

# **Respiratory**

## **Exercise Benefits & Precautions**

This book is for educational purposes and should not be substituted for the direction of a physician or other health care provider (*see Disclaimer*). Before starting an exercise program, especially if you have a history of respiratory disease, you should consult with a physician and/or physical therapist.

Please read the 2<sup>nd</sup> section of this book to learn about precautions, even if you are a healthy individual and are reading this version to learn about preventing pulmonary disease.

Most of the respiratory research is from the:

*CDC – Center for Disease Control and Prevention*

*NIH – National Heart, Blood and Lung Institute* (unless otherwise specified)

Please see *Respiratory References* for links.

**It is advised that you always check with your medical doctor or physical therapist before starting an exercise program or change in diet.**

**Disclaimer:** The information in this book is for educational purposes only and has been obtained through research, publications and personal experience, and shall not be liable for incorrect information. Any mentioned publications or websites does not imply endorsement. As this industry is ever changing, I urge readers to confirm the information contained in this book. The author will not be liable for any injuries sustained from practicing techniques taught in this book or for any typographical errors or omissions. *It is advised that you always check with your medical doctor before starting any new exercise program or change in diet.*

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## **Respiratory Disease and Exercise**

It is beneficial for people who have a history or are currently undergoing treatment for respiratory disease to engage in an exercise program. Please see the second section of this book to see how exercise can help with endurance, balance, muscle strengthening and flexibility.

Most of the pulmonary research is from the **NIH – National Heart, Blood and Lung Institute (NIH)** unless otherwise specified. Please see *Respiratory References* for links.

***This book is not meant to substitute an exercise program prescribed by a health care professional but designed to accompany their recommendations. Please consult with your physician before starting any exercise program.***

Who is this section recommended for?

- Those with a history of pulmonary disease to be used in conjunction with the physician, respiratory therapist or other health care provider and/or physical therapist recommendations.
- The average adult looking to reduce their risks of pulmonary disease.
- Patients currently undergoing Pulmonary Rehab to be used in conjunction with a respiratory therapist, health care provider and/or physical therapist recommendations.
- Physical therapists and other health care providers to be used to prescribe a home exercise program.

Who is this section not for?

- Those who are not able to follow or modify a program without supervision.
- Those who have other medical issues, such as cancer, fracture risks or other acute/chronic issues that have not been cleared by an MD.

What is covered in this section?

Respiratory Disease, including:

- Description
- Signs/Symptoms
- Treatment
- Exercise
- COPD
- Asthma
- Bronchitis
- Cystic Fibrosis
- Idiopathic Pulmonary Fibrosis
- Oxygen Therapy

## Respiratory Disease (NIH unless otherwise specified)

### Quick Summary

#### Chronic Obstructive Pulmonary Disease COPD

- COPD, or chronic obstructive pulmonary disease, is a progressive disease that makes it hard to breathe.
- COPD includes *chronic bronchitis* and *emphysema*
- Signs, symptoms and complications
- Treatments
- Medications
- Managing COPD
- Exercise
- Exercise Precautions

#### Asthma

- A chronic lung disease that inflames and narrows the airways.
- Common Signs and Symptoms
- Control and Treatment
- Diet
- Medications
- Exercise

#### Bronchitis

- Acute vs Chronic
- Signs, Symptoms, and Complications
- Treatment
- Exercise

#### Cystic Fibrosis

- Cystic fibrosis, or CF, is an inherited disease of the secretory glands. Secretory glands include glands that make mucus and sweat.
- Signs, Symptoms, and Complications
- Treatment
- Exercise

#### Idiopathic Pulmonary Fibrosis

- Pulmonary fibrosis is a disease in which tissue deep in your lungs becomes thick and stiff, or scarred, over time. The formation of scar tissue is called fibrosis.
- Signs, Symptoms, and Complications
- Treatment
- Life Changes
- Exercise & Breathing Exercises

#### Oxygen Therapy

- Oxygen therapy is a treatment that provides you with extra oxygen. Oxygen is a gas that your body needs to function. Normally, your lungs absorb oxygen from the air you breathe. But some conditions can prevent you from getting enough oxygen.

