



Pulmonary Rehabilitation Program



THE OHIO STATE UNIVERSITY

WEXNER MEDICAL CENTER



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Talk to your doctor or health care team if you have any questions about your care.

For more health information, go to wexnermedical.osu.edu/patiented or contact the Library for Health Information at 614-293-3707 or health-info@osu.edu.

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Welcome to Pulmonary Rehab

Pulmonary rehabilitation can help improve your well-being as a patient with lung disease. It can also benefit people who need lung surgery, both before and after surgery. Pulmonary rehab is tailored to your needs and goals and includes:

- Education on your lung disease and how to manage it
- Medicine use
- Breathing retraining
- Saving energy techniques
- Benefits of exercise
- Nutrition counseling
- Coping skill techniques
- Group support, one on one counseling and support from a team of health care providers

Classes are offered at:

Martha Morehouse Outpatient Care, Pavilion, Center for Wellness and Prevention

2050 Kenny Road, Suite 1008
Columbus, OH 43221

Phone: 614-293-2820

Fax: 614-293-2821

A maintenance program is available.

Classes are Mondays, Wednesdays and Fridays:

My start date: _____

My class time: _____

Outpatient Care East

543 Taylor Avenue, Room 3068
Columbus, OH 43203

Phone: 614-688-6307

Fax: 614-688-6305

Located north of The Ohio State University
Wexner Medical Center East Hospital,
close to I-670

Classes are Mondays, Tuesdays and
Thursdays

My start date: _____

My class time: _____



Program goals

1. Attend all group education classes and one on one counseling with staff to learn about your lung disease, symptom relief, safe medicine use and how to create a daily routine to improve your quality of life.
2. Improve your strength, endurance and shortness of breath symptoms through regular monitored exercise.
3. Work towards independence in the management of your lung disease to improve your efforts to stay out of the hospital.

Attendance

After orientation, you will **attend class 3 days a week for 8 weeks** (18 to 24 classes total, depending on holidays and missed classes). To get the most out of the program, we recommend that you attend all classes. If you need to miss a class for any reason, please let us know before the missed class occurs. If a week has passed and you have not called us about your absence, you will be discharged from the program.

Program rules

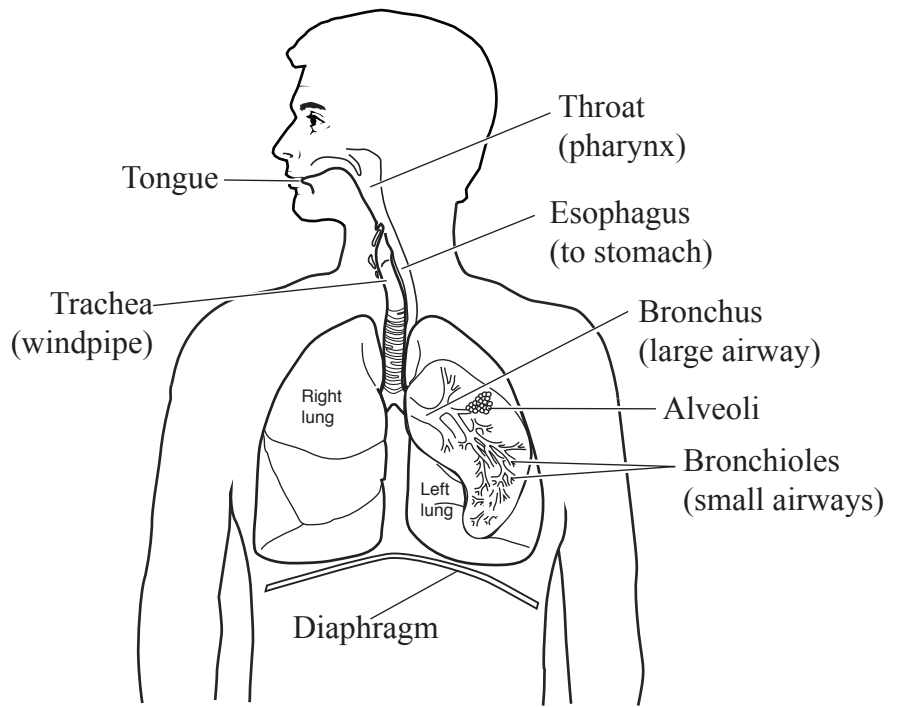
1. Please do not wear strong perfume, lotions, cologne or powders to class. They can affect the breathing of those sensitive to these smells.
2. Wear comfortable clothing and closed-toed shoes for exercise.
3. Family and friends are not allowed to use the exercise equipment, but may come to the group education classes. The Center for Wellness and Prevention offers a maintenance program. Ask your case manager for more information.
4. **If you are ill, do not come to class.** Call us to let us know that you will miss class. Call your doctor if your symptoms cannot be controlled with your prescribed medicines.
5. Let staff know if you have any changes in your medicines since your last class or if you have any joint or muscle discomfort with exercise.
6. **If you have diabetes**, share your most recent blood sugar reading with staff, bring your glucose meter to class and bring a snack, if needed, to keep your blood sugar in a normal range.

For a digital copy of this book, please visit go.osu.edu/pted3715.

How Your Lungs Work

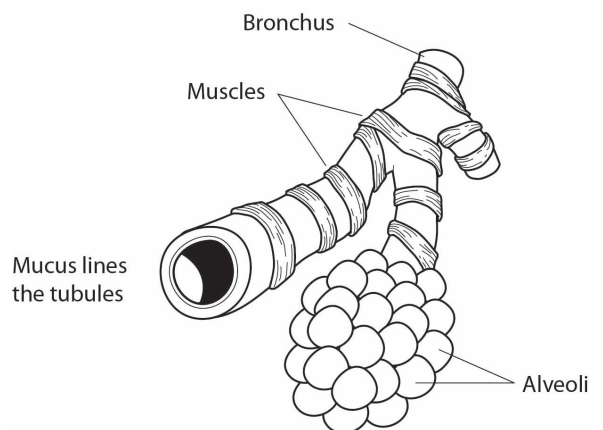
The **respiratory system** is made up of large airways (bronchi), small airways (bronchioles), lung tissue, blood vessels (capillaries) and muscles.

The **lungs** are organs that take in oxygen molecules from the air when you inhale and circulate them in your bloodstream to meet your body's energy needs. When you exhale, the lungs remove a waste gas, called carbon dioxide. The right lung has three lobes and the left lung has two lobes to make room for your heart. Together, they hold a total of 4 to 6 liters of air.



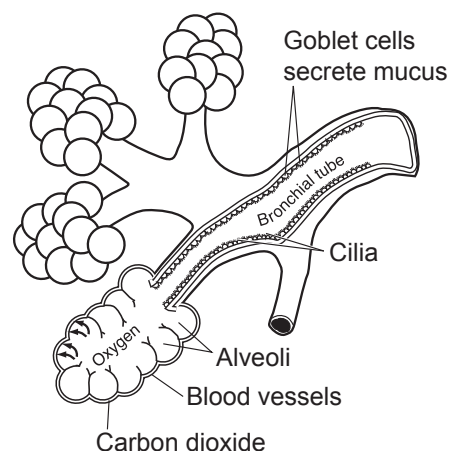
The air (oxygen) you breathe in travels down through your:

- Nose and mouth
- **Trachea** (windpipe)
- Right and left main **bronchus** (major airways)
- **Bronchi** (large airways)
- **Bronchioles** (small airways)
- **Alveoli**: these small “grape-like” sacs are where oxygen and carbon dioxide molecules are exchanged during breathing. Alveoli sacs are surrounded by **capillary blood vessels**. Both lungs are made up of millions of these thin tissue air sacs.



The **diaphragm** muscle helps the lungs expand in the chest cavity when you inhale (breathe in) by contracting and pulling down. When you exhale (breathe out), the muscle relaxes to allow air flow out of the lungs.

Mucus production by **goblet cells**, and small hairs, called **cilia**, line the respiratory system. They filter out debris and small particles, and decrease the risk of infection.

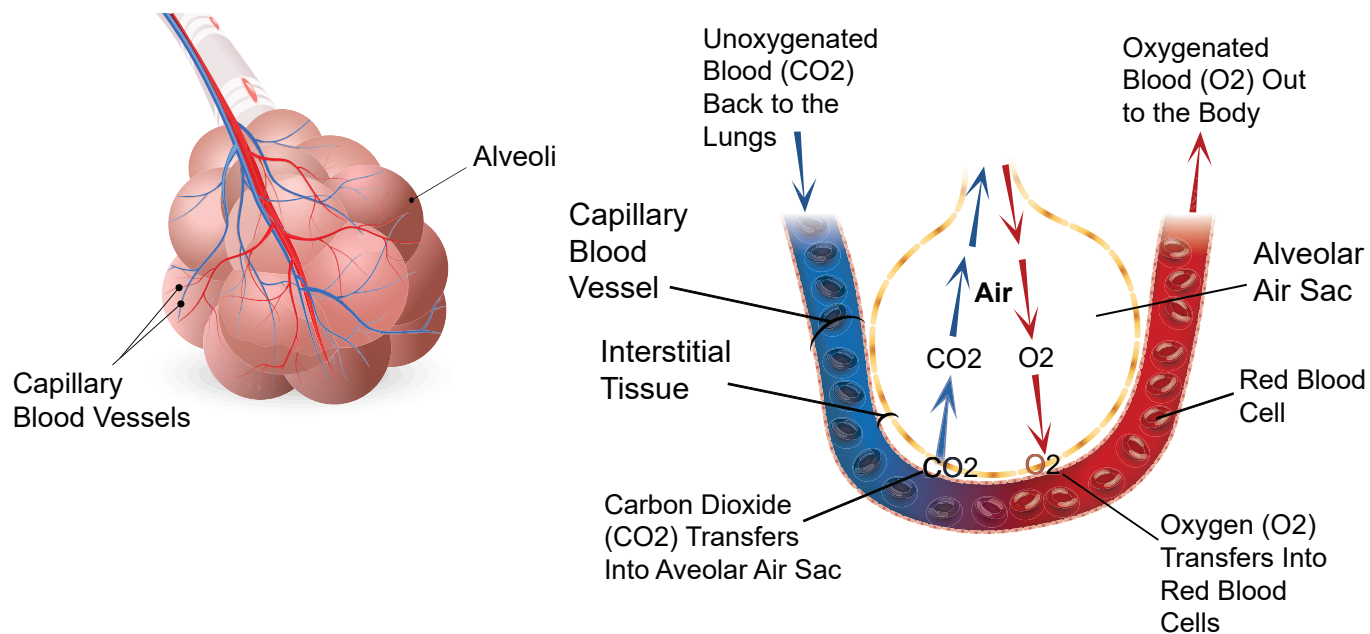


Obstructive lung disease occurs with airway inflammation, increased mucus production or air-trapping due to over-inflation of the air sacs. With air-trapping, the air sacs are not able to get air out when you exhale.

Oxygen and carbon dioxide exchange

When you inhale, oxygen (O₂) molecules transfer through thin lung tissue to enter capillary blood vessels. They attach to **hemoglobin**, a protein in red blood cells, and travel around the body in the bloodstream to be used as energy by your cells, muscles and organs.

Hemoglobin carry carbon dioxide (CO₂) molecules, a waste product, back to the lungs. There they transfer through thin lung tissue to be exhaled out of the lungs.



Restrictive lung disease occurs when oxygen and carbon dioxide is inhibited due to lung tissue scarring or thickening. Other restrictive lung diseases may be due to body shape and increased weight.

Types of Lung Disease

Lung disease prevents the lungs from working well. To find out what type of lung disease you have, your doctor may have done breathing tests, chest x-rays or a CT (computed tomography) scan. **Place a mark next to the lung disease(s) that you have.** If you are not sure, ask a staff member for help.

Obstructive lung disease

Obstructive lung disease **affects the airways and air sacs (alveoli)** of the lungs. The airways narrow or become blocked, **decreasing the amount of air exhaled out of the lungs.**

People with obstructive lung disease may feel like they are trying to breathe out through a straw. Over time, the lungs may get bigger because the air gets trapped.

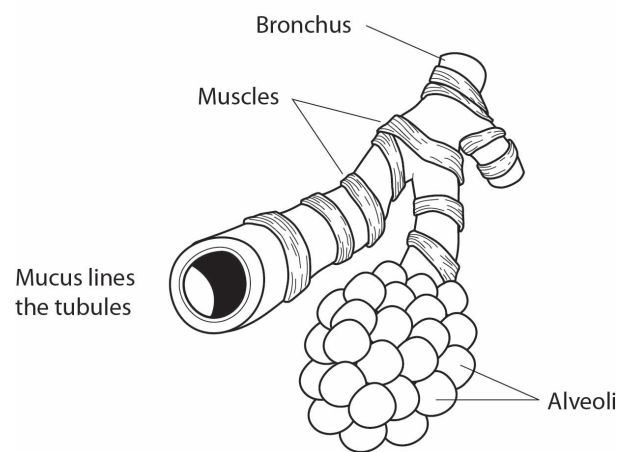
Symptoms include: shortness of breath, chest tightness, increased mucus, wheezing and coughing.

Treatments include: medicines, inhalers, oxygen use, breathing retraining, exercise, surgery or lung transplant.

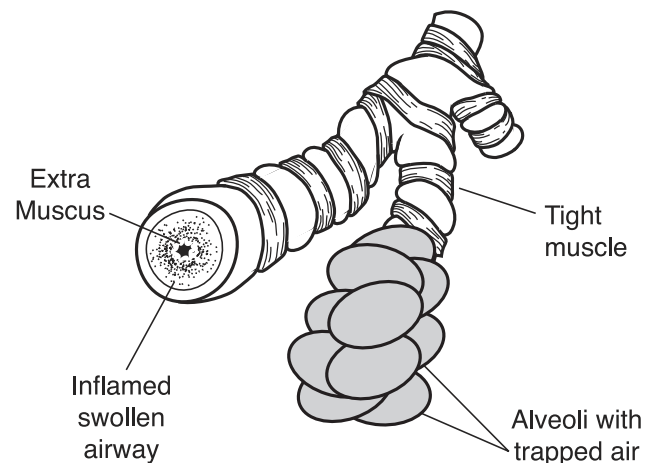
Obstructive lung diseases include:

- Alpha-1 antitrypsin deficiency** - an air sac disease passed down through families that may cause lung and liver disease. People with this disease can develop emphysema.
- Asthma** - lung irritants and allergens cause the airways to swell, narrow and tighten.
- Bronchiectasis** - damage, scarring and widening of the large airways caused by recurring swelling or infection of the airways. People with this disease are at risk for frequent lung infections.
- Bronchiolitis obliterans syndrome** - damaged and inflamed airways from chemical particles, lung infections or inflammation in lung transplant patients. This leads to scarring that blocks the airways in the lungs.

Healthy airways



Obstructive lung disease airways



- ❑ **Chronic obstructive pulmonary disease (COPD), such as emphysema and chronic bronchitis:**
 - ❑ **Chronic bronchitis** - frequent infections that cause inflamed airways, increased mucus, shortness of breath, wheezing and chest tightness. Treatment may include antibiotics, steroids and oxygen use. Chronic bronchitis means that you have had these episodes a few times a year for 2 years or more. The main cause of chronic bronchitis is smoking.
 - ❑ **Emphysema** - the air sacs lose their elasticity and become overinflated. This causes air trapping, shortness of breath and a decrease in gas exchange. The main cause of emphysema is smoking.
- ❑ **Cystic fibrosis** - a disease passed down through families that causes thick, sticky mucus to build up in the lungs, digestive tract and other areas of the body.

❑ Restrictive lung disease

Restrictive lung disease, also called **interstitial lung disease**, may affect lung tissue by causing scarring, inflammation (swelling) or thickening of lung tissue. This makes the lungs unable to expand fully. It becomes hard for the lungs to take in oxygen and release carbon monoxide. Oxygen and carbon dioxide molecules have a hard time passing through the lung tissue to enter or exit the blood stream. (See the illustrations at the bottom of page 7 to learn more about oxygen and carbon dioxide exchange.)

Other conditions, such as obesity and scoliosis or side curve to the spine, may also prevent the lungs from expanding fully and be considered a restrictive lung disease.

Symptoms of restrictive lung disease include: shortness of breath, fatigue especially with activity, chest tightening and increased mucus.

Treatments include: medicines to decrease swelling or the progression of the disease, breathing retraining, exercise, oxygen use, surgery or lung transplant.

Restrictive lung diseases include:

- ❑ **Autoimmune connective tissue disorders** may affect the connective tissue in the body and the lungs, causing inflammation, swelling, hardening and scarring.
 - ❑ **Rheumatoid arthritis** - a disorder that causes inflammation of the body's joints because of increased immune cell production. About 1 in 10 people with rheumatoid arthritis develop restrictive lung disease. Scarring of the lungs occurs from the body's over-active immune system attacking the lungs.
 - ❑ **Scleroderma** - immune cells produce more collagen, causing the body's skin to harden or scar. One type of scleroderma, called systemic sclerosis, can cause hardening or scarring in many parts of the body, including the lungs.
 - ❑ **Sjögren's syndrome** - autoimmune disease of unknown cause that causes dryness of the eyes, mouth and other body parts. Pulmonary symptoms act like interstitial lung disease, causing swelling and inflammation.
- ❑ **Bronchiolitis obliterans with organizing pneumonia (BOOP) / Cryptogenic organizing pneumonia (COP)** - a rare condition where the small airways (bronchioles) and air sacs (alveoli) become inflamed and blocked with connective tissue.

- ❑ **Hypersensitivity pneumonitis** - a disease that causes inflammation of the alveoli in the lungs due to an allergic reaction to dust, fungus, molds or chemicals. Exposure comes most often from the person's occupation or hobbies. The disease causes symptoms that are similar to the flu.
 - ❑ **Bird fancier's lung / pigeon breeder's disease** - from inhaling bird feathers or droppings.
 - ❑ **Farmer's lung** - from inhaling mold that grows on hay, straw or grain.
- ❑ **Pneumoconiosis** - a disease caused by inhaling workplace dust. The disease causes coughing and shortness of breath. It may lead to pulmonary fibrosis.
 - ❑ **Asbestosis** - from inhaling asbestos fibers.
 - ❑ **Black lung disease** - from inhaling coal dust (coal miners).
 - ❑ **Siderosis** - from inhaling iron from mines or welding fumes.
 - ❑ **Silicosis** - from inhaling silica dust.
- ❑ **Pulmonary fibrosis** - lung tissue becomes scarred overtime, making it hard to breathe. Scarring may occur from the environment, chemotherapy, radiation, certain medicines, autoimmune disease or unknown cause.
- ❑ **Sarcoidosis** - disease of unknown cause where abnormal growths, called granulomas, grow in the tissue of the lungs, skin or lymph nodes, causing inflammation. The disease may progress into pulmonary fibrosis or bronchiectasis.

❑ Other lung conditions

- ❑ **Recovery from lung transplant** - after a single or double lung transplant, pulmonary rehab is done to improve your physical strength and endurance. Preventing Infection and watching for symptoms of rejection are key during your recovery.
- ❑ **Pulmonary hypertension** - the blood vessels (pulmonary arteries) that carry blood from the heart to the lungs become hard and narrow. This causes pressure within the heart, leading to a decrease in gas exchange in the lungs. The heart has to work harder and over time weakens. Chest pain, shortness of breath, abnormal heart rhythm and heart failure can occur. Treatment may include medicines to open the pulmonary arteries and oxygen use. High pressure in these arteries is not shown with an arm blood pressure reading. It is diagnosed based on medical history, physical exam and results from tests and procedures.
- ❑ **Diaphragm disorders** - half or all of the diaphragm muscle does not work well due to nerve damage or unknown causes. You may hear this called diaphragm paralysis or eventration (thinning of the diaphragm muscle). Treatment may include chest wall muscle strengthening with breathing exercises (inspiratory muscle training), breathing retraining, surgery or phrenic nerve pacing where electrical impulses are applied to the diaphragm.
- ❑ **Chest wall restriction** - conditions, such as morbid obesity and scoliosis or side curve to the spine may prevent the lungs from fully expanding, causing shortness of breath.

