life with Chronic Conditions by K. Lorig, H. Halsted, D. Sobel, et al (Bull Publishing, Boulder, 2020)

DISEASE-SPECIFIC EXERCISE SUGGESTIONS

Inflammatory arthritis — Inflammatory arthritis is a condition that causes swelling and pain in joints. Examples of inflammatory arthritis include rheumatoid arthritis (RA), psoriatic arthritis, spondyloarthritis, and ankylosing spondylitis (AS). (See "[Patient education: Arthritis \(Beyond the Basics\)](#)", [section on 'Inflammatory arthritis'](#).)

- During an acute flare-up, reduce intensity and exercise time
- Many people need to rest during the day; long naps should be avoided to preserve nighttime sleep
- Avoid resistance exercise involving affected joints during acute flare-ups
- Do daily range of motion/flexibility as tolerated
- Avoid high-impact activities, especially while taking oral steroids
- Protect the joints, as described above (see "[Protect the joints](#)" above)

Rheumatoid arthritis — RA is a chronic inflammatory condition that can affect many tissues throughout the body. The joints are usually most severely affected. The number and type of joints affected by RA can vary widely, although joints on both sides of the body are usually involved. (See "[Patient education: Rheumatoid arthritis symptoms and diagnosis \(Beyond the Basics\)](#)" and "[Patient education: Rheumatoid arthritis treatment \(Beyond the Basics\)](#)", section on 'Exercise' and "[Patient education: Rheumatoid arthritis treatment \(Beyond the Basics\)](#)", section on 'Physical and occupational therapy'.)

- Morning stiffness related to RA often improves after performing stretching exercises, taking a warm shower, and/or using warm-up exercises. Performing flexibility exercises before sleeping can reduce morning stiffness ([picture 1](#) and [picture 2](#) and [picture 3](#) and [picture 4](#)).
- Avoid extreme neck movements and do not put pressure on the back of the neck. Yoga positions such as the plough, headstands, and shoulder stands should not be performed. A safe stretch for the neck is shown here ([picture 1](#)).
- Avoid overstretching or applying too much force over malaligned joints, especially knees and fingers (most common for people with RA). Modify “all-fours” exercises (positioning on hands and knees) by using towel rolls or yoga blocks to avoid overstretching the wrists.
- Be sure to include hand and wrist exercises in your daily routine ([picture 5](#) and [picture 6](#)). After doing dishes or after showering is a good time to do these exercises because hands are warmer and more flexible.
- Take part in low-impact aerobics to increase your walking endurance and ability to participate in daily activities, to decrease pain, and to help lessen fatigue and depression.
- Include hand exercises that strengthen all the muscle groups of the hand to increase grip strength, decrease hand pain, and are safe for people with RA.

Resistance exercise in general, if done carefully, helps you to function better.

Ankylosing spondylitis — AS is a chronic, inflammatory disease that primarily affects the back, neck, and sometimes hips and shoulders. The most common symptoms of AS are pain and stiffness of the low back and hips. Pain, stiffness, and limited mobility in other joints also occur in some patients. (See "[Patient education: Axial spondyloarthritis, including ankylosing spondylitis \(Beyond the Basics\)](#)".)

- Flexibility exercises for the neck, back, shoulders, and hips are especially important to maintain range of motion ([picture 1](#) and [picture 2](#) and [picture 3](#) and [picture 4](#)).

- Be sure to include breathing exercises in your exercise program; this helps to improve mobility and chest expansion.
 - Take a deep breath, allowing the chest to expand as much as possible
 - Hold the breath for a count of three
 - Exhale slowly through the mouth; rest for a count of three
- Muscle strengthening for the extensor muscles of the back and hips is needed to maintain erect posture ([picture 7](#) and [picture 8](#)).
- Pay attention to keeping the neck aligned with the trunk to minimize pain during activity.
- Swimming is an excellent form of exercise if you are feeling stiff. A snorkel and mask can allow you to swim without turning your head to breathe.
- Ongoing regular exercise is required to maintain the gains that you make.

Systemic lupus erythematosus — Systemic lupus erythematosus (SLE) is an autoimmune chronic inflammatory disease that affects various organs of the body. Joint symptoms occur in almost all patients and are often the earliest sign of SLE. The arthritis tends to occur in different parts of the body and does not usually affect both sides of the body the same way. Only a few joints are affected at any time. (See "[Patient education: Systemic lupus erythematosus \(Beyond the Basics\)](#)".)