## COPD - Chronic Obstructive Pulmonary Disease

- COPD, or chronic obstructive pulmonary disease, is a progressive disease that makes it hard to breathe. Progressive means the disease gets worse over time.
- COPD can cause coughing that produces large amounts of a slimy substance called mucus, wheezing, shortness of breath, chest tightness, and other symptoms.
- Cigarette smoking is the leading cause of COPD. Most people who have COPD smoke or used to smoke.
- However, up to 25 percent of people with COPD never smoked. Long-term exposure to other lung irritants—such as air pollution, chemical fumes, or dusts—also may contribute to COPD.
- A rare genetic condition called alpha-1 antitrypsin (AAT) deficiency can also cause the disease.

### Overview

To understand COPD, it helps to understand how the lungs work. The air that you breathe goes down your windpipe into tubes in your lungs called bronchial tubes or airways. Within the lungs, your bronchial tubes branch many times into thousands of smaller, thinner tubes called bronchioles. These tubes end in bunches of tiny round air sacs called alveoli.

Small blood vessels called capillaries run along the walls of the air sacs. When air reaches the air sacs, oxygen passes through the air sac walls into the blood in the capillaries. At the same time, a waste product, called carbon dioxide (CO<sub>2</sub>) gas, moves from the capillaries into the air sacs. This process, called gas exchange, brings in oxygen for the body to use for vital functions and removes the CO<sub>2</sub>.

The airways and air sacs are elastic or stretchy. When you breathe in, each air sac fills up with air, like a small balloon. When you breathe out, the air sacs deflate, and the air goes out.

In COPD, less air flows in and out of the airways because of one or more of the following:

- The airways and air sacs lose their elastic quality.
- The walls between many of the air sacs are destroyed.
- The walls of the airways become thick and inflamed.
- The airways make more mucus than usual and can become clogged.

### Emphysema and Chronic bronchitis

In the United States, the term COPD includes two main conditions—**emphysema** and **chronic bronchitis**.

- In emphysema, the walls between many of the air sacs are damaged. As a result, the air sacs lose their shape and become floppy. This damage also can destroy the walls of the air sacs, leading to fewer and larger air sacs instead of many tiny ones. If this happens, the amount of gas exchange in the lungs is reduced.
- In chronic bronchitis, the lining of the airways stays constantly irritated and inflamed, and this causes the lining to swell. Lots of thick mucus forms in the airways, making it hard to breathe.

Most people who have COPD have both emphysema and chronic bronchitis, but the severity of each condition varies from person to person. Thus, the general term COPD is more accurate.