About Lung Medicines

Questions to ask your doctor

When you are prescribed a new medicine, it is always good to ask your doctor questions about it before you leave the clinic office.

- What is the new medicine for and what results can I expect?
- How long do I need to be on this medicine? Some medicines may only be prescribed for a few days or weeks.
- How do I use this medicine? There may be new inhalers and devices to learn how to use.
- Does this medicine interact with my other medicines or are there any side effects I should watch for?

Things to know about your medicines

- Learn the generic and brand names of your medicines and what they are used for.
- Tell all of your doctors what prescription medicines, over the counter medicines, supplements, vitamins and herbal products you are taking. Keep a current medicine list with you.
- Do not stop taking a medicine without first talking to your doctor, even if you feel better. This includes sample medicines given to you as they need to be taken for the full time to show if they are working.
- Do not share or give your medicine to family or friends.

- Store your medicines away from heat, direct sunlight and moisture. The bathroom is the worst place to store your medicines.
- Keep all medicines out of the reach of children.
- If you have heartburn (GERD) and are not currently taking medicine for it, talk to your doctor. Gastric juices can travel up the esophagus and down into the windpipe (trachea), causing erosion of lung tissue. This can lead to interstitial lung disease.
- If you have any questions about your medicines, call your doctor's office or talk to your pharmacist.

Types of lung medicine

- **Inhalers** - Inhalers allow medicine to reach deep into the lungs. There are different types of inhalers, including dry powder inhalers (DPI), metered dose inhalers (MDI) and soft mist inhalers (SMI).
- **Nebulizer treatments** - A nebulizer changes liquid medicine into a fine mist to let you breathe it into your airways. The machine is called a compressor and may be electric or battery powered.
- **Pills and liquid medicines** - Lung medicines taken by mouth include antibiotics, steroids, cough suppressants and allergy medicines.

Obstructive Lung Disease Medicines

There are many medicines used to treat obstructive lung diseases or COPD like asthma, chronic bronchitis, bronchiectasis and emphysema. Some medicines are **short acting**, taken to prevent or quickly ease bronchospasms of the airways. Others are **long acting**, taken on a set schedule to prevent bronchospasms.

Place a mark next to the medicines you are taking. If you need help, ask a member of your care team. Please ask if you would like more written information about your medicines or if you have questions about any medicine you are taking or its side effects.

Short acting medicines

- These medicines come as inhalers and may be called “rescue” inhalers. Use these inhalers when you are having increased shortness of breath for no reason or chest tightness due to shortness of breath. The medicine acts quickly to decrease swelling and open airways caused by bronchospasms. Relief comes in 5 to 10 minutes.
- Some of these medicines come as nebulizer treatments where you inhale the medicine as a fine mist.
- **Keep your short acting medicine with you at all times in case of an emergency.**

Dosage

- Read the dose instructions that come with your medicine. If they call for 2 puffs, inhale 1 puff at a time, holding the medicine in your lungs for 5 to 10 seconds before exhaling. Wait 1 minute, and then inhale the second puff.
- If you have the medicine in the form of an inhaler AND a nebulizer treatment, use one or the other during the 4 to 6 hour time frame. **Never** use both forms together!

Timing

- Use this medicine every 4 to 6 hours as needed.
- Use your inhaler or nebulizer treatment to open your airways:
 - When you have shortness of breath
 - Before exercise or increased activity
- Remember: use it, don’t abuse it! If you just walked far or up a flight of steps and have shortness of breath, don’t go right to the rescue inhaler. Do pursed lip breathing and think about how long it has been since your last dose of short acting medicine.

Medicines

- **Short Acting Beta-Agonists (SABA):**
 - albuterol (Pro-Air, Proventil, Ventolin) - inhaler or nebulizer treatment
 - levalbuterol (Xopenex) - inhaler or nebulizer treatment
- **Short Acting Antimuscarinic (SAMA):**
 - ipratropium (Atrovent) - inhaler or nebulizer treatment
- **Short Acting Beta-agonists and Short Acting Antimuscarinic (SABA + SAMA):**
 - ipratropium-albuterol (Combivent) - inhaler
 - ipratropium-albuterol (Duoneb) - nebulizer treatment

Long acting medicines

These medicines are used to keep your airways open and to prevent shortness of breath and inflammation. They do not stop an active bronchospasm.

Dosage

- Read the dosing instructions that come with your medicine. If it calls for 2 puffs, inhale 1 puff at a time, holding the medicine in your lungs for 5 to 10 seconds before exhaling and repeating the dose.

Timing

- Use this medicine as directed, often 1 or 2 times a day.

Medicines

- **Long Acting Beta-Agonists (LABA):** These medicines relax and open the small airways in the lungs.
 - salmeterol (Serevent) - inhaler to be used 2 times a day
 - indacaterol (Arcapta Neohaler) - inhaler to be used 1 time a day
 - arformoterol (Brovana) - nebulizer treatment to be used 2 times a day
 - formoterol (Perforomist) - nebulizer treatment to be used 2 times a day
 - olodaterol (Striverdi Respimat) - inhaler to be used 1 time a day
- **Long Acting Antimuscarinics (LAMA):** These medicines relax and open the large airways in the lungs.
 - umeclidinium (Incruse Ellipta) - inhaler to be used 1 time a day
 - tiotropium (Spiriva) - inhaler to be used 1 time a day
 - aclidinium bromide (Tudorza Pressair) - inhaler to be used 2 times a day
 - glycopyrrolate (Seebri Neohaler) - inhaler to be used 2 times a day

- **Combination Long Acting Beta-Agonist and Long Acting Antimuscarinics (LABA +LAMA):** These medicines relax and open the large and small airways in the lungs.
 - vilanterol-umeclidinium (Anoro Ellipta) - inhaler to be used 1 time a day
 - olodaterol-tiotropium (Stiolto Respimat) - inhaler to be used 1 time a day
 - formoterol-glycopyrrolate (Bevespi Aerosphere) - inhaler to be used 2 times a day
 - indacaterol-glycopyrrolate (Utibron Neohaler) - inhaler to be used 2 times a day
- **Inhaled Corticosteroids (ICS):** These medicines contain a steroid to decrease inflammation in the lungs. Brush your teeth and tongue or rinse your mouth after use to prevent thrush, a fungal infection, which causes white sores in the mouth and throat.
 - mometasone (Asmanex) - inhaler to be used 1 to 2 times a day
 - fluticasone furoate (Arnuity Ellipta) - inhaler to be used 1 time a day
 - fluticasone (Flovent) - inhaler to be used 2 times a day
 - budesonide (Pulmicort) - inhaler to be used 2 times a day
 - beclomethasone (Qvar) - inhaler to be used 2 times a day
- **Combination Long Acting Beta-Agonist and Long Acting Inhaled Corticosteroid (LABA + ICS):** These medicines decrease inflammation in the lungs and also contain a steroid. Brush your teeth and tongue or rinse your mouth after use to prevent thrush, a fungal infection, which causes white sores in the mouth and throat.
 - formoterol-budesonide (Symbicort) to be used 2 times a day with an inhaler
 - salmeterol-fluticasone (Advair) to be used 2 times a day with an inhaler
 - formoterol-mometasone (Dulera) to be used 2 times a day with an inhaler
 - vilanterol-fluticasone (Breo Ellipta) to be used 1 time a day with an inhaler
- **Combination Inhaled Corticosteroid, Long Acting Antimuscarinic and Long Acting Beta-Agonist (ICS + LAMA + LABA):** These medicines contain a steroid to decrease inflammation in the lungs. Brush your teeth and tongue or rinse your mouth after use to prevent thrush, a fungal infection, which causes white sores in the mouth and throat. These medicines also relax and open the large and small airways in the lungs.
 - Fluticasone-umeclidinium-vilanterol (Trelegy Ellipta) - inhaler to be used 1 time a day
- **Other Medicines:**
 - roflumilast (Daliresp) - this pill is to be taken by mouth 1 time a day for severe COPD or asthma.
 - prednisone - this pill or liquid medicine is a corticosteroid that decreases inflammation in the lung tissue. It is different from inhaler medicines that decrease inflammation. It may be used short term or long term at a low dose to ease shortness of breath. Take the medicine as directed. **Do NOT stop taking this medicine suddenly.** Your doctor will instruct you how to slowly decrease your dose before stopping it completely.
 - guaifenesin (Mucinex, Vicks 44E, Robitussin and others) - this pill or liquid medicine is a cough suppressant or expectorant that thins mucus, so you can clear it from your lungs. Take the medicine as directed or follow the instructions on the medicine label for dosage.

Restrictive Lung Disease Medicines

Medicines used to treat restrictive lung diseases ease shortness of breath and other symptoms. Inhalers may not give you relief from shortness of breath as the inflammation and thickening of your lung tissue is different from the inflammation that occurs with obstructive lung disease.

Place a mark next to the medicines you are taking. If you need help, ask a member of your care team. Please ask if you would like more written information about your medicines or if you have questions about any medicine you are taking or its side effects.

Restrictive lung disease medicines

Based on your type of restrictive lung disease, these medicines may be ordered. Talk with your doctor about your symptoms of lung disease and if you find relief from your medicines. Take your medicines as directed.

- prednisone - this pill or liquid medicine is a corticosteroid that decreases inflammation in the lung tissue. It may be used short term or long term at a low dose to ease shortness of breath. **Do NOT stop taking this medicine suddenly.** Your doctor will instruct you how to slowly decrease your dose before stopping it completely.
- methotrexate - this pill decreases inflammation.
- immunosuppressive drugs - these medicines suppress the immune system to decrease inflammation.
 - mycophenolate (Cellcept) - pills or liquid
 - cyclophosphamide (Cytoxan) - pills
 - azathioprine (Imuran) - pills

Pulmonary fibrosis medicines

Medicines for pulmonary fibrosis slow the progression of fibroblast cell production in the lung tissue that cause scarring (fibrosis). Take as directed.

- pirfenidone (Esbriet) - pills are taken 3 times a day. Your doctor will work with you to increase your dose slowly to an amount that treats your symptoms while limiting side effects.
- nintedanib (Ofev) - pills are taken 2 times a day.
- prednisone - this pill or liquid medicine is a corticosteroid that decreases inflammation in the lung tissue. It may be used short term or long term at a low dose to ease shortness of breath. Take the medicine as directed. **Do NOT stop taking this medicine suddenly.** Your doctor will instruct you how to slowly decrease your dose before stopping it completely.

Medicines for Other Lung Conditions

Your doctor will work with you to manage your condition. Your treatment may include medicines to ease your symptoms. Please ask if you would like more written information about your medicines or if you have questions about any medicine you are taking or its side effects.

Place a mark next to the medicines you are taking. If you need help, ask a member of your care team.

Lung transplant medicines

Medicines for lung transplant protect the new lungs from rejection and prevent infection. Take your lung transplant medicines each day as ordered, have your labs drawn as ordered and keep your follow up appointments to prevent rejection.

- Immunosuppressive drugs - these medicines suppress the immune system to prevent rejection of the new lungs. Examples include:
 - tacrolimus - pills
 - azathioprine (Azasan, Imuran) - pills
 - cyclosporine - pills or liquid
- Anti-infection drugs - Because you take medicines to suppress the immune system, you are at increased risk for infections. These medicines treat viral, bacterial and fungal infections. Examples include:
 - sulfamethoxazole/trimethoprim (Bactrim) - pills or liquid
 - azithromycin (Zithromax) - pills or liquid
 - valacyclovir (Valtrex) - pills
 - voriconazole (Vfend) - pills or liquid
 - amoxicillin - pills or liquid

- prednisone - this pill or liquid medicine is a corticosteroid that decreases inflammation in the lung tissue. It may be used short term or long term at a low dose. **Do NOT stop taking this medicine suddenly.** Your doctor will instruct you how to slowly decrease your dose before stopping it completely.
- Other medicines - due to side effects of transplant medicines, you may be started on other medicines to help manage high blood pressure, upset stomach, heartburn (GERD), mineral deficiency like calcium and magnesium, and other problems. Talk to your doctor or any member of your care team if you notice side effects from the medicines you take.

Pulmonary hypertension medicines

Medicines for pulmonary hypertension open up (dilate) the pulmonary arteries that carry blood from your heart to your lungs to pick up oxygen.

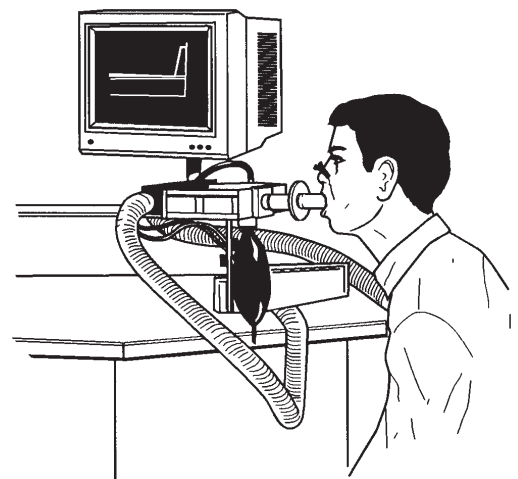
- ambrisentan (Letairis) - pills
- bosentan (Tracleer) - pills
- iloprost (Ventavis) - nebulizer treatment
- sildenafil (Revatio) - pills
- tadalafil (Adcirca, Cialis) - pills
- treprostinil (Tyvaso) - nebulizer treatment
- macitentan (Opsumit) - pills
- treprostinil (Remodulin) - continuous subcutaneous infusion
- riociguat (Adempas) - pill
- tresprostinil (Orenitram) - pill

Pulmonary Tests

Your doctor or pulmonologist will order tests to check your lung disease. These tests can help your doctor understand what type of lung disease you have, how your lung disease is progressing and how well treatments, such as medicine and oxygen, are improving your breathing. Follow any pre-test instructions given to you and give your best effort during tests, so your doctor can use your test results to help you manage your lung disease and breathing.

Pulmonary function tests

- **Spirometry** - This test measures how well and how fast air moves in and out of your lungs. During the test, you sit with a clip on your nose and breathe into a mouthpiece. You take deep breaths and then as fast as you can, blow out all of the air. You will repeat the test several times. You may be given a short acting inhaler to use during the test to see if the medicine opens your airways and air sacs to make breathing easier.



- **Forced expiratory volume in the 1st second of expiration (FEV1)** - This measurement on your pulmonary function test report shows how much air is breathed out in the first second of your total breath. It is expressed as a percentage. A decrease in the number may show COPD, emphysema, asthma, bronchitis or other obstructive lung disease. Your FEV1 number is often the number your doctor tells you about your lung function. Ideal lung function is greater than 80%.
- **Lung volume measurement** - This test measures the total volume of air your lungs can hold after taking a breath in. It then measures the volume of air left over after you breathe out. The residual or left over air shows air trapping. Air trapping can cause decreased oxygen levels and shortness of breath. During the test, you sit in a sealed, clear box that looks like a telephone booth. You breathe in and out into a mouthpiece. Changes in pressure inside the box are also measured.
 - Obstructive lung diseases, like emphysema, may show increased lung volumes.
 - Restrictive lung diseases, like pulmonary fibrosis, may show decreased lung volumes.

- **Diffusion capacity** - This test looks at how well oxygen and carbon dioxide molecules transfer through lung tissue. During the test, you take in a short breath of a harmless gas, called tracer gas. The difference in the amount of gas breathed in and gas breathed out shows how well the gas moves from your lungs and into your blood.
 - Some restrictive lung diseases show a decrease in this value because the scarred and thickened lung tissue inhibits gas exchange. The lack of oxygen in the blood stream leads to more shortness of breath.

Chest x-rays

This test creates pictures of the structures inside your chest, such as your heart, lungs and blood vessels. The test is done to find the cause of problems, like:

- Problems with the diaphragm muscle
- Scarring of lung tissue, called fibrosis
- Lung infections, like pneumonia
- Fluid around the lungs, called pleural effusion
- Fluid in the lungs, called pulmonary edema
- A collapsed lung
- A lung mass or abnormal spot in the lungs

CT (computed tomography) scan

A CT scan creates precise pictures of the structures of your body, such as your lungs. It shows more detail than a standard chest x-ray. The CT scanning machine takes many pictures up and down the body and processes these pictures, which can be viewed on a screen. Sometimes contrast dye is injected into a vein in your arm for the CT scan. This medicine highlights areas in your body to create clearer images.

This test helps your doctor diagnose your type of lung disease (obstructive or restrictive), check how your lung disease is progressing and check if you have any lung masses.

6-minute walk test

This is a timed walking test that measures your physical function. Your total distance in feet, oxygen level, heart rate, and perceive shortness of breath and exertion are measured. A total distance less than your predicted “normal” values may show problems with muscle conditioning or a chronic condition that limits your physical function.

You will have a 6-minute walk test at the start and at the end of your pulmonary rehab program to look for a change in your physical function and check your need for home oxygen. Our goal is to help you improve your distance by 10% or more.

Oxygen titration test

This test is like the 6-minute walk test, but it is not timed and your total distance is not measured. For this test, you walk for a short time and your oxygen level is measured using a pulse oximeter. If you oxygen drops below 88%, you may need home oxygen. This would be ordered by your doctor.

Arterial blood gases

An arterial blood gas (ABG) test measures the acidity (pH) and the levels of oxygen and carbon dioxide in the blood from an artery. This test is used to check how well your lungs are able to move oxygen into the blood and remove carbon dioxide from the blood.

As blood passes through your lungs, oxygen moves into the blood while carbon dioxide moves out of the blood into the lungs. An ABG test uses blood drawn from an artery, where the oxygen and carbon dioxide levels can be measured before they enter body tissues. An ABG measures:

- **Partial pressure of oxygen (PaO₂).** This measures the pressure of oxygen dissolved in the blood and how well oxygen is able to move from the airspace of the lungs into the blood.
- **Partial pressure of carbon dioxide (PaCO₂).** This measures the pressure of carbon dioxide dissolved in the blood and how well carbon dioxide is able to move out of the body.
- **pH.** The pH measures hydrogen ions (H⁺) in blood. The pH of blood is usually between 7.35 and 7.45. A pH of less than 7.0 is called acid and a pH greater than 7.0 is called basic (alkaline). So blood is slightly basic.
- **Bicarbonate (HCO₃).** Bicarbonate is a chemical (buffer) that keeps the pH of blood from becoming too acidic or too basic.
- **Oxygen content (O₂CT) and oxygen saturation (O₂Sat) values.** O₂ content measures the amount of oxygen in the blood. Oxygen saturation measures how much of the hemoglobin in the red blood cells is carrying oxygen (O₂).

Blood for an ABG test is taken from an artery. Most other blood tests are done on a sample of blood taken from a vein, after the blood has already passed through the body's tissues where the oxygen is used up and carbon dioxide is produced.

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Shortness of Breath

Shortness of breath, also called dyspnea, is difficult, labored or uncomfortable breathing. There are both conditions and environmental factors, which can affect your breathing. There are tips and treatments to help.