- Fatigue, shortness of breath, and pain with a deep breath (pleurisy) are common in people with SLE.
- People with SLE who exercise regularly actually experience less fatigue.
- Pace yourself and break up exercise sessions into short sessions.
- Begin with breathing exercises and pay attention to breathing during exercise.
 - Take a deep breath, allowing the chest to expand as much as possible
 - Hold the breath for a count of three
 - Exhale slowly through the mouth; rest for a count of three
- Protect the joints during exercise. (See '[Protect the joints](#)' above.)
- If you start to have pain in your hip or groin, check with your clinician. These can be signs that the head (top) of the femur is not receiving adequate blood flow, which can quickly destroy the joint and can potentially require joint replacement surgery.

- Performing stretching or flexibility exercises at night may help to reduce morning stiffness ([picture 1](#) and [picture 2](#) and [picture 3](#) and [picture 4](#)).

Osteoarthritis — Osteoarthritis (OA) occurs as a result of a gradual loss of cartilage from the joints. OA can affect almost any joint, although it is most commonly seen in the hands, knees, hips, and spine. Common symptoms include pain, stiffness, some loss of joint motion, and changes in the shape of affected joints. (See "[Patient education: Osteoarthritis symptoms and diagnosis \(Beyond the Basics\)](#)".)

- Cartilage, which is worn down with OA, needs motion to help the joints stay healthy. People with OA generally benefit from a general exercise program that promotes healthy cartilage.
- Painful joints should be moved through a full range of motion every day to maintain flexibility and to slow deterioration of cartilage. For example, if the knees are affected, bend and extend the knees as far as comfortably possible several times per day.
- If you have knee OA, knee-strengthening exercises can reduce pain and make it easier to walk, get up and down from a chair, and climb stairs ([picture 8](#) and [picture 9](#)). Be sure to keep the joints in line by avoiding twisting motions or moving at an angle. You can do strengthening exercises even if your OA is severe; they can help you to function better with less pain and with an improved quality of life. Some people with knee OA find that doing Tai chi helps.
- Exercise helps decrease pain and prevent disability in people with OA.
- Aerobic exercise also helps to prevent depression in people with OA.
- Hip-strengthening exercises are especially helpful for reducing pain and improving function in knee OA, although they are unlikely to slow the progression of the arthritis.
- Low-impact activities (biking, swimming, tai chi) are recommended when knees, hips, and spine are affected.
- Knee braces or other supports (eg, a Neoprene sleeve) may be helpful if there is pain while walking.
- Higher activity levels promote better function, and people with OA benefit from being as active as they are able.

However, some knee braces are of little value for people who have active arthritis, significant joint instability, malaligned knees (bow-legged), or knees that “give out” as a result of arthritis. With a clinician's referral, an orthotist can provide an appropriate brace for these conditions and can provide instructions for wearing the brace correctly.

Fibromyalgia — The most common signs and symptoms of fibromyalgia are fatigue; tender points around the shoulders, back, hips, and knees; and generalized aching and stiffness. Joints do not become swollen as a result of fibromyalgia alone. (See "[Patient education: Fibromyalgia \(Beyond the Basics\)](#)".)

- Exercise, especially endurance exercises and gentle strengthening, is key to managing this condition. In addition to low-impact aerobic exercises such as fast walking or biking, other options include water therapy, tai chi, chair yoga, or gentle yoga.
- Avoid very prolonged or vigorous exercise, as this may worsen symptoms.
- When supervised by professionals, people with fibromyalgia benefit from moderate resistance training. Resistance exercises help to reduce the number of tender points.
- Being physically fit seems to help lower pain levels, and helps people with fibromyalgia feel more confident that they can do things.

WHERE TO GET MORE INFORMATION

Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our web site (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Arthritis and exercise \(The Basics\)](#)

[Patient education: Osteoarthritis \(The Basics\)](#)

[Patient education: Exercise \(The Basics\)](#)

[Patient education: Psoriatic arthritis in adults \(The Basics\)](#)

[Patient education: Psoriatic arthritis in children \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: Exercise \(Beyond the Basics\)](#)

[Patient education: Psoriatic arthritis \(Beyond the Basics\)](#)

[Patient education: Rheumatoid arthritis symptoms and diagnosis \(Beyond the Basics\)](#)

[Patient education: Axial spondyloarthritis, including ankylosing spondylitis \(Beyond the Basics\)](#)

[Patient education: Systemic lupus erythematosus \(Beyond the Basics\)](#)

[Patient education: Osteoarthritis symptoms and diagnosis \(Beyond the Basics\)](#)

[Patient education: Fibromyalgia \(Beyond the Basics\)](#)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Nonpharmacologic therapies and preventive measures for patients with rheumatoid arthritis](#)

[Overview of joint protection](#)

[The benefits and risks of aerobic exercise](#)

[Overview of the management and prognosis of systemic lupus erythematosus in adults](#)

[Treatment of axial spondyloarthritis \(ankylosing spondylitis and nonradiographic axial spondyloarthritis\) in adults](#)

The following organizations also provide reliable health information.