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<b>Signs, Symptoms, and Complications</b>	<p>At first, COPD may cause no symptoms or only mild symptoms. As the disease gets worse, symptoms usually become more severe. Common signs and symptoms of COPD include:</p> <ul style="list-style-type: none"><li>• An ongoing cough or a cough that produces a lot of mucus; this is often called smoker's cough.</li><li>• Shortness of breath, especially with physical activity</li><li>• Wheezing or a whistling or squeaky sound when you breathe</li><li>• Chest tightness</li></ul> <p>If you have COPD, you also may often have colds or other respiratory infections such as the flu, or influenza.</p> <ul style="list-style-type: none"><li>• Not everyone who has the symptoms described above has COPD. Likewise, not everyone who has COPD has these symptoms. Some of the symptoms of COPD are similar to the symptoms of other diseases and conditions. Your doctor can determine if you have COPD.</li><li>• If your symptoms are mild, you may not notice them, or you may adjust your lifestyle to make breathing easier. For example, you may take the elevator instead of the stairs.</li><li>• Over time, symptoms may become severe enough to cause you to see a doctor. For example, you may become short of breath during physical exertion.</li><li>• The severity of your symptoms will depend on how much lung damage you have. If you keep smoking, the damage will occur faster than if you stop smoking.</li><li>• Severe COPD can cause other symptoms, such as swelling in your ankles, feet, or legs; weight loss; and lower muscle endurance.</li><li>• Some severe symptoms may require treatment in a hospital. You—or, if you are unable, family members or friends—should seek emergency care if you are experiencing the following:<ul style="list-style-type: none"><li>○ You are having a hard time catching your breath or talking.</li><li>○ Your lips or fingernails turn blue or gray, a sign of a low oxygen level in your blood.</li><li>○ People around you notice that you are not mentally alert.</li><li>○ Your heartbeat is very fast.</li><li>○ The recommended treatment for symptoms that are getting worse is not working.</li></ul></li></ul>
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<b>Treatments</b>	<p><b>Lifestyle Changes</b></p> <ul style="list-style-type: none"><li>• Quitting smoking is the most important step you can take to treat COPD. Talk with your doctor about programs and products that can help you quit.</li><li>• Try to avoid secondhand smoke and places with dusts, fumes, or other toxic substances that you may inhale.</li><li>• If you have COPD, especially more severe forms, you may have trouble eating enough because of symptoms such as shortness of breath and fatigue. As a result, you may not get all the calories and nutrients you need, which can worsen your symptoms and raise your risk for infections.</li><li>• Talk with your doctor about following an eating plan that will meet your nutritional needs. Your doctor may suggest eating smaller, more frequent meals; resting before eating; and taking vitamins or nutritional supplements.</li><li>• Talk with your doctor about what types of activity are safe for you. You may find it hard to remain active with your symptoms. However, physical activity can strengthen the muscles that help you breathe and improve your overall wellness.</li></ul> <p><b>Pulmonary Rehabilitation</b></p> <ul style="list-style-type: none"><li>• Pulmonary rehabilitation or rehab is a broad program that helps improve the well-being of people who have chronic breathing problems.</li><li>• Rehab may include an exercise program, disease management training, and nutritional and psychological counseling. The program's goal is to help you stay active and carry out your daily activities.</li><li>• Your rehab team may include doctors, nurses, physical therapists, respiratory therapists, exercise specialists, and dietitians. These health professionals will create a program that meets your needs.</li></ul> <p><b>Oxygen Therapy</b> (also see <i>Oxygen Therapy</i> for more information)</p> <ul style="list-style-type: none"><li>• If you have severe COPD and low levels of oxygen in your blood, oxygen therapy can help you breathe better. For this treatment, oxygen is delivered through nasal prongs or a mask.</li><li>• You may need extra oxygen all the time or only at certain times. For some people who have severe COPD, using extra oxygen for most of the day can help them:<ul style="list-style-type: none"><li>○ Do tasks or activities while experiencing fewer symptoms</li><li>○ Protect their hearts and other organs from damage</li><li>○ Sleep more during the night and improve alertness during the day</li><li>○ Live longer</li></ul></li></ul> <p><b>Surgery</b></p> <p>Surgery may benefit some people who have COPD. Surgery usually is a last resort for people who have severe symptoms that have not improved from taking medicines. Surgeries for people who have COPD that is mainly related to emphysema include bullectomy and lung volume reduction surgery (LVRS). A lung transplant might be an option for people who have very severe COPD.</p> <ul style="list-style-type: none"><li>• <b>BULLECTOMY</b> - When the walls of the air sacs are destroyed, larger air spaces called bullae form. These air spaces can become so large that they interfere with breathing. In a bullectomy, doctors remove one or more very large bullae from the lungs.</li><li>• <b>LUNG VOLUME REDUCTION SURGERY</b> - In LVRS, surgeons remove damaged tissue from the lungs. This helps the lungs work better. In carefully selected patients, LVRS can improve breathing and quality of life.</li><li>• <b>LUNG TRANSPLANT</b> - During a lung transplant, doctors remove your damaged lung and replace it with a healthy lung from a donor. A lung transplant can improve your lung function and quality of life. However, lung transplants have many risks, such as infections and rejection of the transplanted lung.</li></ul>
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<b>Medicines</b>	<p><b>BRONCHODILATORS</b></p> <ul style="list-style-type: none"><li>• Bronchodilators relax the muscles around your airways. This helps open your airways and makes breathing easier.</li><li>• Depending on the severity of your COPD, your doctor may prescribe short-acting or long-acting bronchodilators. Short-acting bronchodilators last about 4–6 hours and should be used as needed. Long-acting bronchodilators last about 12 hours or more and are used every day.</li><li>• Most bronchodilators are taken using a device called an inhaler. This device allows the medicine to go straight to your lungs. Not all inhalers are used the same way. Ask your health care providers to show you the correct way to use your inhaler.</li><li>• If your COPD is mild, your doctor may only prescribe a short-acting inhaled bronchodilator. In this case, you may use the medicine only when symptoms occur.</li><li>• If your COPD is moderate or severe, your doctor may prescribe regular treatment with short- and long-acting bronchodilators.</li></ul> <p><b>COMBINATION BRONCHODILATORS plus INHALED GLUCOCORTICOSTEROIDS (STEROIDS)</b></p> <ul style="list-style-type: none"><li>• In general, using inhaled steroids alone is not a preferred treatment. If your COPD is more severe, or if your symptoms flare up often, your doctor may prescribe a combination of medicines that includes a bronchodilator and an inhaled steroid. Steroids help reduce airway inflammation.</li><li>• Your doctor may ask you to try inhaled steroids with the bronchodilator for a trial period of 6 weeks to 3 months to see whether the addition of the steroid helps relieve your breathing problems.</li></ul>
<b>Managing COPD</b>	<p>You can do things to help manage COPD and its symptoms.</p> <p>For example:</p> <ul style="list-style-type: none"><li>• Do activities slowly.</li><li>• Put items you use often in one easy-to-reach place. Find simple ways to cook, clean, and do other chores. For example, you might want to use a small table or cart with wheels to move things around and a pole or tongs with long handles to reach things.</li><li>• Ask for help in making things more accessible in your house so that you will not need to climb stairs as often.</li><li>• Keep your clothes loose, and wear clothes and shoes that are easy to put on and take off.</li></ul>