Causes

These **conditions** affect shortness of breath:

- Obstructive lung disease, also called airway or air sac disease
- Restrictive lung disease, also called interstitial lung disease
- Low oxygen level, also called hypoxia
- Lung infections
- Increased mucus
- Exacerbation or worsening of your lung disease
- Eating a large meal, which pushes up the diaphragm and lungs
- Muscle deconditioning due to lack of activity or exercise

These **environmental factors** affect shortness of breath:

- Pollution
- Dust
- Smoking
- High humidity
- Extreme hot or cold weather
- Aerosol sprays
- Fumes
- Perfumes
- Powders
- Deodorants
- Barometric weather changes

Suggestions to help

- Find a position that is comfortable for you.
 - Sit leaning forward with your arms and upper body supported on a table.
 - Stand upright and brace yourself against a wall while leaning forward a bit.
 - Lay on your back with your head propped up.
- Focus on your breathing pattern. For more information, read “Breathing Retraining” in this book.
- Do relaxation exercises, such as guided imagery and progressive muscle relaxation. See Coping with Lung Disease section for more information.
- You may use a fan to blow air on your face.
- Plan your activities.
 - Rest before, during and between activities as needed.
 - Do outside activities in the early morning or evening on hot, humid days.
- Cover mouth and nose with a cotton scarf in cold weather.
- Stay out of areas with high pollution. View air quality index (AQI) forecasts on television or the internet at www.epa.ohio.gov/dapc/airohio/forecast.
- Eat smaller, more frequent meals to prevent abdominal fullness.
- Take your medicines as ordered by your doctor:
 - Use your short acting inhaler or nebulizer treatment every 4 to 6 hours as needed to open your airways when you have shortness of breath and before exercise or increased activity.
 - Use oxygen as ordered by your doctor. If you have a pulse oximeter and your oxygen level is consistently less than 88% at rest or with activity, **call your doctor**.

Call your doctor if your shortness of breath worsens or is not helped with your medicines or home oxygen.

Environmental Tips

There are irritants in the environment that may make breathing more difficult. Some can be avoided and some cannot. Become aware of irritants and avoid or limit your exposure.

Smoking



Smoke from tobacco products irritates the lining in your lungs. Mucus is produced, which may plug your lungs. In time, this leads to infection and may cause permanent lung damage. Avoid secondhand smoke and if you smoke, stop. Emphysema and bronchitis are largely diseases of smokers. No matter how long you have smoked, coughing and sputum may decrease when you quit.

Pollution

Watch for **air quality alerts**. These alerts are issued when there is potential for high pollution levels. People with lung disease need to stay inside to limit exposure to unhealthy air. Smoke from tobacco products is another form of pollution. Ask your family and friends not to smoke around you.

Aerosol sprays

Aerosol sprays, such as room fresheners, deodorants and oven cleaners, pollute the air in your home. Breathing in these products is irritating to your lungs. These products linger in the air making them hard to avoid. Substitute aerosol spray in your home for products that can be poured or rubbed.

Fumes

Avoid fumes that may irritate your lungs. Ventilate your cooking stove by turning on the exhaust fan or opening a nearby window to draw the cooking fumes out of the house.

Humidity

If you live in a humid area and have mildew or mold in the house, you may want to dehumidify your home. Air conditioning will do this, or you can use a dehumidifier. If your house is too dry, it can dry out the mucus linings of your airways. Use a humidifier to add moisture to the air.

Dust

Avoid activities that raise dust, such as sweeping, dusting, driving on dirt roads and mowing grass. If you must get involved in a dusty job, wear a scarf or handkerchief over your nose and mouth or buy a surgical mask to wear. This helps to filter the air that you inhale. Also, regularly clean filters in air conditioners and furnaces.

Extremely cold weather



Cold air can irritate the bronchial tubes and cause coughing. When you go outdoors in very cold weather (less than 40 degrees Fahrenheit), breathe through a scarf or handkerchief held over your nose. This will help warm the air as it enters your lungs.

Breathing Retraining

Breathing retraining can help reduce feeling short of breath and tired, and help you use less energy in your daily tasks. **Practice this breathing for 10 to 15 minutes each day.** Rest as needed between breaths.

Pursed lip breathing

This type of breathing helps during exercise or any activity that may cause you to feel short of breath. It keeps your airways open longer as you exhale to release trapped air in your lungs. **Practice this when you are resting,** so you can use it when you feel short of breath.

Follow these steps:

1. Breathe in through your nose and feel your lungs fill with air.
2. Purse your lips together as if you were going to whistle or blow out a candle.
3. Breathe out slowly through your pursed lips. **It should take 2 to 3 times longer to breathe out than it take to breathe in.**
4. You may need to adjust your breathing rate and how much you purse your lips to help your comfort.

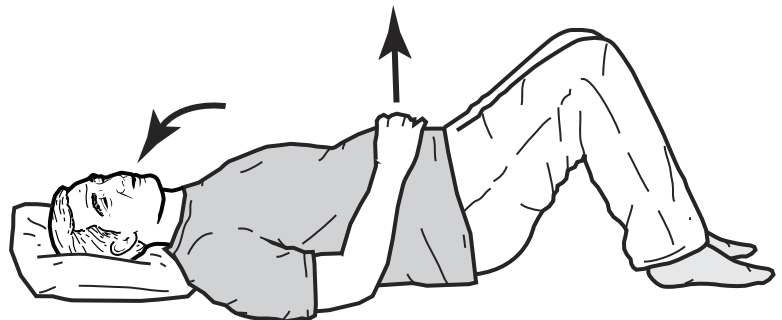


Diaphragmatic breathing

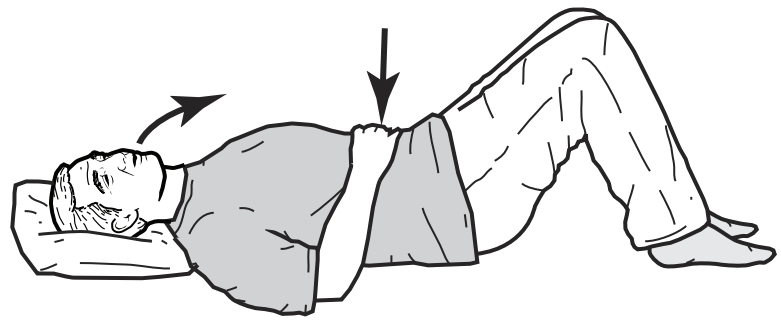
This type of breathing strengthens your diaphragm and stomach muscles to clear trapped air in your lungs.

Follow these steps:

1. Lie or sit down in a comfortable position, relaxing your neck and shoulder muscles.
2. **Place one hand on your chest and the other hand at the bottom of your ribs** just above your waistline. Use your hands to feel the movements as you breathe.
3. **Take a breath in through your nose and feel your hand on your stomach move outward. Do NOT** let your shoulders move up. **Do NOT** expand your chest. Think about expanding your lungs in all directions.



4. Breathe out slowly through your mouth with pursed lips as if you were going to whistle or blow out a candle. The hand on your stomach moves in as you breathe out. You may need to pull your stomach muscles in at first to help move your diaphragm up. Exhale or breathe out at least twice as long as you take to inhale or breathe in.



Patterned breathing

This type of breathing moves the air in a pattern in and out of the lungs. It controls your shortness of breath during a burst of strenuous activity, like:

- Lifting or pushing objects
- Climbing a step or two
- Standing up from a seated position
- During strength training with upper and lower body exercises

With patterned breathing, you breathe out during the hardest part of the activity, such as lifting a weight. Remember to never hold your breath during activity.

Example 1: Standing up from a seated position.

1. Inhale while you are seated.
2. Exhale as you stand up.

Example 2: Lifting a laundry basket.

1. Inhale when bending down to grab the basket.
2. Exhale as you stand up, holding the basket.

Managing Extra Mucus and Controlled Coughing

People with lung disease often have extra amounts of thick, sticky mucus. Having too much mucus makes breathing more difficult and increases your risk of getting a lung infection. You cannot stop your body from producing extra mucus, but there are techniques to help you get rid of the mucus easier.

First, drink plenty of fluids to help thin the mucus and make it easy to cough up. Six to eight glasses of water a day is often how much is recommended. Ask your doctor or rehabilitation specialist how much fluid you should drink.



Once the mucus is thin, you can get rid of it through controlled coughing, postural drainage and chest percussion. A respiratory therapist will work with you to teach you breathing and coughing techniques.

Controlled coughing

Controlled coughing is a special technique that helps you bring up mucus more easily. Controlling the way you cough forces mucus up and out of your lungs without causing tiredness, shortness of breath, or increased pain, if you have had chest surgery.

1. Sit upright in a chair and bend forward slightly. Take a deep breath in through your nose, and hold it for 2 seconds.



2. Instead of exhaling, through your nose, cough 2 or 3 times with your mouth slightly open. This loosens the mucus with the first cough and moves it upward with the second and third cough. Be careful to not just clear your throat. Use your stomach muscles to help with light coughing.



3. Wait a few seconds then breathe in normally and gently through your nose. Breathing in deeply after you have coughed may force mucus back into your lungs.

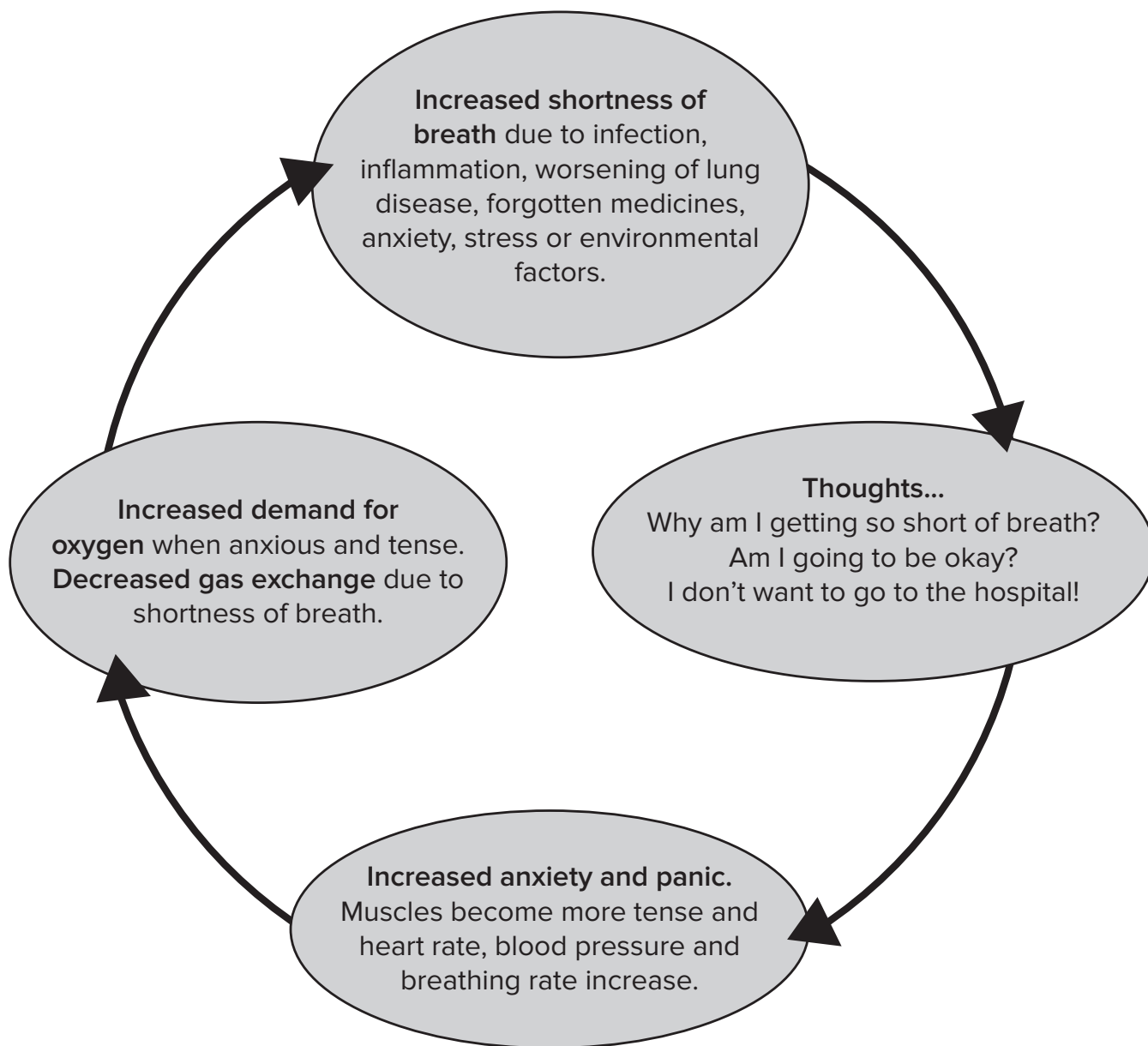
4. Repeat these steps again.



Tips to Control Panic Breathing

Panic breathing can occur at any time and for a number of reasons. With shortness of breath, worry and anxious thoughts can start to enter your mind, causing more shortness of breath and tense muscles. Panic breathing increases your breathing rate and does not allow you to take full breaths. Your body needs more oxygen when you are anxious, and your muscles are tense.

The vicious cycle of shortness of breath and panic breathing



Tips to help

- **Start pursed lip breathing right away.** This will help slow your breathing down, allow your lungs to empty fully and allow more oxygen in with your next breath. **Breathe out twice as long as you breathe in through pursed lips.**
- **When you can, sit down.** Lean slightly forward and place your hands on your lap, palms up. This will help relax your shoulders and decrease your upper body tension.
- As you do your pursed lip breathing, think of reasons for your shortness of breath. What can you do to prevent this from happening again and what actions can you take now?
 - Did you forget to take your lung medicines? Do you need your short acting inhaler or nebulizer treatment?
 - Are you coming down with an illness? Do you have signs of fever, cough, increased mucus or labored breathing with normal activity?
 - What is the weather like outside? Is it very hot or humid? What is the air quality?
 - Do you feel anxious or stressed? Why? Read “Coping with Lung Disease” in this book to learn skills to manage your stress.
 - Are you managing your energy level? Are you getting enough exercise? Read “Saving Energy and Making Work Simple” and the “Exercise” section of this book for more information.

Seek medical help if your shortness of breath does not ease with pursed lip breathing and your short acting inhaler or nebulizer treatment.

Talk to your doctor or any member of your care team if your medicines and home oxygen are not managing your lung disease symptoms.

Saving Energy and Making Work Simple

Balancing rest and activity when coping with lung disease is very important. Saving energy, also called **energy conservation**, allows you to accomplish everyday tasks. You may need to change how and when you do a task in order to not put unrealistic work demands on your body. **The way you do a job is as important as what you do.**

Remember to Plan, Prioritize and Pace yourself through each task:

- **Plan** out your daily schedule.
- **Prioritize** your tasks, so you get the most important things done first.
- **Pace** yourself, so you can get more done.

Apply the **3 Ps of saving energy** and the below tips to your daily life to help make tasks easier.

General tips

1. Sit when doing a task. Standing takes more energy.
2. Do work with your arms instead of your legs. Working with your legs takes more energy.
3. Wait 30 minutes after eating before doing a task. Work done after a meal causes more demand for oxygen to your heart.
4. Avoid doing activities in temperatures above 80 degrees F with humidity and below 20 degrees F. Extremes of heat and cold have a dangerous effect on the heart.

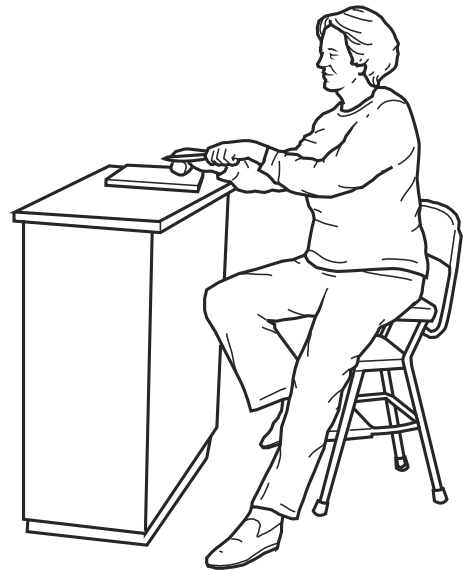
Pace yourself to save energy

1. Get at least 6 to 8 hours of sleep each night.
2. Rest for 20 to 30 minutes at least twice a day. If you get tired, stop and rest for 15 minutes whether you have finished the task or not.
3. Alternate easy tasks with hard tasks or spread a task out over the day.
4. Focus your energy on the things you can do.
5. Ask for help if the demands on your energy are too much. Hire help as needed.
6. Avoid stress.

Use labor-saving methods and devices to save energy

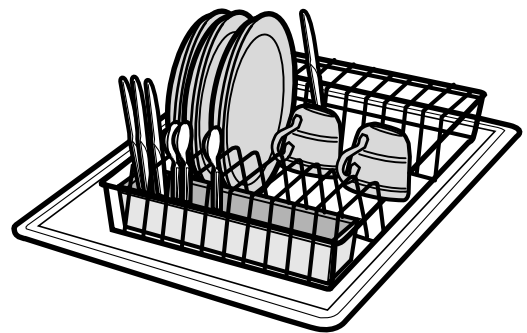
1. Sit to work as much as possible. Avoid crossing your legs. This interferes with blood returning to the heart.

- Sit at a counter or table to prepare food.
- Use a riding lawn mower.
- Sit in a stool at a work bench.
- Sit to dress, shave, do hair, put on make-up and dry off after a shower.
- Sit to iron.
- Use a shower bench to sit and a hand-held shower head in the shower.



2. Organize work areas:

- Keep cleaning materials on each floor.
- Store garden tools in the garage.
- Store shaving equipment and cosmetics near the sink and mirror.
- Store seldom used equipment out of the way.
- Store frequently used items in the kitchen at chest height to avoid bending and stretching.



3. Get rid of unnecessary work:

- Use a dishwasher.
- Let dishes soak instead of scrubbing.
- Use commercial pre-wash instead of scrubbing.
- Air dry dishes rather than hand dry.
- Cut open sealed bags. Do not tear them.
- Wear no-iron permanent press clothes.
- Use long handled mops, dusters and dustpans.

4. Use automatic or electric appliances:

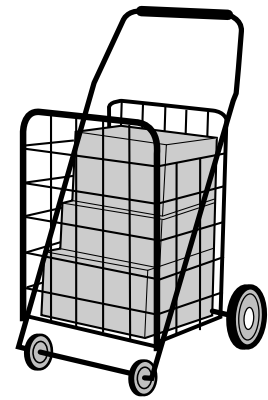
- Use an electric can opener, mixer, clothes dryer, sander, riding mower, electric saw and dishwasher.
- Use cruise control when driving.
- Use a rubber mat or wet towel under your mixing bowls to help steady them while stirring or mixing.

5. Use good lighting and ventilation.



6. Use wheels to move things:

- A shopping cart for groceries.
- A garbage can on wheels.
- A cart for cleaning or repair supplies or to move heavy bags or laundry.

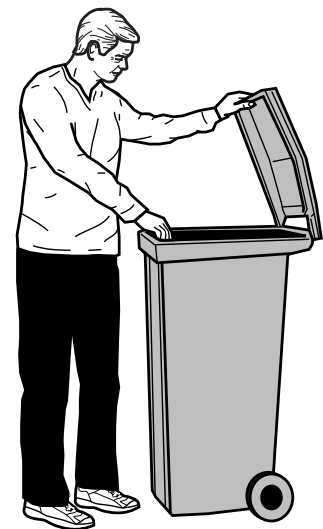


7. Use both hands to:

- Lifts objects, such as from the oven or refrigerator.
- Push objects.

8. Use proper body mechanics:

- Slide rather than lift.
- Relieve back strain by keeping one foot up on a low stool while standing.
- Use good posture when driving.
- Do not lean forward unsupported. Instead rest your elbows on counter tops.
- Bend at the knees to lift.

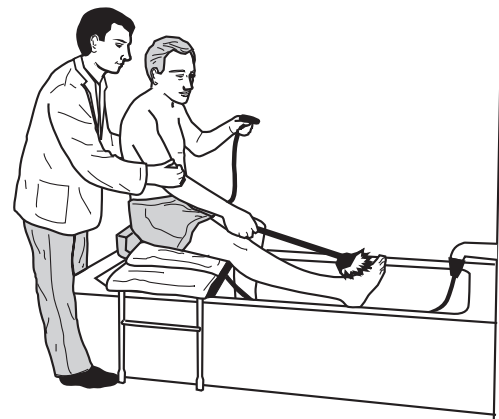


9. Shopping tips:

- Make a list first.
- Organize list by store aisle.
- Shop at less busy times.