- National Library of Medicine
(www.nlm.nih.gov/medlineplus/healthtopics.html)
- National Institute of Arthritis and Musculoskeletal and Skin Disease
(www.niams.nih.gov)
- American College of Rheumatology
(www.rheumatology.org)
- Arthritis Foundation
(www.arthritis.org)
- Spondylitis Association
Phone: 1-800-777-8189
(www.spondylitis.org)
- CDC
(www.cdc.gov/arthritis/)

- Lupus Foundation of America
(www.lupus.org)

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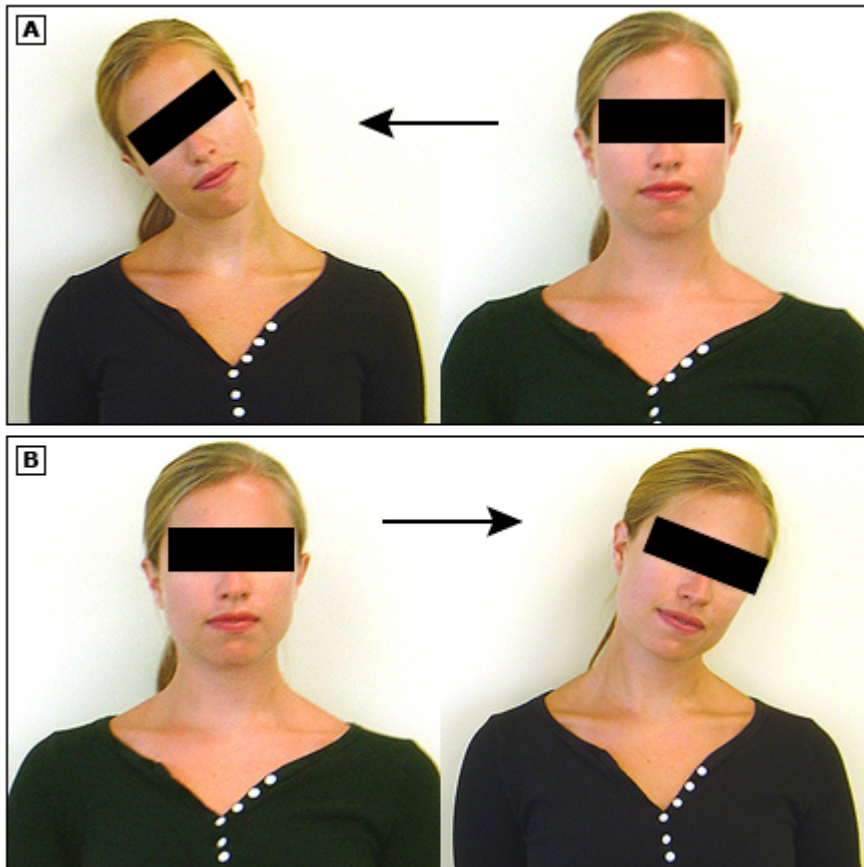
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Topic 506 Version 22.0

GRAPHICS

Lateral neck flexion



Sit or stand. Look straight ahead. Slowly tilt the head toward the right shoulder until you feel a stretch along the left side of the neck. Hold for 5 seconds. Straighten the neck then tilt the head towards the left shoulder. Hold for a count of 5. Repeat this sequence 10 times.

Graphic 79565 Version 4.0

Knee chest stretch



Lie on the back on a bed or on a towel on the floor. Bring knees up to chest. Place the hands behind the knees and pull toward the chest until you feel a stretch in the lower back and buttocks. Hold for 5 seconds. Rest. Repeat 10 times.

Graphic 64407 Version 4.0

Hamstring stretch



The hamstrings are the muscles in the back of the thigh, just above the back of the knee. To stretch them, you will need a stable stool that does not roll (or a stair) that is about knee height. Place hands on hips. Place the right heel on top of the stool, keeping the leg straight. Bend the left leg and slowly lean forward until you feel a stretch in the back of the right leg. Hold for 10 seconds. Rest. Repeat 10 times, then switch legs and repeat 10 times with the left leg on the stool or stair.