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<p><b>Exercise</b></p> <p><i>(HealthLine and COPD Store)</i></p>	<p>Different types of exercise can help COPD patients in different ways. For example:</p> <ul style="list-style-type: none"><li>• <b>Cardiovascular exercise</b> involves steady aerobic activity that uses large muscle groups and strengthens your heart and lungs. This type of exercise improves your body's ability to use oxygen. Over time, you'll experience decreased heart rate and blood pressure and your heart won't need to work as hard during physical activities, which will improve your breathing.</li><li>• <b>Strengthening or resistance exercises</b> use repeated muscle contractions to break down and then rebuild muscle. Resistance exercises for the upper body can help build strength in your respiratory muscles.</li><li>• <b>Stretching and flexibility exercises</b> like yoga and Pilates can enhance coordination and breathing.</li></ul> <p><b><i>What Type of Exercise You Should Do and Which Activities to Avoid</i></b></p> <p>Frequency</p> <ul style="list-style-type: none"><li>• When exercising with COPD, it's important not to overdo it. Increase the amount of time you exercise very gradually. As a precursor to an exercise program, practice coordinating your breathing with daily activities. This can help strengthen postural muscles used for standing, sitting, and walking. From this base, you can begin to incorporate cardiovascular exercise into your routine.</li><li>• Start out with modest exercise goals and build up slowly to a 20 to 30-minute session, three to four times each week. To do this, you can begin with a short walk and see how far you can go before you become breathless. Whenever you start to feel short of breath, stop and rest.</li><li>• Over time, you can set specific goals to increase your walking distance. Try an increase of 10 feet per day as your first goal.</li></ul> <p>Exertion</p> <ul style="list-style-type: none"><li>• Use a Rated Perceived Exertion (RPE) scale to measure the intensity of your exercise. This scale allows you to use numbers from 0 to 10 to rate the level of difficulty of a physical activity. For example, sitting in a chair would rate as level 0, or inactive. Taking an exercise stress test or performing a very difficult physical challenge would rate as level 10. On the RPE scale, level 3 is considered "moderate" and level 4 is described as "somewhat heavy."</li><li>• People with COPD should exercise between levels 3 and 4 most of the time. Be aware that when you're using this scale, you should consider your level of fatigue and individual factors such as shortness of breath to prevent over-exertion.</li></ul> <p>Breathing</p> <ul style="list-style-type: none"><li>• Shortness of breath while working out means that your body needs more oxygen. You can restore oxygen to your system by slowing down your breathing. To breathe more slowly, focus on inhaling through your nose with your mouth closed, then exhaling through pursed lips.</li><li>• This will warm, moisturize, and filter the air you breathe and allow for more complete lung action. To help decrease the rate of your breathing while you exercise, try making your exhalations twice as long as your inhalations. For example, if you inhale for two seconds, then exhale for four seconds.</li></ul>
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### **Precautions**