10. Dressing and bathing tips:

- Wear button up clothing.
- Wear loose clothing for easier breathing.
- Sit while putting on shoes and socks.
- Wear slip on shoes. Use a long-handled shoe horn and sock aid.
- Use a terry cloth robe instead of a towel to dry off.
- Use a shower bench to sit and a hand-held shower or a long-handled sponge.
- Wear low-heeled shoes with shock absorbers.
- Use an elevated toilet seat.



Oxygen Use

The room air you breathe is 21 percent oxygen. Your body needs oxygen to work well. When you inhale, oxygen travels down your windpipe (trachea) and into your airways and air sacs (alveoli). A mesh of tiny blood vessels, called capillaries, surrounds the air sacs. Oxygen molecules pass into the red blood cells of the capillaries and attach to red blood cell proteins, called hemoglobin. The oxygen-rich blood flows around the body to be used as energy (fuel).

With certain lung diseases, you may not be able to get enough oxygen into your blood stream by breathing the air around you. Extra (supplemental) oxygen may be needed to keep the oxygen in your body at the right level.

Measuring your oxygen level

A **pulse oximeter** measures the oxygen in your blood by reading the color of your blood through a light sensor. The hemoglobin in your blood turns bright red when it is full of oxygen. As oxygen is dropped off to your body's cells, it turns a darker red or purple color. A small clip is put on over a finger to get a reading. A light flashes in the clip and shines a light through the tip of your finger.

Oxygen levels (SpO₂) change or vary with rest and activity. Because you may not have any symptoms when your oxygen level is too low or too high, you may be told to check your oxygen level. You can purchase pulse oximeters at your local drug store or on the Internet.

Check your oxygen level when you feel shortness of breath. Do not keep it on all of the time, worrying about your oxygen level.

- Normal resting SpO₂ = mid-90s to 100% (no one is 100% all of the time)
- Exercise or activity SpO₂ = keep above 88%

If you have home oxygen, use it to keep your oxygen level above 88% during rest and activity per your doctor's instructions.

Tips for accurate pulse oximeter readings:

- Make sure your fingers are warm.
- Use a finger without nail polish.
- When walking, you may need to bend your elbow, bringing your hand and pulse oximeter to your shoulder to check a reading. Arm motion can affect an accurate reading.
- Replace batteries as directed.



Low oxygen levels

Long term low oxygen levels, also called hypoxia, are not good for your body. Because all of your body's cells need oxygen to work and live, low oxygen can affect almost every part of your body. Low oxygen is very hard on cells of your heart and brain, and other body cells that are always working and not able to repair themselves. Also, when your oxygen level is low, the right side of your heart has to work much harder to pump blood through your lungs.

If your body is not able to keep your oxygen level above 88% at rest, you may develop:

- Shortness of breath
- Fatigue
- Problems with thinking or concentrating
- Depression or anxiety
- Problems sleeping
- Heart arrhythmias
- Heart attacks
- Shorter life expectancy

Talk to your doctor if you have signs of low oxygen levels or have chronic low oxygen levels. You may need home oxygen or need to change the amount of oxygen you are using at rest and activity.

Home oxygen

Oxygen is considered a medicine that needs a doctor's order to be prescribed or to have the amount of oxygen changed. Your oxygen company will work with you to find the type of oxygen and amount needed.

Supplemental oxygen has many benefits, which may include:

- Decrease shortness of breath.
- Improve energy levels.
- Improve thinking and memory.
- Improve quality of life.
- Extend life expectancy.

Oxygen flow is measured in liters per minute. Remember, room air is 21% oxygen.

1 liter = 25% oxygen

4 liters = 37% oxygen

7 liters = 49% oxygen

2 liters = 29% oxygen

5 liters = 41% oxygen

8 liters = 53% oxygen

3 liters = 33% oxygen

6 liters = 45% oxygen

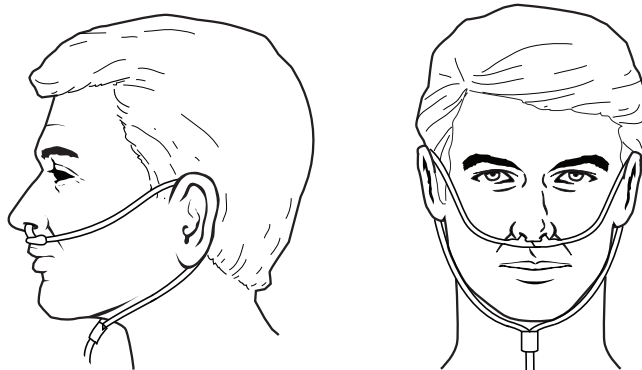
...and so on

Giving yourself more oxygen is not always better. Too much oxygen can damage the cells of the lungs. For people with obstructive lung disease, it can cause the brain to not send out signals to breathe, causing them to take fewer or less deep breaths. This can cause confusion or lethargy. To prevent problems with too much oxygen, your oxygen flow level will be adjusted based on your pulse oximeter readings.

Oxygen sources

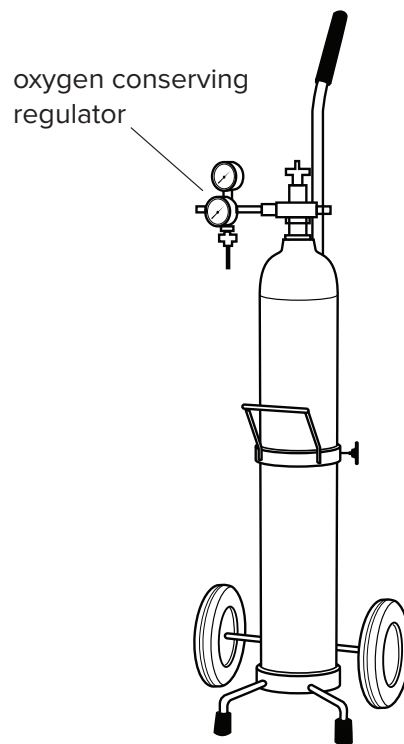
Extra oxygen can help your oxygen level stay in a good range. This means less damage to your heart and brain cells and lower blood pressure in your lungs. If your doctor prescribes oxygen, use it.

Oxygen is often given with a tube that has 2 prong openings that fit in your nose. This is called a nasal cannula (kan-u-la). A mask that fits over the nose and mouth or a tube connecting to a tracheostomy are other ways oxygen may be given for oxygen flow rates greater than 4 liters. “High flow” tubing may be used to decrease nose sensitivity.

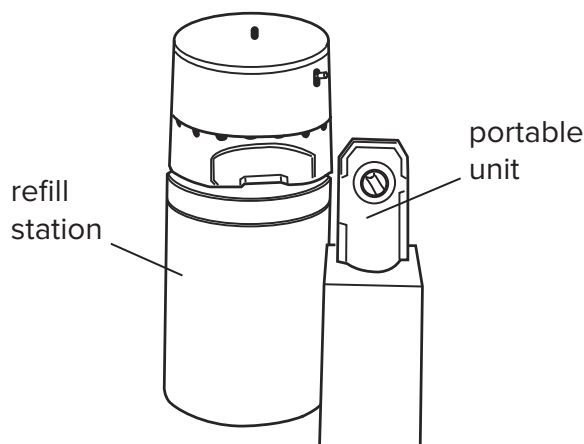


There are several types of oxygen sources that may be used:

- **Compressed gas tanks** - These tanks, also called cylinders, can be large for use in the home or very small to be carried over the shoulder or wheeled around (portable tanks).
 - An **oxygen conserving regulator** may be attached to the tank. It senses when you take in a breath and only delivers the amount of oxygen needed. During activity, you may need to use the continuous flow setting to keep your pulse oximeter reading above 88%.
 - Oxygen flow ranges from 1 to 15 liters per minute.

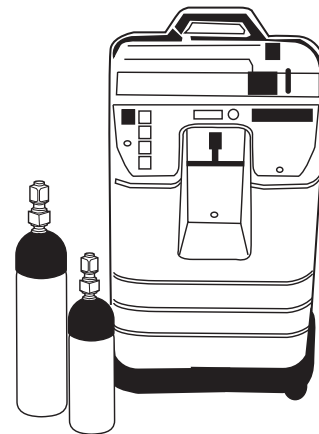


- **Liquid oxygen systems** - Liquid oxygen is stored in a large refilling station that stays in your home. The oxygen company exchanges the unit when needed. Smaller portable units are filled at the top of the refilling station. This oxygen source is a good option if you need an oxygen flow of more than 10 liters per minute at home.



- **Concentrator** - These devices use electrical or battery power to draw in room air oxygen (21%), remove the nitrogen molecules and store it as a higher oxygen concentration in the unit. Some units have a “filling” station to fill up portable gas cylinders. Oxygen flow goes up to 10 liters per minute.
 - **Portable concentrator** - These devices run on batteries. They are limited to people who need 3 to 5 liters per minute of oxygen flow or less. Larger units are on rollers and go up to 6 liters per minute. These units are easy to use and just need to be plugged into an electrical outlet to recharge the battery.

concentrator



Your oxygen company will determine the best source of oxygen for you, based on your needs and your doctor’s orders.

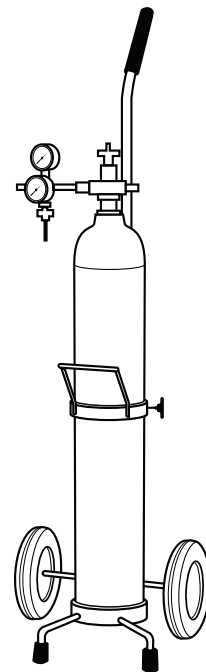
Tips for oxygen use

- **Call your oxygen company with any questions.** They can help you with:
 - Nasal cannulas or masks to meet your oxygen needs at rest and with activity.
 - An extra concentrator if you use more than 8 to 10 liters of oxygen flow per minute.
 - A humidifier for your concentrator. This is helpful if you have irritated or dry nostrils.
- When traveling:
 - Call your airline or cruise line to check their policies regarding oxygen use while traveling with them.
 - Ask your oxygen company to contact your place of destination to set up a home oxygen concentrator.
 - Make sure you have enough portable oxygen tanks or cords to recharge your battery powered portable concentrators.
- You may use saline-based products to ease dry or irritated nostrils, such as general saline (water-based) nasal spray mist or gel. For your safety, **do NOT** use petroleum-based products, such as Vaseline®, Blistex® or Chapstick®, which are highly flammable.

Oxygen Safety at Home

Oxygen itself does not burn. Oxygen can feed a spark and cause it to become a large fire in seconds. To be safe at home, **follow these fire safety guidelines.**

- **Do NOT smoke or allow anyone to smoke in the room where oxygen is being used. E-cigarettes, matches, and lighters should not be used in the room either.** A spark could ignite the oxygen, setting your face and oxygen tubing on fire! Your oxygen home care company will provide “No Smoking” signs to hang in your home.
- **Avoid open flames.** Do NOT store oxygen tanks within 10 feet of open flames, such as fireplaces, wood-burning stoves and gas stoves. When cooking, wear your tubing behind your head and down your back.
- **Use caution when using electrical equipment.** Do NOT use equipment with frayed cords or electrical shorts. They could cause a spark.
 - Use **battery powered** razors and hair dryers when using oxygen.
 - Hair dryers should be used on a **cool setting only.**
 - If you must use an electric razor or hair dryer, be sure to use it at least 5 to 10 feet away from the oxygen.
 - Do NOT use an appliance with a control box, such as a heating pad. Control boxes may throw sparks.
- **Avoid static electricity.**
 - Avoid nylon or woolen clothing that is more likely to cause static electricity.
 - Use a humidifier in winter to add moisture to dry air in your home.
- **Store and handle oxygen properly.** Store tank and liquid oxygen away from heat and direct sunlight. Secure tanks with chain as arranged by your home care therapist. Place tanks in a secure holder in an upright position.
- **Never apply any oily substance**, such as petroleum-based lip products, Vaseline®, Blistex® or Chapstick®, **to your nose, lips or the lower part of your face.** They are highly flammable. You may use saline-based products to ease dry or irritated nostrils, such as Ocean® Saline Nasal Spray or K-Y® Liquid Personal Lubricant.



Exercising with Lung Disease

Aerobic exercise

Examples: walking, biking, swimming, dancing

Recommendations: 30-45 minutes, 3-5 days a week

Benefits:

- Helps muscles use oxygen more efficiently, which puts less strain on the heart with activity.
- Helps regulate blood sugar levels.
- Lowers high blood pressure.
- Helps improve mood and outlook on life.
- Decreases risk for obesity and other chronic diseases.
- Helps with sleep issues.

Strengthening exercise

Examples: weight machines, free weights, resistance bands, body weight

Recommendations: Do 2-3 times a week, alternating upper and lower body muscle groups

Benefits:

- Increases size, strength and endurance of muscles.
- Prevents muscle wasting.
- Lowers risk of bone loss.
- Lowers risk of falls and fall-related injuries.
- Stronger muscles work better by using less oxygen.
- Helps with weight loss/control.

Stretching

Examples: static stretching, dynamic stretching, yoga

Recommendations: daily or at least every time you exercise

Benefits:

- Increases flexibility and mobility.
- Decreases muscle soreness after exercising.
- Decreases chance of injury to muscles and joints.
- Helps relieve stress and tension.

Core and balance exercises

Add these exercises as needed based on your individual goals.

Tips

- Using your short-acting inhaler 15-30 minutes before exercise may decrease your shortness of breath with exercise.
- If you are having a bad breathing day, you may need to decrease your workloads and/or time.
- You can take breaks as needed. You will still benefit from exercise in bouts of at least 10 minutes.

Rating your shortness of breath and exertion during exercise

We want you to exercise safely. Use these scales to measure how hard the exercise feels to you:

*Borg Rating of Perceived Dyspnea:

This scale rates shortness of breath, also called dyspnea. **If your rating is greater than 6, slow down.** If your rating is under 6, you can safely increase your speed or exercise longer.

0	No shortness of breath
0.5	Slight shortness of breath
1	
2	Mild shortness of breath
3	Moderate shortness of breath
4	
5	Strong or hard breathing
6	
7	Severe shortness of breath
8	
9	
10	Shortness of breath so severe you need to stop and rest

*Borg Rating of Perceived Exertion (RPE):

This scale rates your effort in response to an activity. **A rating of a 4 to 6 is a safe level of exertion.** This means you are comfortably tired after an activity. If your rating is less than 3, it is safe for you to increase your speed or exercise longer. If your rating is greater than a 4, slow down.

0	No effort
0.5	Noticeable effort
1	Very light effort
2	Light effort
3	Moderate effort
4	Somewhat strong effort
5	Strong effort
6	
7	Very strong effort
8	
9	Very, very strong effort
10	Maximum effort

* Adapted from Borg G. Perceived exertion as an indicator of somatic stress. Scand J Rehabil Med. 1970;2: 92–98.

Stretching Exercises

Walk around the room, step side to side, ride a bike or walk on a treadmill for at least 5 minutes to warm up before doing these stretches. **Stretch warm muscles only.**

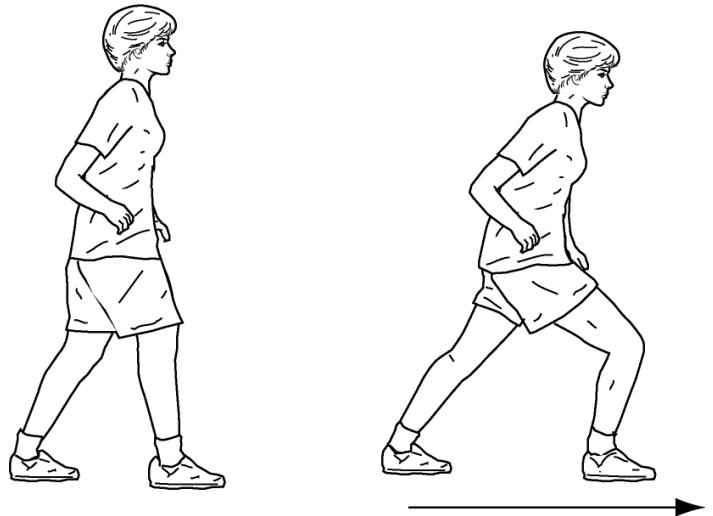
Hold each stretch for 30 to 60 seconds. Do NOT bounce. You should feel the stretch in the muscle, not the joint.

Do these stretches 3 times a week.

Lower body stretches

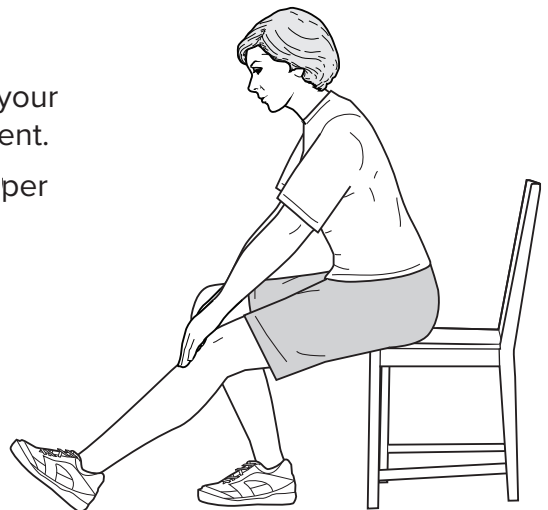
Calf muscle stretch:

1. Move your left foot back and keep your leg straight.
2. Move your right foot forward with the knee bent. Keep the knee in line with your ankle.
3. Press the heel of your left foot into the floor.
4. You should feel a stretch up the back of your lower leg, from your heel up to the back of your knee.
5. Repeat with the right leg back and the left leg forward.



Hamstring stretch:

1. Sit in a chair or on the edge of the chair.
2. Bring your left foot forward, placing the heel down and your toes raised to the ceiling. The knee should be slightly bent.
3. Lean forward and feel the stretch in the back of your upper leg.
4. Bring your right foot forward and repeat.



Quadriceps stretch:

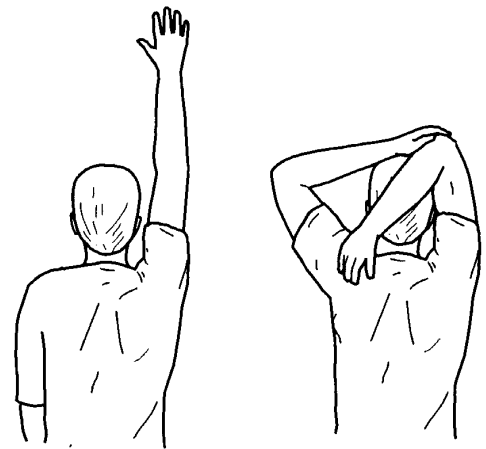
1. Sit in a chair.
2. Bring your foot back under the chair, so the top of your foot is on the floor.
3. Keep your lower back straight and lean back.
4. Feel the stretch in the front of your upper leg.
5. Repeat with your other leg.



Upper body stretches

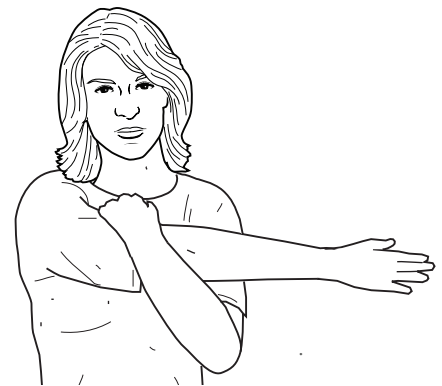
Side and triceps stretches:

1. Raise one arm into the air and reach for the ceiling. Feel the stretch through your side.
2. Bring the hand down behind your head reaching across towards the opposite shoulder blade.
3. Reach up with your other hand and gently pull your elbow towards your back. If you cannot reach to pull your elbow back from behind your head, gently push your elbow back from the front of your arm.
4. Feel the stretch in the back of your upper arm.
5. Repeat with the other arm.