Graphic 57600 Version 4.0

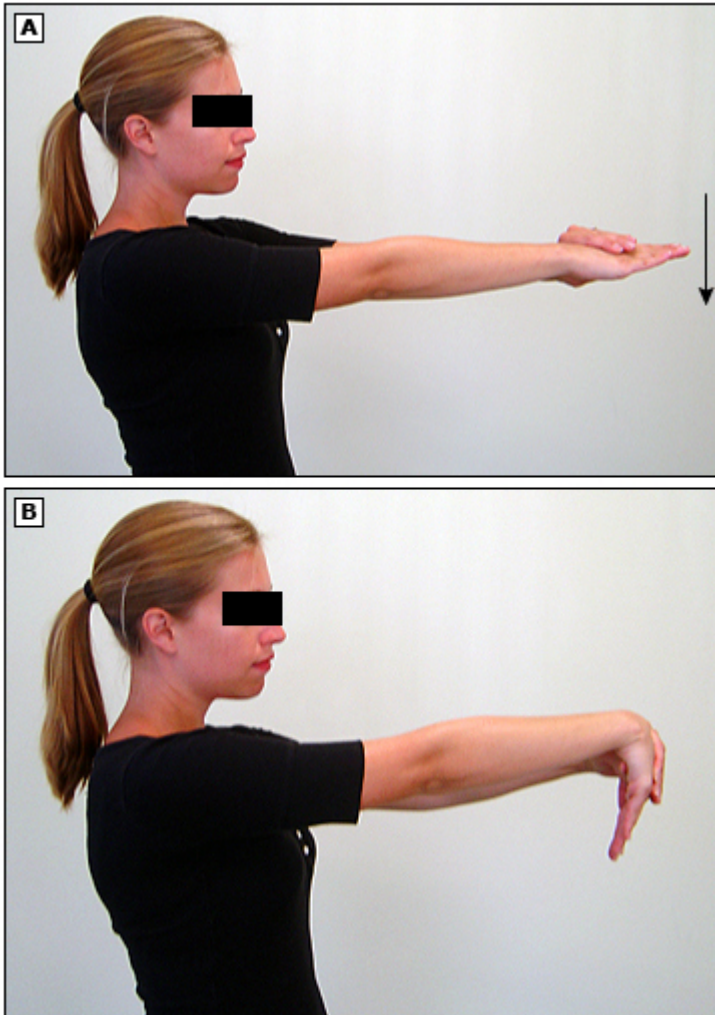
Gastrocnemius stretch



The gastrocnemius muscles are the two muscles in the upper calf, just below the back of the knee. To stretch them, stand 18 to 24 inches away from a wall (facing the wall). Place hands on wall at head level. Bend left knee and move right foot about 12 inches backwards. Keep right leg straight and keep heel on the floor. Lean into the wall until you feel a stretch in the right calf (this should not hurt); do not bounce. Hold for a count of 10. Rest. Repeat 10 times with each leg.

Graphic 52289 Version 4.0

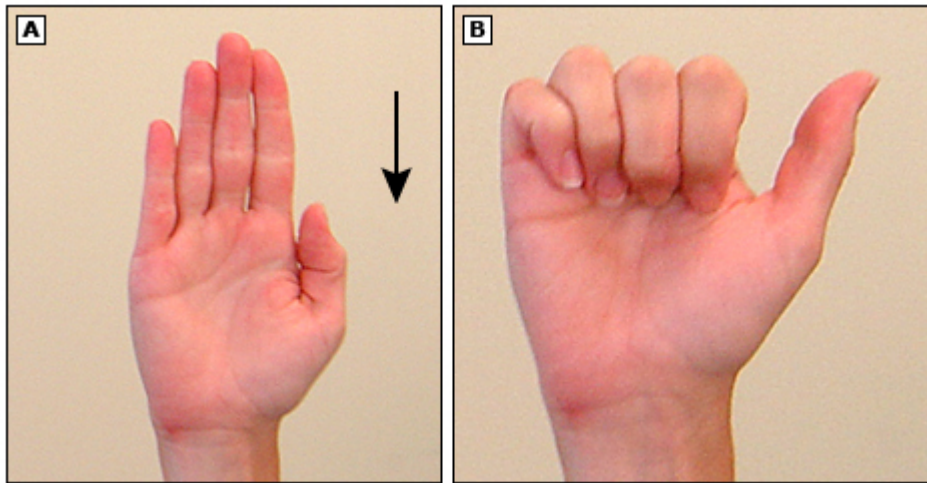
Wrist extensor stretch



Hold left arm straight out in front of the body, with the palm facing down. Using the right hand, grasp the left hand and gently bend hand downward until you feel a stretch in the left forearm. Hold for 10 seconds. Relax. Repeat 10 times, then switch hands and repeat 10 times with the right hand.