Physical activity is an important part of managing your COPD, but you should take the following precautions to ensure safe exercise:

- Do not work out in extreme temperatures. Hot, cold, or humid conditions can affect your circulation, making breathing more difficult, and possibly causing chest pain.
- Avoid hilly courses, as exercising on hills may lead to over-exertion. If you must traverse a hilly area, slow your pace and monitor your heart rate closely, walking or stopping if needed.
- Be sure to exhale when lifting any moderately heavy object. In general, try to avoid lifting or pushing heavy objects.
- If you become short of breath, dizzy, or weak during any activity, stop exercising and rest. If symptoms continue, call your doctor. They might recommend changes to your medications, diet, or fluid intake before you continue your program.
- Ask your doctor for guidance regarding your exercise program after you start new medications, as medicine can affect your response to activity.
- Regular exercise has special challenges for those living with COPD, but the benefits can outweigh the difficulties. By learning proper techniques and using precaution, physical activity can become one of the most important tools in your arsenal to manage your condition.

*(HealthLine)*

### **Signs You Should Stop Exercising (COPD Store)**

- It is important to listen to what your body is telling you, especially when exercising with COPD.
- If you experience any of the following symptoms, you should immediately stop exercising and sit down with your feet elevated.
- If you are still unable to regain control of them, call 9-1-1.

However, even if you do feel better, you should still report these symptoms to your doctor.

- Experiencing Troubles Walking, Talking, or Thinking
- Nausea
- Dizziness
- Lightheadedness
- Irregular or Rapid Heart Rate
- Overall Weakness
- Extreme Shortness of Breath, Even After Taking Medications
- Severe Pressure or Pain in Your Arms, Chest, Neck, Jaw, or Shoulder

## Asthma

A chronic lung disease that inflames and narrows the airways. Asthma causes recurring periods of wheezing (a whistling sound when you breathe), chest tightness, shortness of breath, and coughing. The coughing often occurs at night or early in the morning.

### Overview

To understand asthma, it helps to know how the airways work. The airways are tubes that carry air into and out of your lungs. People who have asthma have inflamed airways. The inflammation makes the airways swollen and very sensitive. The airways tend to react strongly to certain inhaled substances.

When the airways react, the muscles around them tighten. This narrows the airways, causing less air to flow into the lungs. The swelling also can worsen, making the airways even narrower. Cells in the airways might make more mucus than usual. Mucus is a sticky, thick liquid that can further narrow the airways.

This chain reaction can result in asthma symptoms. Symptoms can happen each time the airways are inflamed.

### Common Signs and Symptoms

- Coughing. Coughing from asthma often is worse at night or early in the morning, making it hard to sleep.
- Wheezing. Wheezing is a whistling or squeaky sound that occurs when you breathe.
- Chest tightness. This may feel like something is squeezing or sitting on your chest.
- Shortness of breath. Some people who have asthma say they can't catch their breath, or they feel out of breath. You may feel like you cannot get air out of your lungs.
- Not all people who have asthma have these symptoms. Likewise, having these symptoms does not always mean that you have asthma. The best way to diagnose asthma for certain is to use a lung function test, a medical history (including type and frequency of symptoms), and a physical exam.

The types of asthma symptoms you have, how often they occur, and how severe they are may vary over time. Sometimes your symptoms may just annoy you. Other times, they may be troublesome enough to limit your daily routine.