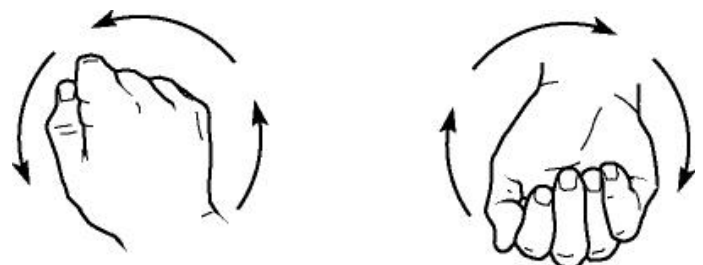
Stretch for the back of your shoulders:

1. Sit or stand and bring one arm across your body at shoulder height.
2. Place your other hand on your elbow or upper arm and pull it close to your chest.
3. Feel the stretch in the back of your shoulder.
4. Repeat with the other arm.



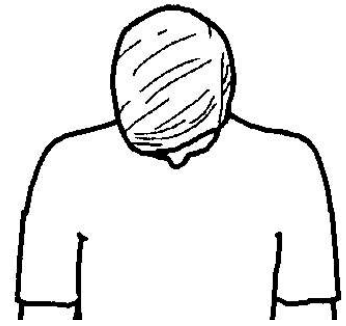
Wrist circles:

1. Hold your arms in front of you at shoulder height.
2. Move your wrists to the right and to the left in circles.

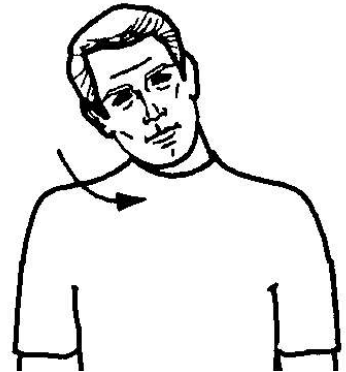


Neck stretches:

1. Sit facing forward. Relax your arms at your sides.
2. Press your chin into your chest. You should feel a stretch up the back of your neck.
3. Return to looking straight ahead.



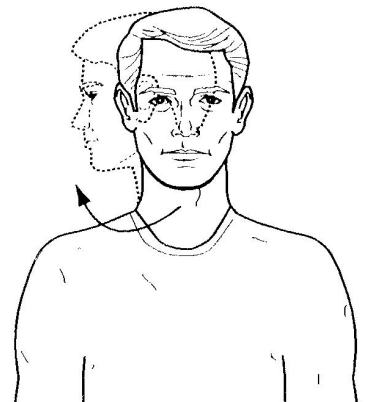
4. Press your right ear to your right shoulder. Do not raise your shoulder to your ear. Feel the stretch in the side of your neck.
5. Return to looking straight ahead.



6. Press your left ear to your left shoulder. Do not raise your shoulder to your ear. Feel the stretch in the side of your neck.
7. Return to looking straight ahead.



8. Turn your head to the right as far as you can and feel the stretch.
9. Return to looking straight ahead.
10. Turn your head to the left as far as you can and feel the stretch.
11. Return to looking straight ahead.



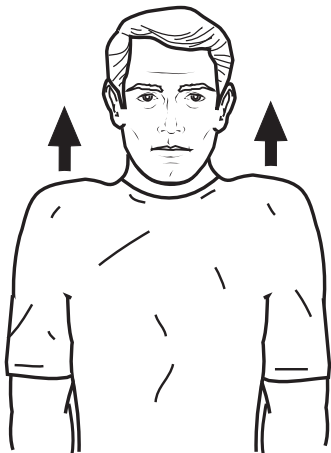
Upper Body Strengthening Exercises

Do all upper body exercises slowly. **Do not hold your breath** and remember to exhale as you do the “work” part of each exercise. **If you feel any unusual pain in your joints or muscles while you exercise, stop the exercise.**

You will need a firm chair. These exercises can be completed with hand held weights, wrist weights, resistance bands or weight machines. You may also do these exercises standing.

Do 2 sets of 12 repetitions, 3 times a week.

Shoulder shrugs



Shrug your shoulders, bringing them up towards your ears.

Lower your shoulders and repeat.

Chest press



Sit in a chair with your back straight. Hold a weight in each hand at chest level, elbows bent.

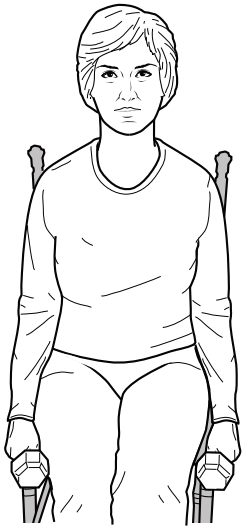


As you exhale, slowly push the weights straight out in front of you until your arms are straight. Keep a slight bend in your elbows.

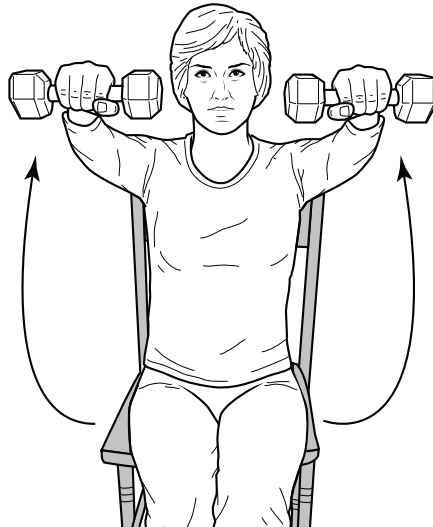


As you inhale, slowly return to starting position.
Repeat.

Front raises



Sit in a chair with your back straight. Hold a weight in each hand at your sides.



As you exhale, slowly raise your arms, palms down, to shoulder height. Keep a slight bend in your elbows.

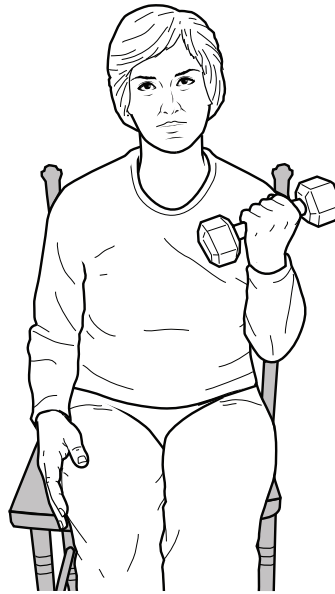


As you inhale, slowly return to starting position.
Repeat.

Biceps curls



Sit in a chair with your elbows tucked in at your sides. Hold a weight in one hand, palm facing forward.



As you exhale, slowly bend your elbow, bringing the weight up to your shoulder.

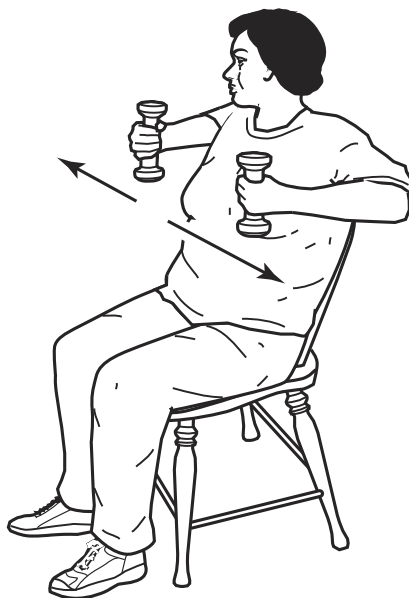


As you inhale, slowly return to starting position. Repeat on the other side.

Chest pulls



Sit in a chair with your back straight. Hold a weight in each hand, at the center of your chest, at shoulder height and with your elbows bent.

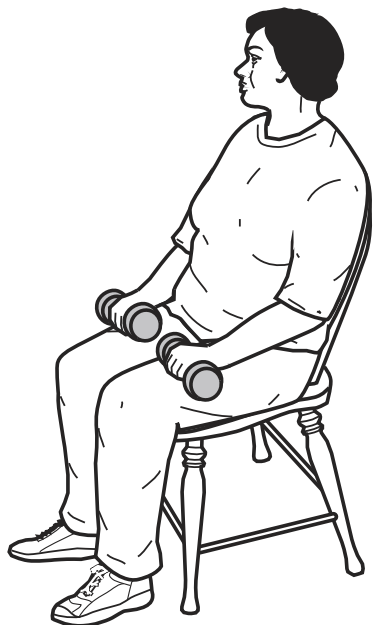


As you exhale, slowly pull your elbows back to shoulder height until you feel a pinch between your shoulder blades.

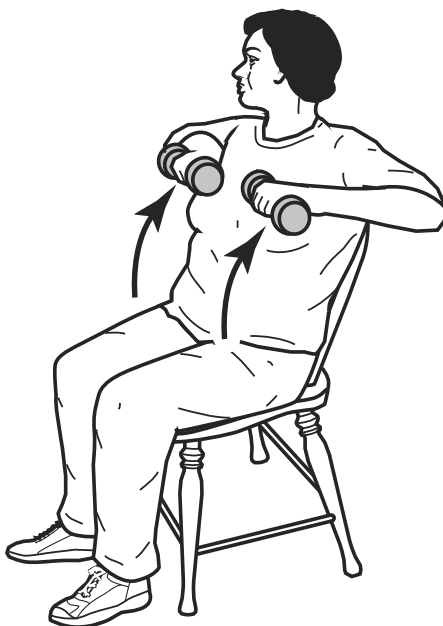


As you inhale, slowly return to starting position. Repeat.

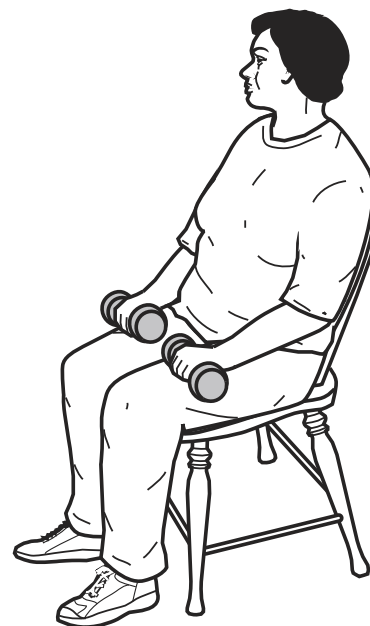
Upright row



Sit in a chair with your arms in front of you, a weight in each hand and resting on your knees.



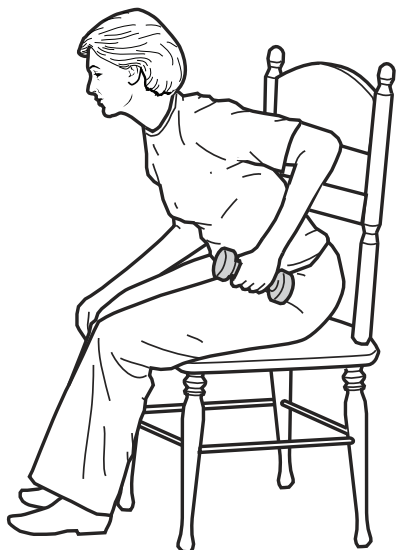
As you exhale, slowly lift the weights by pulling your elbows up and out at shoulder height. Keep your elbows higher than your wrists. Hold.



As you inhale, slowly return to starting position.

Repeat.

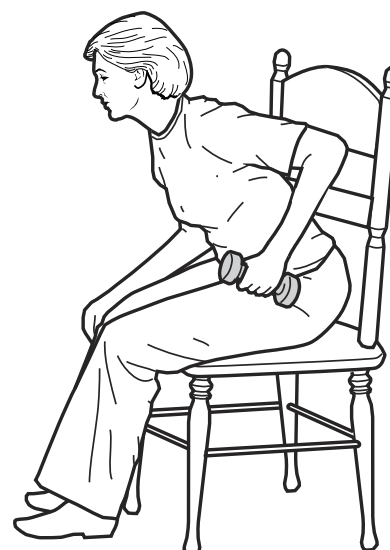
Triceps extension



Sit in a chair and lean forward. Hold a weight in your hand and at your side. Bend your elbow to bring it up toward your back.



As you exhale, slowly raise the weight behind you, keeping your upper arm and elbow still and pinned to your side.



As you inhale, slowly return to starting position.

Repeat.

Lower Body Strengthening Exercises

Do all lower body exercises slowly, do not hold your breath and remember to exhale as you do the “work” part of each exercise. **If you feel any unusual pain in your joints or muscles while you exercise, stop the exercise.** You will need a firm chair to help you do some of these exercises.

Do 1 set of 15 repetitions, 3 times a week.

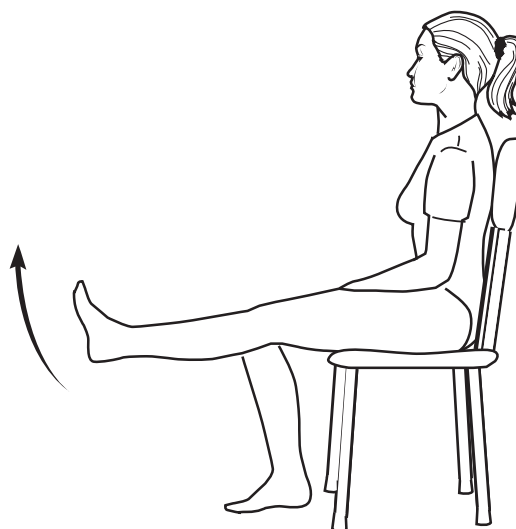
Leg extensions

1. Sit in a firm chair.
2. Straighten the knee of your right leg.
3. Hold for 5 to 10 seconds.
4. Slowly lower your leg.
5. Repeat.
6. Repeat the exercise with your left leg.



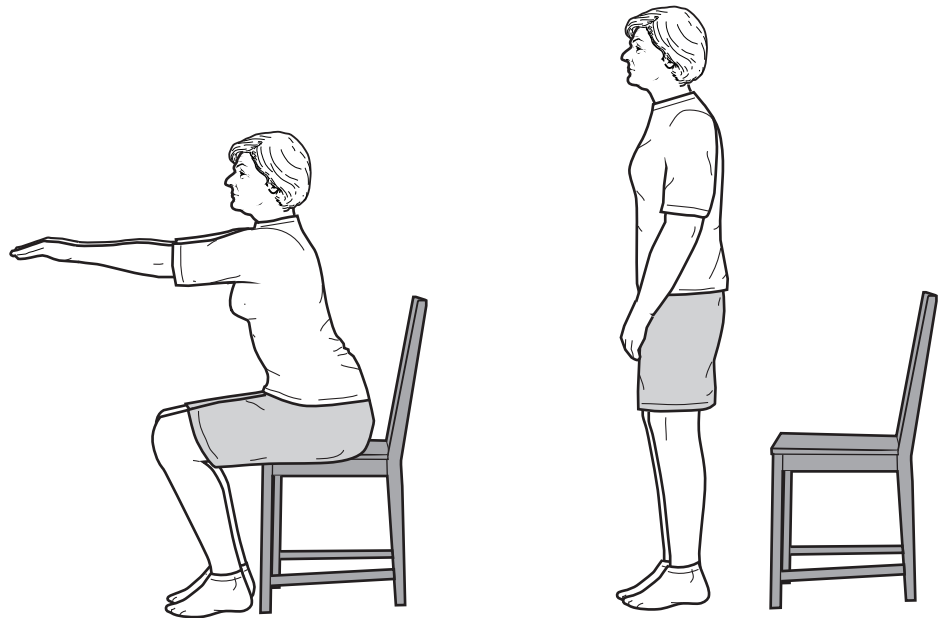
Straight leg lift

1. Sit in chair with your head up and your back straight. Press your back into the chair. Feet should be flat on the floor.
2. Straighten one leg out, pointing your toes.
3. Try to lift your thigh off the chair, and hold.
4. Slowly lower your leg to bring your foot back down to the floor.
5. Repeat the exercise with your other leg.



Sit to stand

1. Start by sitting in a firm chair.
2. Stand up. You can use your hands, pressing them on the arms of your chair or on your thighs to assist you to stand until you build up enough strength to do the exercise as shown.
3. Repeat.

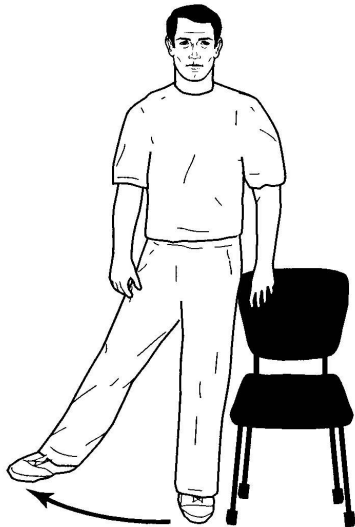


Hamstring curls

1. Stand behind a chair with your toes forward. Hold onto the back of the chair for support. Stand up straight and steady.
2. Stand with your weight on one foot and have the other leg back slightly, toes on the ground.
3. Lift the foot by bending the knee back toward your buttocks and hold.
4. Lower the foot by straightening the knee.
5. Change to the other leg.



Hip abduction



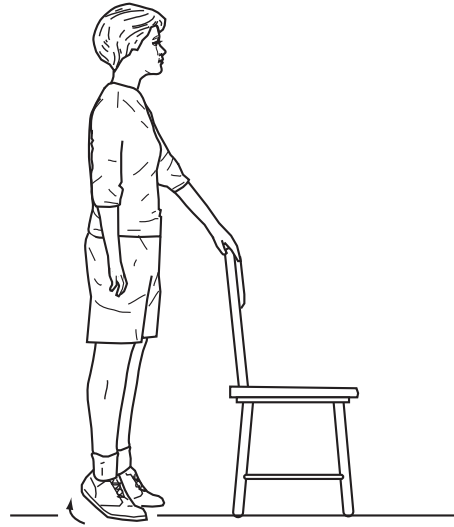
1. Stand holding onto a chair for balance.
2. As you exhale, slowly move your leg out to the side.
3. As you inhale, slowly return to starting position.
4. Repeat with your other leg.

Glute kickbacks



1. Stand holding onto a chair for balance, keeping your legs hip width apart and your toes pointed forward.
2. As you exhale, slowly extend one leg back with a straight knee until you feel a squeeze in your backside.
3. As you inhale, slowly return to starting position.
4. Repeat with your other leg.

Calf raises



1. Stand with feet hip width apart. You may hold onto the back of a chair for balance.
2. As you exhale, slowly lift your heels as high as you can, shifting your weight onto the balls or front part of your feet.
3. As you inhale, slowly return to starting position.
4. Repeat.

Variation: You may hold a 1 to 5 pound dumbbell in each hand with palms facing toward your body and arms hanging at your sides.

Core Strengthening Exercises

As you do each exercise, focus on your breathing, form and speed.

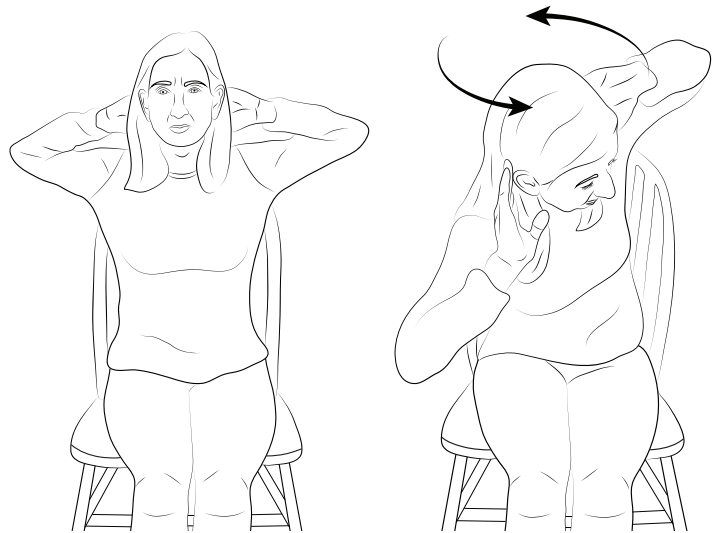
- Breathing: Breathe at a natural and steady rate. Do not hold your breath while doing each exercise. Exhale while doing the work portion of the exercise. Inhale while in the start position of each repetition.
- Form: Use good posture and focus on the muscles doing the work while moving through the full range of motion.
- Speed: Keep a natural pace that you can sustain throughout the set while keeping good form. Do not rush the range of motion and the repetitions of each exercise.