Graphic 81293 Version 4.0

Finger flexion/extension



Hold both hands with fingers pointing toward ceiling. Roll tips of all fingers down slowly to make a fist. Hold for 5 seconds. Relax fingers. Repeat 10 times.

Graphic 53043 Version 3.0

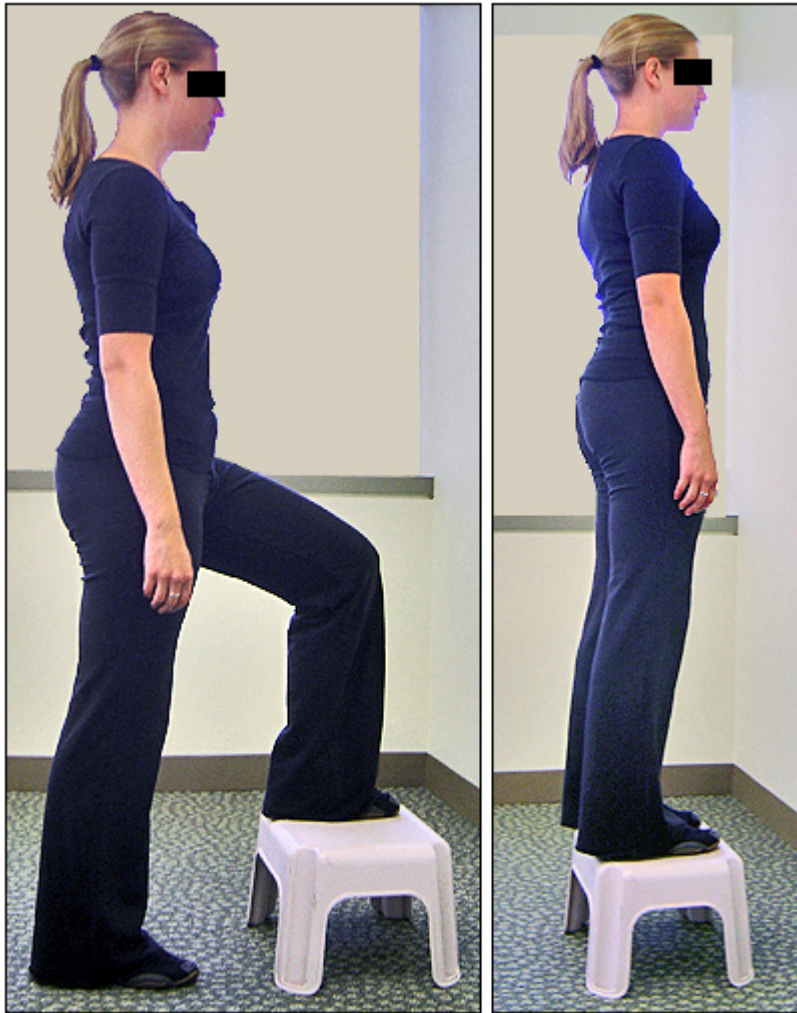
Trunk lift



Lie face down on a towel or blanket on the floor. Extend hands in front of the body. Lift the arms and upper body away from the floor. Hips should stay in contact with the floor. Hold for 3 to 5 seconds. Rest. Repeat 10 times.

Graphic 58290 Version 3.0

Forward step up



Place left foot onto a step, then step up with right foot. Move left foot back down to floor then step down with right. Repeat this sequence 10 times then change order of feet (step first with the left, followed by the right); this is one set. Perform three sets.

Graphic 69481 Version 4.0

Quarter squat



Stand 12 to 18 inches away from a wall (facing away from the wall). Place feet shoulder-width apart. Lean back against the wall and slide the back down the wall while bending the knees. Do not bend the knees more than 30 to 45° (this should not hurt the knees). Hold for a count of 5. Stand up. Repeat 10 times.

Graphic 64474 Version 3.0

Contributor Disclosures

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