Severe symptoms can be fatal. It's important to treat symptoms when you first notice them so they don't become severe.

### What Causes Asthma Symptoms To Occur?

Many things can trigger or worsen asthma symptoms. Your doctor will help you find out which things (sometimes called triggers) may cause your asthma to flare up if you come in contact with them. Triggers may include:

- Allergens from dust, animal fur, cockroaches, mold, and pollens from trees, grasses, and flowers
- Irritants such as cigarette smoke, air pollution, chemicals or dust in the workplace, compounds in home décor products, and sprays (such as hairspray)
- Medicines such as aspirin or other nonsteroidal anti-inflammatory drugs and nonselective beta-blockers
- Sulfites in foods and drinks
- Viral upper respiratory infections, such as colds
- Physical activity, including exercise
- Other health conditions can make asthma harder to manage. Examples of these conditions include a runny nose, sinus infections, reflux disease, psychological stress, and sleep apnea. These conditions need treatment as part of an overall asthma care plan.

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<p><b>Control and Treatment</b></p>	<p><b><i>Taking an active role to control your asthma involves:</i></b></p> <ul style="list-style-type: none"> <li>• Working with your doctor to treat other conditions that can interfere with asthma management.</li> <li>• Avoiding things that worsen your asthma (asthma triggers). However, one trigger you should not avoid is physical activity. Physical activity is an important part of a healthy lifestyle. Talk with your doctor about medicines that can help you stay active.</li> </ul> <p>Asthma is treated with two types of medicines: long-term control and quick-relief medicines. Long-term control medicines help reduce airway inflammation and prevent asthma symptoms. Quick-relief, or "rescue," medicines relieve asthma symptoms that may flare up.</p> <p><b><i>Avoid Things That Can Worsen Your Asthma</i></b></p> <ul style="list-style-type: none"> <li>• Many common things (called asthma triggers) can set off or worsen your asthma symptoms. Once you know what these things are, you can take steps to control many of them.</li> <li>• For example, exposure to pollens or air pollution might make your asthma worse. If so, try to limit time outdoors when the levels of these substances in the outdoor air are high. If animal fur triggers your asthma symptoms, keep pets with fur out of your home or bedroom.</li> <li>• One possible asthma trigger you should not avoid is physical activity. Physical activity is an important part of a healthy lifestyle. Talk with your doctor about medicines that can help you stay active.</li> <li>• If your asthma symptoms are clearly related to allergens, and you cannot avoid exposure to those allergens, your doctor may advise you to get allergy shots.</li> <li>• You may need to see a specialist if you are thinking about getting allergy shots. These shots can lessen or prevent your asthma symptoms, but they cannot cure your asthma.</li> <li>• Several health conditions can make asthma harder to manage. These conditions include runny nose, sinus infections, reflux disease, psychological stress, and sleep apnea. Your doctor will treat these conditions as well.</li> </ul> <p><b><i>Watch for Signs That Your Asthma Is Getting Worse</i></b></p> <p>Your asthma might be getting worse if:</p> <ul style="list-style-type: none"> <li>• Your symptoms start to occur more often, are more severe, or bother you at night and cause you to lose sleep.</li> <li>• You are limiting your normal activities and missing school or work because of your asthma.</li> <li>• Your peak flow number is low compared to your personal best or varies a lot from day to day.</li> <li>• Your asthma medicines do not seem to work well anymore.</li> <li>• You have to use your quick-relief inhaler more often. If you are using quick-relief medicine more than 2 days a week, your asthma is not well controlled.</li> <li>• You have to go to the emergency room or doctor because of an asthma attack.</li> </ul>
<p><b>Diet</b></p>	<p><b><i>Best Foods:</i></b> Apples, Avocado, Caffeine, Cantaloupe, Carrots, Cold water fish including cod, salmon, mackerel and halibut, Extra virgin olive oil, Flax Seed, Garlic, Kale, Kiwi, Onions, Spinach, Sweet potatoes, Tomatoes</p> <p><b><i>Worse Foods:</i></b> Most common for food allergies: Dairy, Eggs, Peanuts, Salt, Shellfish, Soy beans, Tree nuts, Wheat</p> <p><b><i>Vitamins / Mineral:</i></b> Beta-carotene, Magnesium, Selenium, Vitamin C, Vitamin E (<i>Worlds Healthiest Foods</i>)</p> <p><b><i>Supplements, Herbs, Spices or Foods containing:</i></b> Echinacea, Ginger, Glycyrriza (Licorice), Lobelia, Omega-3 fatty acid, Oregano, Peppermint, Quercetin, Reishi mushroom, Rosemary, Sage, Turmeric</p> <p><b><i>Avoid:</i></b> MSG, Omega-6 fatty acids, Salt, Tartrazine, or yellow dye #5</p>