You will need a firm chair for most of these exercises. **Do 1 set of 10 repetitions, 3 times a week.**

Circling torso

Do not do this exercise if you feel any back pain.

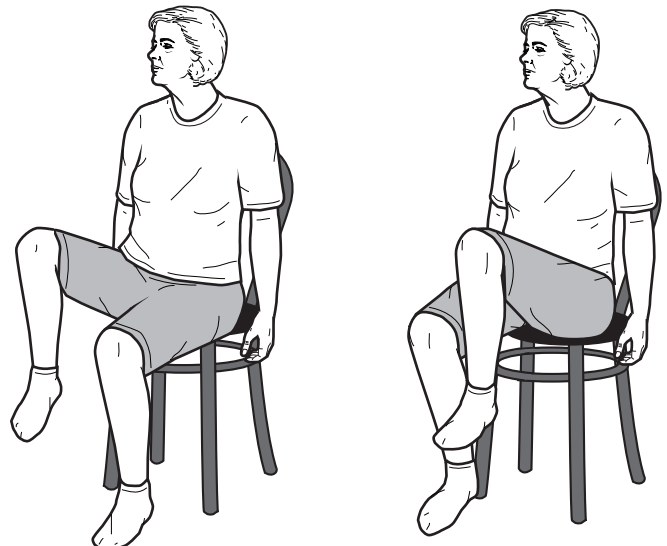
1. With your arms at shoulder level, place your finger tips on your ears.
2. Lean forward over your thighs with a straight back.
3. Circle slowly to the left, arching your back slightly at the top of the movement.
4. Return to start.
5. Repeat, circling to the right.



Single knee lift

Focus on your abdominals, so your stomach muscles do the work, not your legs.

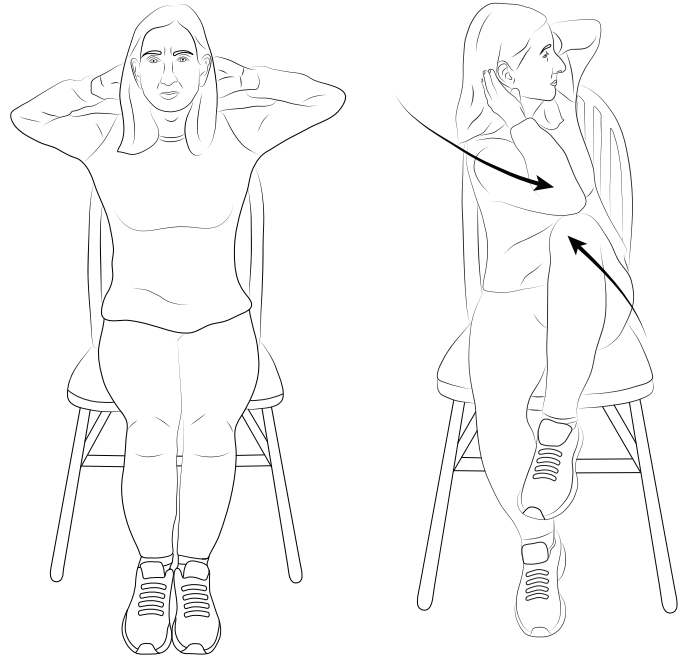
1. Brace with the opposite leg as you lift your knee to your chest.
2. Lower your leg.
3. Repeat on the other side.



Single knee lift with a twist

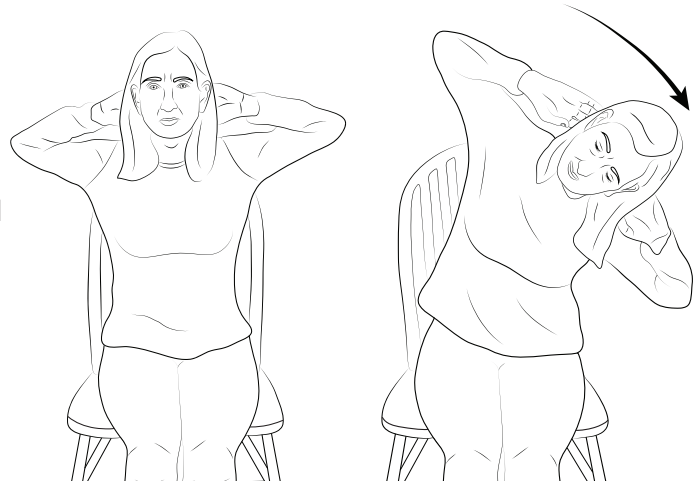
Focus on your breathing and engaging your core.

1. Sit with your chest out, shoulders back and core tight.
2. With your arms at shoulder level, place your finger tips on your ears.
3. Raise one knee to your chest. At the same time, bring the opposite elbow to your knee.
4. Repeat with the other side.



Side crunch

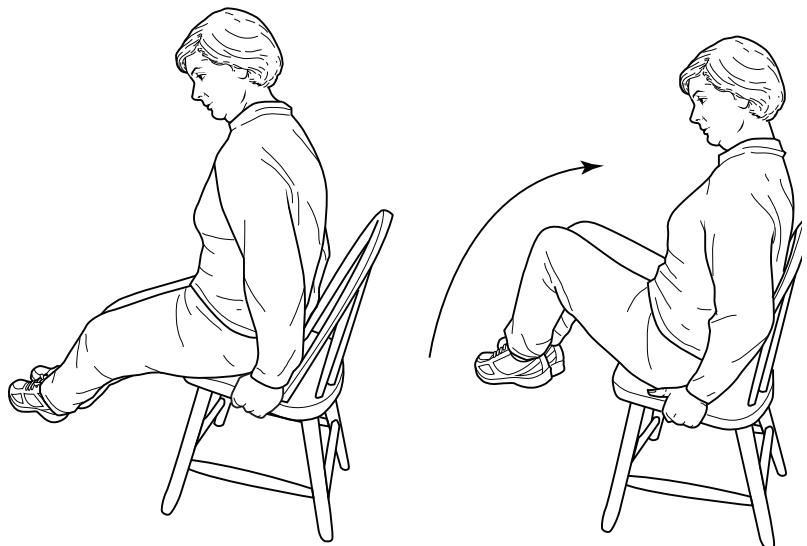
1. With your arms at shoulder level, place your finger tips on your ears.
2. Sit with your chest out and your shoulders back. Squeeze your abdominals as you bend at the waist to the side.
3. Return to starting position.
4. Repeat on the other side.



Double knee lift

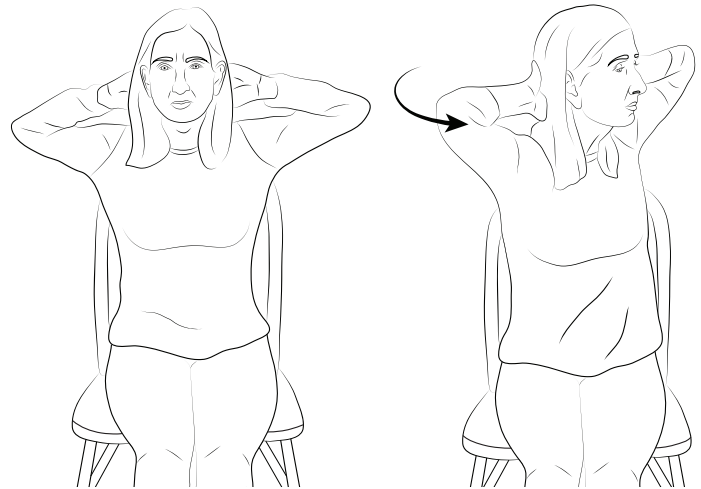
Focus on your abdominals, so your stomach muscles do the work, not your legs.

1. Lean back slightly with a straight back, placing your hands on the chair's seat to stabilize your body.
2. Keep your chest wide with shoulders back. Do not round your back.
3. Lift your knees toward your chest.
4. Lower your legs back to the floor.



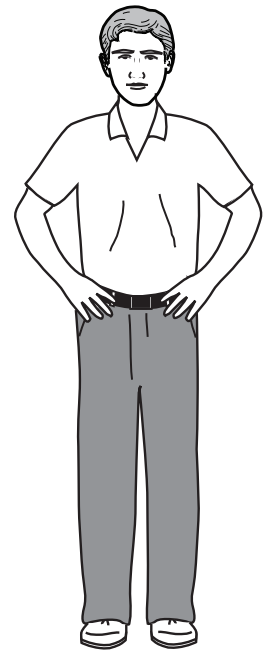
Seated twist

1. With your arms at shoulder level, place your finger tips on your ears.
2. Slowly twist your torso to the left. Do not move your hips.
3. Slowly return to start.
4. Repeat on the other side.



Stomach vacuum

1. Stand straight with your feet shoulder width apart and your hands on your hips.
2. Slowly inhale as much air as possible.
3. Then, exhale as much air as possible while bringing your stomach toward your spine as much as possible.
4. **Hold this position for 20 seconds while breathing normally.** Imagine your navel touching your backbone.
5. Then, inhale, relaxing your stomach.



Balance Exercises

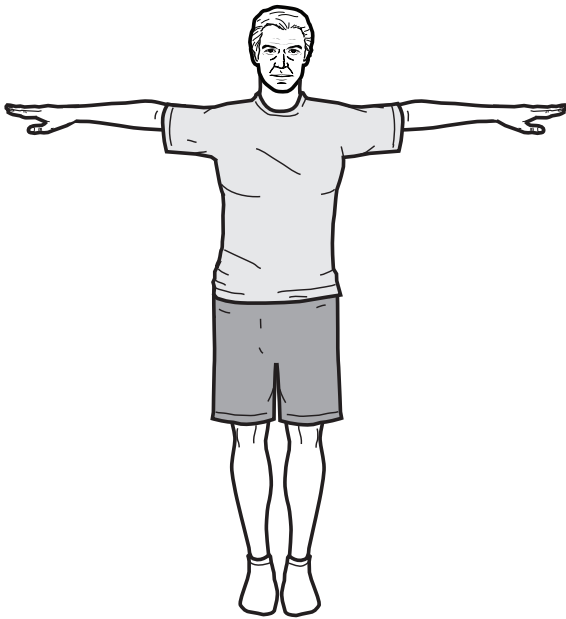
Balance exercises improve coordination and decrease your risk for falls.

As you do each exercise, use a chair for support until your balance improves.

Do these exercises 3 times, 3 days a week. Hold each pose for 15 to 20 seconds.

Standing with feet together

1. **Eyes open:** Find a stationary object to stare at as you hold each pose: arms out to your sides, arms down at your sides and arms crossed on your chest.
2. **Eyes closed:** Close your eyes. Picture yourself in an upright position as you hold each pose: arms out to your sides, arms down at your sides and arms crossed on your chest.



Arms out to
your sides



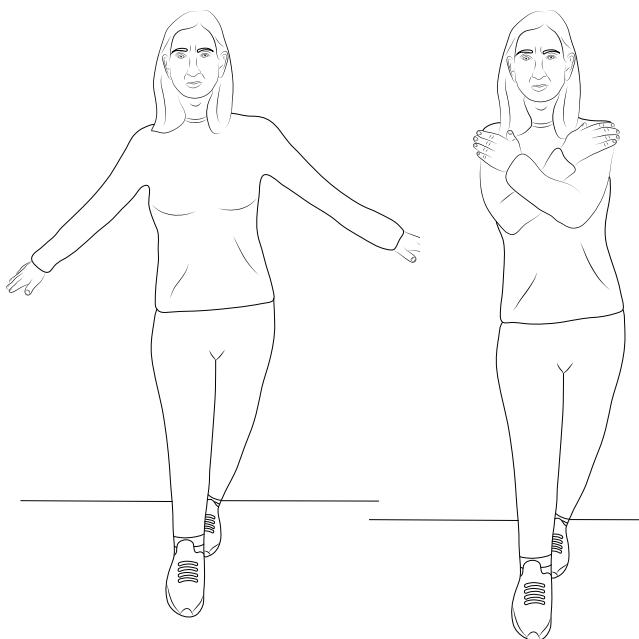
Arms down at
your sides



Arms crossed on
your chest

Standing with one foot in front of the other

1. **Eyes open:** Find a stationary object to stare at as you hold each pose: arms out to your sides and arms crossed on your chest. Repeat each pose with your other foot in front.
2. **Eyes closed:** Close your eyes. Picture yourself in an upright position as you hold each pose: arms out at your sides and arms crossed on your chest. Repeat each pose with your other foot in front.



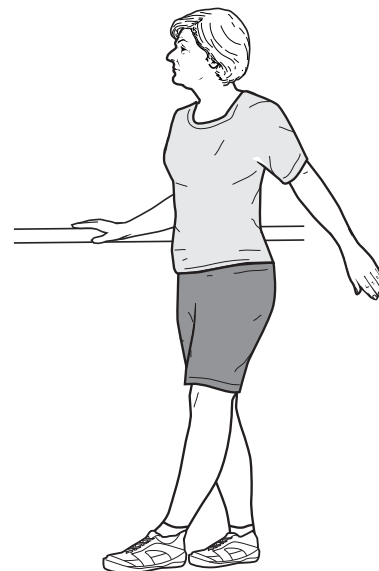
Arms out to your sides

Arms crossed on your chest

Walking heel to toe

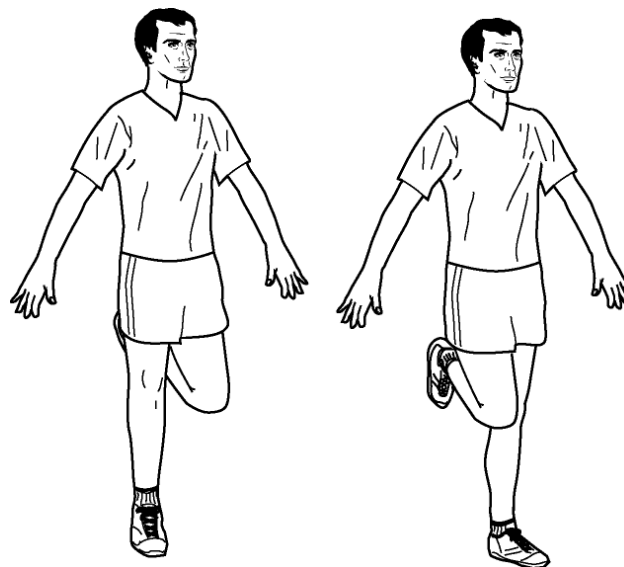
Find a stationary object to stare at as you do this exercise.

1. Using a hand on a wall for balance, walk heel to toe.
2. Then, turn and walk heel to toe in the opposite direction.



Standing one foot balance

1. **Eyes open:** Find a stationary object to stare at as you balance on one foot. Switch sides.
2. **Eyes closed:** Close your eyes. Picture yourself in an upright position as you balance on one foot. Switch sides.



Nutrition and Lung Disease

When you have lung disease, it can be hard to eat the right amount of food each day, especially as your disease progresses.

Symptoms, like fatigue, shortness of breath (dyspnea), phlegm or sputum production (which can cause taste changes), depression and side effects of medicines, can alter eating habits and your preferences.

What and how much you eat can also affect your breathing by limiting your lungs' ability to expand.

Maintaining a healthy weight is important for your lung health. It can help you manage your breathing problems, handle treatments and recover from illnesses and procedures. Discuss with your lung care team what is a healthy weight for you.

Each patient with lung disease has unique needs. Work with your dietitian and other members of your lung care team to improve your nutrition to affect your long term wellness.

If you need to gain weight:

- Eat 6 or more mini meals and snacks if you cannot eat 3 substantial meals a day. This will provide your lungs more room to expand and feel less overwhelming, which will help you to eat enough overall.
- Eat at least 250 to 500 more calories a day above your normal intake. Individual needs may vary.
- Eat nutrient and calorie-dense foods, such as those with a high fat or protein content. Examples include dairy products like ice cream, whole milk, yogurt and others, mono or poly-unsaturated fats like olive, safflower or canola oil, nuts and nut butters like peanut or almond butter. For more information, please read *High Calorie High Protein Diet*.
- Avoid filling up on foods high in added sugars. Sugar is a type of carbohydrate and too many carbohydrates may produce more carbon dioxide, which may increase your work of breathing.
- Eat healthy fats, like olive oil and nuts, which improve your work of breathing and are concentrated calories. You get more energy to breathe from small portions of healthy fats.
- Avoid drinking large amounts of liquids before and during meals, which may fill you up and make it harder to breathe and eat enough.
- When you do drink liquids, choose ones high in nutrients like milk, juices, smoothies, milk shakes and other blended drinks. Do not fill up on soda, coffee, tea, broth or water as they have little nutrients or calories.

- Use liquid meal supplements between meals or as snacks. Modify to enhance flavor or increase nutrients.
 - Example products include Carnation Breakfast Essential, Ensure or Boost.
 - Homemade recipe: In a large glass, mix 8 ounces of whole milk, ½ cup dry milk powder and 2 tablespoons of flavored syrup, such as chocolate or strawberry. Serve cold or warm. Nutrition information: 340 calories and 22 grams of protein.
- Eat fewer foods that cause gas if you feel bloated or short of breath. While everyone is different, these may include raw apples, asparagus, beans, broccoli, cabbage, carbonated drinks, cauliflower, corn, cucumbers, melons, raw onions, peas and peppers.

If you are at a healthy weight:

Follow these general guidelines. As each person's nutritional needs are unique, discuss with your lung care team what is right for you.

- Women need about 300 to 500 calories per meal.
- Men need about 400 to 600 calories per meal.
- Eat snacks that are about 100 to 250 calories each.
- Eat a variety of healthy foods like vegetables, fruits, whole grains, dairy products and protein foods.
- Pay attention to serving sizes, especially when eating foods that are high in added sugar and low in nutrients like chips, candy, fried foods, cake, cookies and soft drinks.
- Include protein-dense foods like milk, meats, fish, poultry, eggs, beans and nuts each day to support respiratory muscle strength.

If you need to lose weight:

Not all lung patients are underweight or under nourished. Obesity can be a problem for people with lung disease due to lack of physical activity, poor food choices and certain medicines.

- Small changes can have a big impact on your health. The goal is to lose your excess fat stores without losing muscle mass or functional status (especially your lung function). Work with a dietitian or a medical weight management program to achieve your goals in a healthy way.
- Avoid fad diets as they often have the opposite effect on maintaining a healthy weight long-term.
- Structure can be helpful when starting to make healthier choices. For example:
 - Visit www.choosemyplate.gov or download the MyPlate App to learn how to create a healthy plate that includes fruits, vegetables, grains, protein foods and dairy products.
 - Read *Healthy Meals for Weight Loss*.
 - Follow a DASH (Dietary Approaches to Stopping Hypertension) eating plan to achieve a healthy weight. Visit www.nhlbi.nih.gov/health-topics/dash-eating-plan for more information, or read *Heart Healthy Eating with DASH*.

- Increase the fiber in your diet to 25 to 35 grams a day. Good sources of fiber include whole grains, nuts and seeds, fruits and vegetables. Fiber adds bulk to your diet and makes you feel full faster, helping you to manage your weight. It also aids in digestion and helps to prevent constipation. Increase your fiber intake slowly to avoid abdominal discomfort.
- Choose foods low in saturated fat and added sugars. Avoid fried and fast food meals, which contain a lot of fat, sugar and sodium.
- Discuss physical activity with your lung care team. They can help you find activities that are safe and that you enjoy. Physical activity can aid in weight loss and maintain your muscle tone and lung function. Start small. Try 15 minutes, twice a day and slowly increase to 180 minutes per week or to the goal set with your lung care team.

Other key nutrients

Calcium and vitamin D:

If you are taking a steroid or have osteopenia or osteoporosis, including foods high in calcium and vitamin D can help maintain your bone health.

The table below shows some good sources of calcium. Eat 4 servings of calcium-rich foods a day.

Foods High in Calcium	Serving size
Milk	1 cup
Yogurt, fruit flavored	1 cup
Frozen yogurt	½ cup
Cottage cheese	½ cup
Colby, cheddar and jack cheeses	1 ounce
American cheese	1 ounce
Swiss cheese	1 ounce
Non-fat dry milk powder	1 tablespoon
Clams	3.5 ounces
Sardines, canned with bones	½ cup
Shrimp	3.5 ounces
Orange	1 medium
Calcium-fortified orange juice	6 ounces

The table below shows some good sources of vitamin D. Most people are not able to get enough vitamin D from foods alone. However, eating these foods will help you meet your total daily needs.

Foods High in Vitamin D	Serving size
Cod liver oil	1 tablespoon
Salmon, cooked	3 ounces
Salmon, canned	3 ounces
Tuna fish canned	3 ounces
Shrimp, cooked	4 ounces
Milk, fortified with vitamin D	1 cup
Yogurt, fortified with vitamin D	1 cup
Orange juice, fortified with vitamin D	1 cup
Cereal, fortified with vitamin D	$\frac{3}{4}$ cup to 1 cup
Cheese	1 ounce

Vitamin D supplement:

Your doctor may take a blood sample to check your body’s vitamin D level. If it is low, your doctor may recommend taking a vitamin D supplement that is more than the Recommended Daily Allowance (RDA) to raise your vitamin D to a normal level. After a period of time using the supplement, your doctor will check your blood again to make sure that your vitamin D level has reached the recommended range.

Sodium:

Most Americans eat too much sodium. If you also have high blood pressure, heart disease or heart failure, it is even more important for you to avoid eating too much sodium.

To lower sodium in your diet:

- Eat a very low sodium diet or less than 2,000 mg of sodium a day.
- Avoid packaged, processed foods, which are high in sodium. These include condiments, frozen meals, lunch meats, canned foods, and ready-to-eat cereals, breads and baked goods.
- Do not add salt to foods. Use herbs and spices to flavor your foods instead of salt.
- Cook at home. Read food labels to help you plan low sodium meals and snacks.
- Avoid fast food meals, which are high in sodium.

For more information, read *Lowering Sodium in Your Diet* and *Making Sense Out of Food Labels*.

Please visit wexnermedical.osu.edu/patiented if you would like to read the nutrition resources mentioned in this handout, or ask your health care provider to print a copy.

Making Sense Out of Food Labels

Claims on food packages can be confusing. Knowing what is in food may help you to make healthier choices. Reading food labels is the best way to get information about what is in your foods. This can help you make better choices and eat healthier overall.

Nutrition Facts

- 1. Look for the Nutrition Facts on the food label.** The numbers on this illustration match the numbers in the Nutrition Facts section of this handout. Refer back to this page as you learn what each item means.
- 2. Serving Size:** The amount of food recommended to be eaten at one time. All of the following nutrition information is based on this serving size. For instance, if you ate 2 servings, you would need to double the numbers listed below. Also note how many servings are in the entire container to help estimate what one serving size looks like.
- 3. Calories:** The average adult needs about 2,000 calories a day from food and beverages. Use this number to help determine if this product fits into your daily eating plan or not. Too many calories each day can lead to weight gain.
- 4. Fat:** Not all fat is created equal. There are 4 types of fat in our foods: saturated fat, trans fat, monounsaturated fat and polyunsaturated fat. The FDA only requires that food manufacturers list saturated fat and trans fat on their Nutrition Facts labels, but sometimes you might find all 4 types listed.

Nutrition Facts	
6 servings per container	
Serving size	1 cup (140g)
Amount per serving	
Calories	170
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 22g	8%
Dietary Fiber 2g	7%
Total Sugars 16g	
Includes 8g Added Sugars	16%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 20mg	2%
Iron 1mg	6%
Potassium 240mg	6%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet 2000 calories a day is used for general nutrition advice.

Source: Adapted from U.S. Food and Drug Administration

Too much saturated fat or trans fat in the diet can lead to health problems, such as heart disease or cancer. An average adult following a 2000 calorie diet should aim to limit total fat to 45 to 75 grams per day (20-35% total calories), saturated fat to 11 to 13 grams per day (5-6% total calories) and trans fat should be avoided as much as possible. Check the list below to see how much you should have if you eat a different amount of calories per day.

If your daily calorie total is:	Your total fat limit fat per day is:	Your saturated fat limit per day is:
2000 calories	45 to 75 grams	11 to 13 grams
1800 calories	40 to 70 grams	10 to 12 grams
1500 calories	35 to 60 grams	8 to 10 grams
1200 calories	25 to 45 grams	6 to 8 grams

Note: Although the food label may say the food item has 0 grams of trans fat, it may contain up to 0.5 gram per serving. The best way to check for trans fats is to look at the ingredient list and look for “partially hydrogenated oils.” If you see these words, try to find an alternative product made with different ingredients.

- 5. Cholesterol:** Cholesterol is found in animal products, such as cheese, egg yolks, milk and butter. Eating too many of these foods can increase your risk for heart disease. Try to limit total cholesterol intake to 300 mg per day. If you are at risk for heart disease or have Type 2 Diabetes, 200 mg per day is the maximum recommended amount. Plant-based foods do not contain any cholesterol.
- 6. Sodium:** Many processed foods contain sodium, which acts as a preservative and adds flavor. Most Americans are eating too much sodium. Keeping your sodium intake low may decrease high blood pressure and lower your risk for stroke, heart disease and kidney disease. The 2015 Dietary Guidelines for Americans suggests limiting sodium intake to no more than 2,300 mg per day although some older individuals or those with high blood pressure may want to limit this intake even more.
Guideline: Look for foods that have less than 300 mg of sodium per serving. Watch the number of servings of any food you eat.
- 7. Total Carbohydrates:** Carbohydrates are in foods like bread, pasta, potatoes, fruits and vegetables. Some individuals, like those with diabetes, may want to control the amount of carbohydrate that they have with their meals and snacks.
- 8. Dietary Fiber:** Fiber is the bulk part of grains, beans, peas, fruits and vegetables. Fiber helps the body’s digestive system work well and may help lower the risk of some cancers and heart disease. If you want to increase your fiber intake, look for foods with at least 3 grams of fiber per serving.
- 9. Added Sugar:** Some sugars are naturally occurring, like those in fruit, and others are added during the processing or packaging of foods. Too many of these “added sugars” can increase your risk for developing diabetes, heart disease, obesity and other health conditions. Aim to limit added sugar intake to 10% of total calories, or about 30 to 55 grams per day for most people. Make sure to check beverages for added sugar content.
- 10. Protein:** Protein can help to build muscle, regulate hormones and is involved in immune function. Most individuals should aim for about 60 to 100 grams of protein per day.

11. Vitamins and Minerals: Most Americans are not meeting the recommended amount of these nutrients each day. Look for food products that are a good source of these nutrients. Your goal is to reach 100% of each for the day.

12. % Daily Value: Daily values are the percentage of nutrients the product provides based on a diet of 2,000 calories per day. Your nutrient needs may be less or more than the Daily Value depending on your individual health concerns. For certain nutrients, like sodium and added sugar, aim for lower percentages. For other nutrients, like fiber, vitamins and minerals, aim for 100% a day.

The Ingredient List

In addition to the Nutrition Facts Label, look at a product’s ingredient list to help you make better food selections. The ingredient list tells you what is in the food. Manufacturers list ingredients by weight in order of greatest amount to least amount in the food. It is a valuable resource for people with food allergies. Use the table to help you identify ingredients that are high in a nutrient.

Nutrient	Common Ingredients	
Sodium	<ul style="list-style-type: none"> • Baking powder • Baking soda • Monosodium glutamate 	<ul style="list-style-type: none"> • Salt (regular or sea salt) • Sodium
Cholesterol	<ul style="list-style-type: none"> • Any animal fats • Lard 	<ul style="list-style-type: none"> • High fat products, such as whole milk and cheese
Saturated and Trans Fats	<ul style="list-style-type: none"> • Any animal fats except fish • Coconut butter • Coconut oil 	<ul style="list-style-type: none"> • Palm oil • Partially hydrogenated oils
Sugar	<ul style="list-style-type: none"> • Brown sugar • Carob powder • Corn syrup/solids • Dextrin • Dextrose • Fructose • Glucose 	<ul style="list-style-type: none"> • High fructose corn syrup • Honey • Invert sugar • Lactose • Mannose • Molasses • Sucrose

Osteoporosis

Osteoporosis, or porous bone, is a disease from the loss of bone mass thickness and bone quality. People may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump or fall causes a bone fracture. Fractures occur most often in bones of the hip, spine and wrist, but any area of the bone can be affected.

More than 54 million people in the United States have osteoporosis or are at high risk of developing it.

Risk factors

There are risk factors you cannot change, and others that you can or may be able to change.

Risk factors that you cannot change:

- **Gender:** Women are at higher risk than men.
- **Age:** The older you are, the greater your risk.
- **Body size:** Slender, thin-boned women and taller women are at higher risk.
- **Race:** Caucasian women are at higher risk.
- **Family history** of osteoporosis.

Risk factors that you can or may be able to change:

- **Poor diet.**

What you can do: Eat a healthy, balanced diet that includes plenty of fruits and vegetables, enough calories, calcium, vitamin D and vitamin K. Dietary sources of calcium include low-fat dairy products (fat free skim milk and yogurt), dark green leafy vegetables, sardines and salmon with bones, soy products, and calcium-fortified foods, such as orange juice, cereals and breads.

- Men and women up to age 50 need 1,000 mg of calcium a day.
- Women after age 50 need 1,200 mg of calcium a day.
- Men after age 70 need 1,200 of calcium a day.

If you have trouble getting enough calcium in your diet, **talk to your doctor about taking calcium supplements**, like calcium carbonate, calcium phosphate or calcium citrate. Vitamin D is needed to help your body absorb calcium. Choose a calcium supplement with vitamin D to meet your body's needs.

- **Certain medical conditions**, like a sex hormone problem, eating disorder, genetic disorder, endocrine disease, gastrointestinal disease, blood disease or rheumatic disorder.

What you can do: Talk to your doctor about treatment for your condition and your overall bone health.

- **Certain medicines**, such as long term use of steroid medicines, anticoagulants (heparin), some anticonvulsants, cyclosporine, tacrolimus, glucocorticoids and methotrexate, increase your risk for fractures.

What you can do: Talk to your doctor about your overall bone health. Your doctor may be able to reduce your medicine dose or switch you to another medicine that is not harmful to your bones.

- **Are inactive or on bedrest.**

What you can do: Start an exercise program that includes strength training under the supervision of your doctor, physical therapist or exercise specialist. This will help increase your muscle strength and decrease your risk of falls.

- **Excessive use of alcohol.**

What you can do: Limit alcohol use. Talk to your doctor if you need help.

- **Smoking and tobacco use.**

What you can do: Talk to your doctor for resources and aids to quit.

Tests

Your doctor will do a physical exam, take a medical history, and perform blood and urine tests to check for medical conditions that could lead to osteoporosis. An x-ray of your spine and hips may be done to look for fractures or malformations due to osteoporosis. If you have risk factors for the disease, a bone density test may be done.

Dual-energy x-ray absorptiometry (DXA) is the most common bone density test done. It uses low levels of x-rays to measure bone density, often of the hip and spine. Your T-score is compared to the average bone density of other people your age, gender and race.

If your bone density is very low and you have risk factors for fractures, your doctor will talk to you about options for treatment or prevention of osteoporosis.

Treatment

Your treatment plan will include eating a healthy diet rich in calcium, exercise, strength training and preventing falls. Your doctor may also prescribe medicines to slow or stop bone loss, and increase bone density. The most commonly prescribed medicines for the prevention or treatment of osteoporosis are bisphosphonates.

Safety Tips to Prevent Falls at Home

Falls can happen at any time and at any age. However, falls greatly increase as we get older due to slower reaction and response times. Here are some tips to use in your home to help prevent falls.

Floors

- Keep cords, furniture and small objects out of walkways and off stairs. **Do not** put electric cords under rugs.
- Large area rugs should have non-slip backing. If not, use double-sided tape to keep the rug securely attached to the floor. **Do not** use throw rugs.
- Remove carpet that is torn or has turned-up edges. Use low-pile carpet or solid flooring.
- Use bright tape or paint to mark areas where the floor surface changes, such as from carpet to solid floors. It is easy to fall when you walk from one type of flooring to another.

Lighting

- Keeps areas of your home well-lit. Use night-lights in bedrooms, bathrooms and near stairways.
- Use light switches that glow in the dark, so they can be seen more easily.
- Keep electrical cords and small things out of your path.

Stairs

- Place handrails on both sides of your stairs. These handrails should extend past the top and bottom stair.
- Try not to carry anything, or carry as little as possible when you use the stairs.
- Use good lighting on your stairs. Non-slip surfaces can be put on wood stairs to prevent sliding.
- Use bright tape or paint on the edge of each step, so they are more easily seen.

Furniture

- Be careful when you sit down. Make sure the backs of your legs touch the seat of the chair behind you before you sit down.
- Use chairs and furniture that are stable for your size and weight. Choose chairs with armrests.
- Get help to move furniture that may block your walking path.

Bathroom

- Use non-skid decals or a mat in your tub or shower.
- Install grab bars around your toilet and in your shower or bathtub. Towel bars will break if you use them as grab bars.
- Use a tub seat and an elevated toilet seat.
- Leave the bathroom door unlocked so it can be opened if you fall.

Kitchen

- Place items you use most often at counter level or within easy reach.
- Use a sturdy step stool with a handrail to reach items on high shelves. **Do not** climb on the counter or use chairs.
- Wear non-slip shoes in the kitchen to lower your risk of falls.

Bedroom

- **Do not** wear long nightgowns or robes. These can cause you to trip.
- **Do not** wear loose shoes that cause you to shuffle your feet when you walk. Wear non-slip shoes or slippers that fit well and stay securely on your feet.
- Sleep in a bed that is easy to get into and out of.
- Place a lamp, telephone and flashlight near your bed in case you need them during the night.

Outside your home

- Leave outside lights on at night if you are outside after dark.
- Get help to repair cracks in your pavement and fill holes in your lawn.
- Get help to remove rocks, tools, snow, wet leaves and ice on your outside walkways and stairs.

Other tips

- Be careful not to trip over pets. Be aware of where your pet is when you move around.
- Take your time. **Do not** rush to answer the phone or door.
- Always keep a telephone within reach. It may help to keep a mobile phone in your pocket or use an emergency alert necklace in case you fall and are unable to reach your phone.
- If needed, use a cane or walker to give you support when you are walking.
- Ask for help when you get up if you feel shaky, weak, dizzy or lightheaded.
- Change positions slowly. This can help lower your chance of getting dizzy.

Preventing Infections

Infections are the main reason people with lung disease are admitted to the hospital. Even common illnesses, like the cold and flu, can lead to a lung infection. Preventing infections and knowing the signs of illness will help you seek early treatment and keep you out of the hospital.

Causes of infection

Infections are caused by germs, such as bacteria and viruses. These germs are so small that millions of them can fit on the period at the end of this sentence. They cause common illnesses, such as colds and flu, and serious diseases, such as meningitis and tuberculosis.

How germs are spread

Most germs are spread through contact between people, often by unwashed hands. Some germs are airborne and travel on tiny particles in the air, entering the body as you breathe. Sometimes germs are passed through contaminated food or water.

Protecting yourself from illness

- **Wash your hands often with soap and water for 20 seconds. Be sure to clean the backs of your hands, between your fingers and under your nails.**
- When soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol. Rub the product over all surfaces of your hands and fingers until your hands are dry.
- **Do not touch your eyes, nose and mouth.**
- **Cover your mouth and nose with a tissue when you cough or sneeze to prevent spreading germs. If you do not have a tissue, cough or sneeze into your shoulder or bend of your elbow.**
- Clean surfaces, such as countertops, sinks, doorknobs, light switches, remote controls, computer keyboards, tablets and phones, with a disinfectant cleaner or cleaner with bleach.
- Limit your contact with those who are ill.
- Avoid shaking hands if you are ill or with others who are ill.
- Avoid large crowds.
- Stay away from others when you are sick. Stay home from work, school or running errands if you can.
- Get a full night's rest, eat a healthy diet and drink at least 8 glasses of liquids each day.
- Maintain an active lifestyle.

- Get a flu shot every year, ideally in September or October, before peak flu season.
- Ask your doctor about getting pneumonia vaccines:
 - Get the pneumococcal polysaccharide vaccine (PPSV23) every 5 years.
 - Get the pneumococcal conjugate vaccine (PCV13) one time during your life.
- Keep your lungs clear from mucus, which can trap germs. Deep breathing and coughing exercises are a great way to clear out mucus.
- Use air quality index (AQI) forecasts to plan your day. Reduce your exposure to air pollution by staying indoors when air quality is unhealthy and rescheduling exercise to times of the day when air quality is expected to be better. Go to www.epa.ohio.gov/dapc/airohio/forecast for today's AQI forecast and more information.
- Stay away from strong chemical fumes and smells.
- Avoid being outside in very hot, humid or cold temperatures.

Signs of illness

Call your doctor at the first signs of illness. The sooner you seek treatment, the more likely you are to prevent damage to your airways. Call your doctor if you have:

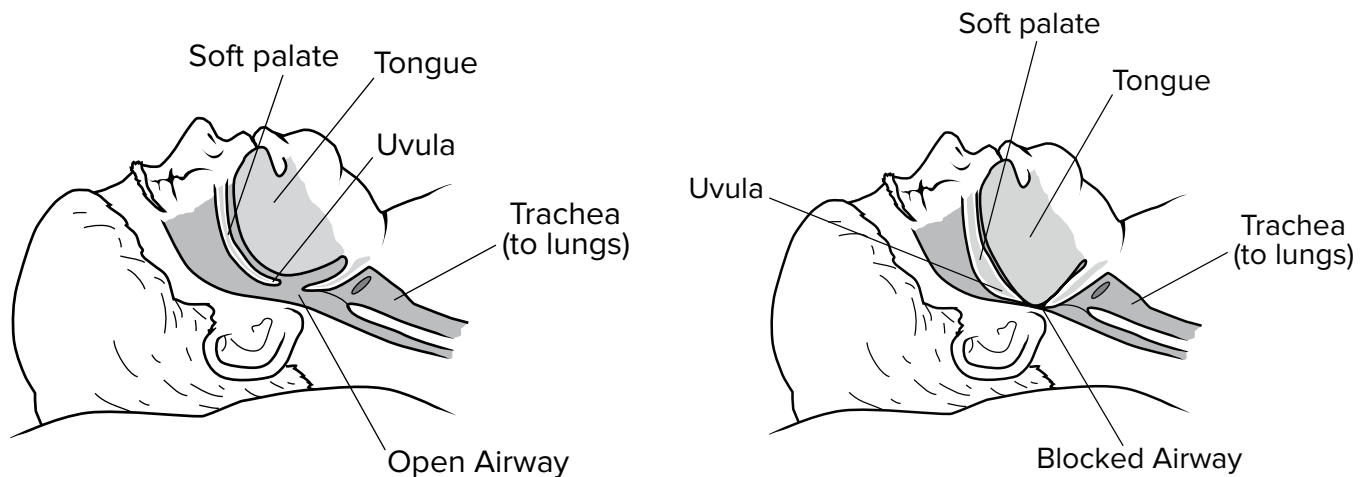
- Tightness in your chest that does not go away with your normal medicines or short acting inhalers
- Increased shortness of breath, trouble breathing or more wheezing
- Coughing more often or harder
- Chest pain with breathing or coughing
- Changes in mucus, including color, thickness or amount
- Fever, chills or muscle aches
- Fatigue
- Increased sinus drainage that does not go away with normal medicines
- Nasal congestion or pain along the cheekbones
- Fluid retention, such as swelling in your ankles or legs, or weight gain of 3 or more pounds overnight or within a few days
- Dehydration: less urine, dark urine or dry skin from less fluid
- Heart rate faster or more irregular than usual
- Dizziness, headaches or trouble thinking
- Changes in your vision
- Loss of appetite or nausea
- Confusion

When you call your doctor, share with them:

- How long you have had your symptoms.
- What medicines you are taking, how much and when.
- How your symptoms are changing (getting better or worse).

Obstructive Sleep Apnea

Obstructive sleep apnea occurs when a person stops breathing for a short time while sleeping. The muscles around the tongue and throat keep the airway open, so a person can breathe during sleep. If you have obstructive sleep apnea, these muscles relax during sleep causing the tongue or throat tissues to block or limit the flow of air to your lungs.



If you have signs of sleep apnea or do not feel rested when you sleep, your doctor may order a sleep study to check your breathing or when your oxygen level drops. If you stop breathing more than 5 times in an hour, it can have major effects on your health.

Who is at risk?

You are at increased risk for sleep apnea if you:

- Are a man
- Are older
- Are overweight
- Have a family history
- Snore
- Have daytime sleepiness
- Take sedating medicines
- Use alcohol
- Smoke
- Have certain health problems, like high blood pressure, stroke, heart failure or diabetes

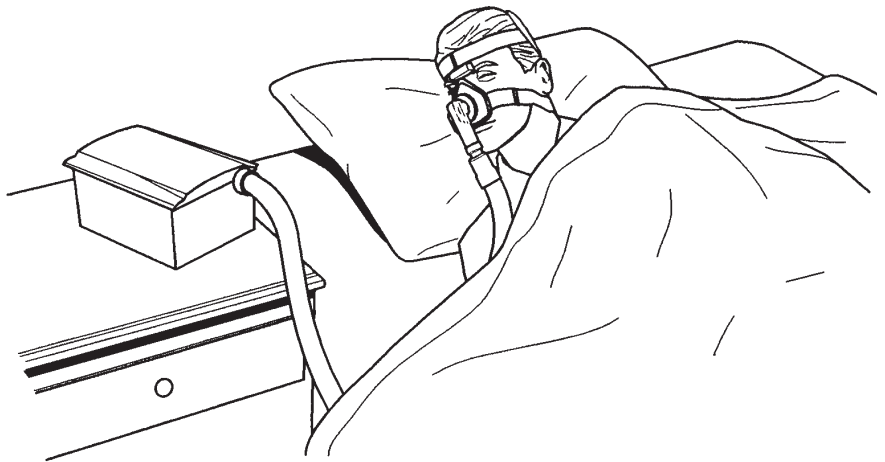
How does sleep apnea affect me?

Sleep apnea does more than affect the quality of sleep. If not treated, it can cause:

- High blood pressure, also called hypertension
- Poor control of diabetes
- Daytime sleepiness and fatigue
- Irritability
- Problems concentrating or remembering facts
- Trouble losing weight
- Swelling in the legs
- Waking often at night to have to go to the bathroom
- Higher risk for stroke
- Higher risk of an irregular heart beat
- Increased risk for heart and blood vessel disease
- Less sexual drive
- Morning headaches
- Greater risk for accidents, especially when driving

How is sleep apnea treated?

- The most effective treatment is continuous positive airway pressure (CPAP). A mask or nasal cannula is worn while you sleep. Warm, humidified air is continuously pushed through the tube to keep your airway open and your oxygen level up while you sleep. Home oxygen can also be attached to the CPAP machine to give extra oxygen. Although it can take some time to get used to wearing the mask, most people feel more rested and alert. CPAP needs to be used every time you sleep to stop the apnea. If it is not used or not used correctly, apnea will return.
- Share with your doctor how well CPAP is working for you. The CPAP's pressure settings and mask can be adjusted to improve your comfort and oxygen levels.
- If your apnea needs managed with two pressure settings, a bi-level positive airway pressure (BiPAP) may be an option. It has a setting for inhaling and a setting for exhaling.
- Remember to take your CPAP or BiPAP with you when you travel or if you are admitted to the hospital.
- Other treatment options include weight loss, modifying sleeping position (sleeping on your side or with your head elevated), dental devices and surgery.



Quit Tobacco Use

Smoking or any tobacco use is dangerous to your health. Quitting will reduce your risk of dying from heart disease, blood vessel disease, lung problems, cancer and stroke.

Benefits of quitting now

- **Within 20 minutes**, your heart rate and blood pressure drops.
- **After 8 hours**, the oxygen levels in your blood return to normal.
- **Within 3 months**, your circulation and lung function improves.
- **Within 9 months**, you will cough less and breathe easier.
- **After 1 year**, your risk of heart disease is cut in half.
- **After 5 years**, your risk of having a stroke will be the same as a nonsmoker's. Your risk of cervical cancer and stroke return to normal.
- **By 10 years**, you will have decreased your risk of developing cancer.

Talk to your doctor about quitting

You will need support to quit. Talk to your primary care doctor about a referral to the office's pharmacist for smoking cessation counseling. Ohio State's family medicine and internal medicine doctors are your health partners to quit tobacco use. Talk with your doctor about medicines and other aids to help you quit. Ask about classes and support groups in your area.

If you would like more information on stopping tobacco use, consider these resources:

Ohio State resources

- Call **614-293-QUIT (7848)** to connect with a pharmacist for one-on-one assessment, counseling and treatment. For more information about this program, please visit <https://wexnermedical.osu.edu/heart-vascular/clinical-pharmacist-services/smoking-cessation>.
- **Quitting Tobacco Use Book:** Available from your health care provider or visit <https://go.osu.edu/pted3430>.

Quit lines

- **American Cancer Society**, 800-227-2345
- **American Lung Association**, 1-800-LUNGUSA (1-800-586-4872)
- **BeTobaccoFree.gov**, 877-448-7848
- **Ohio Tobacco Quit Line**, 1-800-QUIT-NOW (1-800-784-8669)

Mobile apps

- Search your mobile device's app store for quit smoking apps, such as **QuitGuide** and **QuitSTART**.

Coping with Lung Disease

Physical Symptoms and Life Stressors

Aging and chronic health problems, like lung disease, can affect you physically, mentally and emotionally. Dealing with these normal responses takes different ways of coping.

You use coping skills every day to manage your symptoms of lung disease. For example:

- When you are short of breath, you do pursed lip breathing and use your inhaler or nebulizer medicine as prescribed.
- When it is cold outside, you cover mouth and nose with a cotton scarf.

There is no one way to cope, but here are some ways to help you.

Remember to work on the issues or situations you can control and learn to accept or change your response to the ones you cannot control.

What are some of your stressors?

Physical symptoms:

- Shortness of breath
- Coughing
- Increased mucus production
- Increased heart rate or palpitations
- Supplemental oxygen needs
- Chest tightness or soreness
- Fatigued or tired
- Muscle or joint pain
- Not sleeping well
- _____

Activities of daily living:

- Self care, such as dressing, showering and bathing
- Housework, such as cleaning and laundry
- Cooking
- Driving

- Taking all of your medicines
- Getting to appointments, events, church, etc.
- _____

Family, friends and home life:

- I feel isolated. My family or friends are not involved in my life.
- My family or friends are too overbearing or I don't get along with them.
- I take care of young children or other family members.
- I fear or lack intimacy.
- I have money concerns, such as debt or how to pay my bills, utilities, medicines, food, etc.
- _____

Ways to handle stress

- Pursed lip breathing
- Listening to favorite music
- Relaxation techniques, such as guided imagery or progressive muscle relaxation
- Positive self-talk
- Meditation
- Prayer
- Reading books and magazines
- Hobbies or crafting
- Talking with family or friends
- Asking for help from family or friends
- Exercise or increased activity
- Professional counseling
- Watching TV or movies
- Computer use
- Pet companionship
- Getting more sleep
- Puzzles or games
- Journaling
- Volunteering
- Join “clubs” of interest

Relaxation Techniques

The relaxation techniques listed below will help with stress, anxiety, and muscle tension. It is good to practice these techniques often even when you are not stressed or anxious. There are many books, CDs and Internet resources that promote optimal mental health and muscle relaxation techniques through guided exercises. Your Pulmonary Rehab staff can help you with these techniques and give you more information to help you practice correctly and safely.

- **Guided imagery:**

This is a type of meditation (not hypnosis) that involves seeing yourself or your surroundings in a way that promotes relaxation, safety and comfort. It reduces stress and anxiety, and promotes positive thinking. The more you practice, the easier it will become.

- ▶ Set aside 10 to 15 minutes for the exercise.
- ▶ No matter your beliefs, values or preferences, you chose the visual information in the guided imagery exercise.
- ▶ Setting: For optimal results, make sure you practice in a calm environment. Turn off the lights, phone, radio and television. Get into a comfortable position, such as sitting or lying down.
- ▶ For more information, please visit Ohio State Integrative Medicine’s website at <https://wexnermedical.osu.edu/integrative-complementary-medicine> or call 614-293-9777.
- ▶ For free guided imagery recordings, please visit <https://wexnermedical.osu.edu/integrative-complementary-medicine/resources/guided-imagery>.

- **Progressive muscle relaxation:**

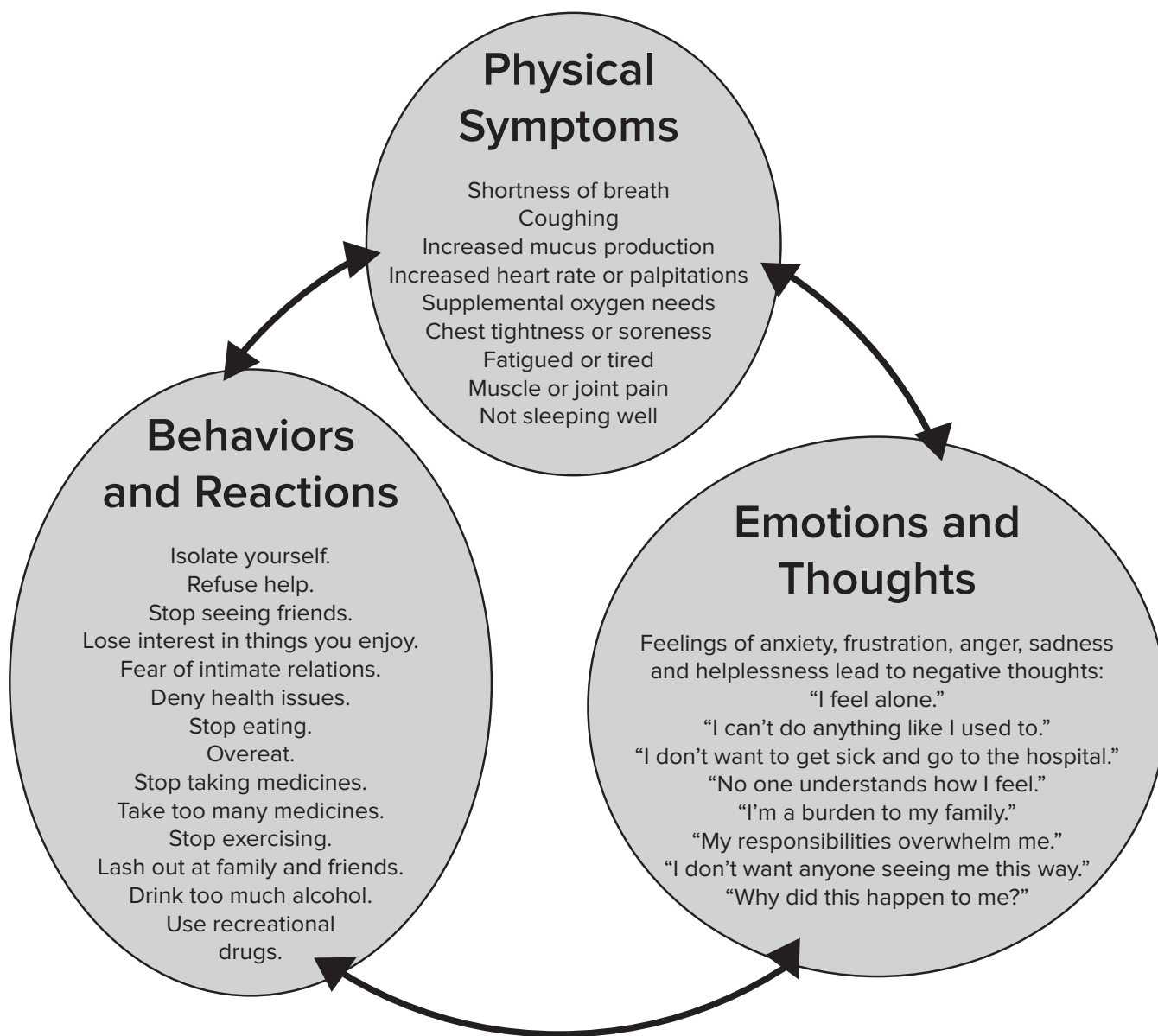
This is a two-step process that involves tensing certain muscle groups and then relaxing the muscles to promote stress and tension relief.

- Set aside 15 minutes for this exercise.
- Setting: Find a comfortable, calm place where you will not be disturbed. Sitting in a comfortable chair or lying down is preferred.
- Muscle groups: Feet, calves, thighs, hands, upper arm (biceps), buttocks, stomach, neck, shoulders, mouth, eyes and forehead.
- Follow these steps:
 1. Tension: Take a deep breath in and clench (tighten) one of the muscle groups. Hold your breath for 5 seconds.
 2. Relaxation: Breathe out through pursed lips and relax the muscle group. After 15 seconds of breathing and resting, repeat the same muscle group 2 to 3 times before moving on to the next muscle group.

Coping with Lung Disease

Mental Outlook and Emotions

Good mental health is just as important as physical health. Your physical symptoms have a huge impact on your emotions and thoughts, which in turn affect your behaviors and reactions. The more severe your physical symptoms, like breathing, shortness of breath and physical activity, influence your daily life, the stronger the effect on your emotions, thoughts and behaviors.



Coping reminders

When you're not feeling well physically, it can affect your emotions, leading to changes in your behaviors. It's easy to focus on negative thinking. Negative thoughts are normal, but they will keep you from making positive changes and obtaining positive outcomes in your daily life.

- **Recognize your negative thinking.** Ask yourself, "Am I thinking this way because I'm not feeling well, or because I'm stressed and anxious, or because I just had a bad experience?" When you start thinking or reacting negatively, adjust your thinking and responses with positive reinforcement.

Examples of positive reinforcement:

- I was able to decrease my shortness of breath without getting anxious!
- I found a parking spot and was able to see the doctor on time. He even answered all my questions!
- I don't like calling my insurance company, but I have given myself enough time for the call and have my questions written down.
- I increased my time and level on the Nu-step today! Yeah for me!
- **Take control of your reactions.** Don't let your reactions take control of you. Try not to lash out at people or situations because of your frustration. Also, try not to avoid those people or situations you don't want to deal with.
 - Instead, pause and ask questions if you are frustrated or do not understand. Sometimes asking a question is one of the best ways to communicate with others. It increases your knowledge and control of your reactions for your health, medical treatments, home-life situations and social interactions.
- **Don't be afraid to ask for help.** This includes:
 - Professional counseling: Ask your doctor for a referral if needed. Talking to someone outside of your current situation or family circle will give you insight or steps to handle your reactions, issues or conversations you struggle with.
 - Home-life: Ask for help with housework, house repairs, yard work, meal preparation, etc.
 - Travel: Ask for help to get to and from appointments, the grocery store, etc.
 - Social support: Social support is the single most important buffer against stress. Share problems and seek advice from people you trust and care about.

How to find a counselor

Consider these resources if you need help finding a counselor:

- Your health insurance company for a list of professionals or companies that are covered under your insurance plan
- Your doctor, nurse, social worker, clergy, family and friends
- A Community Mental Health Center
- The Employee Assistance Program at your work

Other mental health resources

- Ohio State Psychology Services Center, <https://psychology.osu.edu/psc/services>
- Ohio State Mental and Behavioral Outpatient Care, 614-293-9600 or <https://wexnermedical.osu.edu/mental-behavioral/outpatient-care>
- Ohio State Integrative Medicine, 614-293-9777 or <https://wexnermedical.osu.edu/integrative-complementary-medicine>
- American Psychiatric Association, www.psychiatry.org
- National Institute of Mental Health, www.nimh.nih.gov/index.shtml
- Toll-free, 24-hour National Suicide Prevention Lifeline, 1-800-273-TALK (1-800-273-8255). You can also find more information by visiting www.mentalhealth.gov.

Being a Sexual Person with Lung Disease

Sexuality is part of healthy living. It is more than being male or female. It includes your emotions, feelings and experiences. Each person expresses sexuality in different ways. Sexual expression includes touching, talking, hugging, fantasizing, kissing or just holding hands. It can also include sexual intercourse.

Emotional issues and lack of communication are the most common reasons for problems with sexual relationships. Talk with your partner about your feelings and fears. Do not expect your partner to read your mind.

Sexuality and lung disease

Lung disease does not lessen sexual interest for most people. Men may have more problems with impotence as lung function declines. Having sex does not raise blood pressure, heart rate or breathing rates to dangerous levels. The effort or amount of work is about the same as climbing a flight of stairs at a normal pace. The physical work of having sex can cause some people with lung disease to have trouble breathing, coughing or wheezing.

Some lung disease medicines can have an affect on sexual function. Talk to your doctor if you think you are having side effects from the medicines you take.

Things you can do

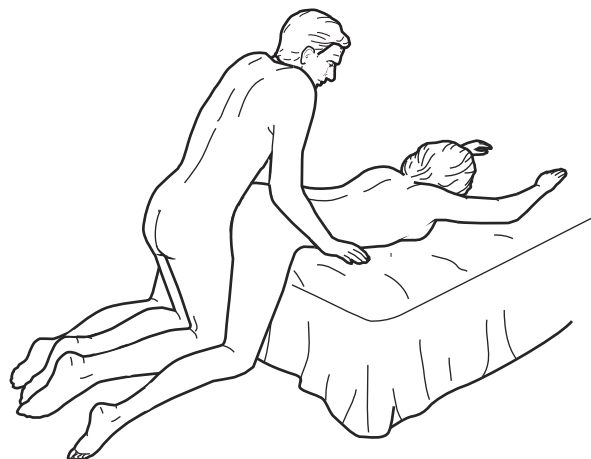
- Talk to your doctor, nurse or therapist about your sexual concerns. You may want to seek counseling if the problems persist.
- Use the breathing strategies and exercises you've learned in pulmonary rehab to build your strength and endurance and to feel less shortness of breath.
- Use your short acting inhaler or nebulizer treatment 15 to 30 minutes before planned sexual activity.
- Use home oxygen during sex if prescribed.
- Keep the room cool. Be sure there is good airflow in the room.
- Slow down or take a break if your shortness of breath gets too severe.
- Use massage to reduce muscle tension.
- Plan sexual activity for your best breathing time in the day. Wait at least 30 minutes after eating a meal.
- Use other ways to express your romantic feelings. Holding someone close, hugging and kissing are very intimate.

- Allow extra time for foreplay to allow for gradual adjustments to oxygen demands.
- You may need extra time to adjust your breathing to a reclining position when you first get into bed.
- Do not over focus on reaching an orgasm. With long-term lung disease, it may be more difficult to reach orgasm. Do not let this stop the romantic and intimate behaviors between you and your partner.
- Avoid positions that put pressure on the chest and stomach or those that require support of the arms. Explore new positions with your partner, including:
 - Lying face to face on your side. This allows free and easy breathing for both partners.
 - Lying on your side, back to front, with the man behind.



- For women:

- Kneel on the floor bent over with your chest resting on the bed, with the man on his knees behind. This reduces the weight of the man pressing down on you.



- Sit on the edge of the bed, feet on the floor and your back resting on pillows. The man kneels on the floor in front. This may be the most comfortable position.



- For men:

- Lie on your back with the woman sitting on top. This allows the woman to do most of the work.



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