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<b>Medications</b>	<p>Asthma medicines can be taken in pill form, but most are taken using a device called an inhaler. An inhaler allows the medicine to go directly to your lungs.</p> <p><b><i>Long-Term Control Medicines</i></b></p> <ul style="list-style-type: none"><li>• Most people who have asthma need to take long-term control medicines daily to help prevent symptoms. The most effective long-term medicines reduce airway inflammation, which helps prevent symptoms from starting. These medicines do not give you quick relief from symptoms.</li><li>• Inhaled corticosteroids. Inhaled corticosteroids are the preferred medicine for long-term control of asthma. They are the most effective option for long-term relief of the inflammation and swelling that makes your airways sensitive to certain inhaled substances.</li><li>• Reducing inflammation helps prevent the chain reaction that causes asthma symptoms. Most people who take these medicines daily find they greatly reduce the severity of symptoms and how often they occur.</li><li>• Your doctor may prescribe low-dose inhaled corticosteroids that you will need to take each day. If your symptoms get worse, your doctor may prescribe higher doses to prevent severe flare-ups. However, one study of children between the ages of 5 and 11 found that children given the higher doses when their symptoms worsened did not experience fewer severe flare-ups. More frequent or prolonged high-dose inhaled corticosteroids in children in this age group may also affect growth.</li><li>• Your doctor may have you add another long-term asthma control medicine so he or she can lower your dose of corticosteroids.</li><li>• Inhaled corticosteroids generally are safe when taken as prescribed. These medicines are different from the illegal anabolic steroids taken by some athletes. Inhaled corticosteroids are not habit-forming, even if you take them every day for many years.</li><li>• Like many other medicines, though, inhaled corticosteroids can have side effects. Most doctors agree that the benefits of taking inhaled corticosteroids and preventing asthma attacks far outweigh the risk of side effects.</li><li>• One common side effect from inhaled corticosteroids is a mouth infection called thrush. You might be able to use a spacer or holding chamber on your inhaler to avoid thrush. These devices attach to your inhaler. They help prevent the medicine from landing in your mouth or on the back of your throat.</li><li>• Check with your doctor to see whether a spacer or holding chamber should be used with the inhaler you have. Also, work with your health care team if you have any questions about how to use a spacer or holding chamber. Rinsing your mouth out with water after taking inhaled corticosteroids also can lower your risk for thrush.</li><li>• If you have severe asthma, you may have to take corticosteroid pills or liquid for short periods to get your asthma under control.</li><li>• If taken for long periods, these medicines raise your risk for cataracts and osteoporosis. A cataract is the clouding of the lens in your eye. Osteoporosis is a disorder that makes your bones weak and more likely to break. Your doctor may suggest you take calcium and vitamin D pills to protect your bones. High doses of these medicines over time may have other side effects that your doctor will monitor.</li></ul>
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<p><b>Medications</b></p> <p><i>Continued</i></p>	<p><b>Other long-term control medicines include:</b></p> <ul style="list-style-type: none"><li>• <i>Anti-inflammatory</i> medicine, such as cromolyn. This medicine is taken using a device called a nebulizer. As you breathe in, the nebulizer sends a fine mist of medicine to your lungs. Cromolyn helps prevent airway inflammation.</li><li>• <i>Immunomodulators</i>, such as omalizumab. This medicine is given as a shot (injection) one or two times a month. It helps prevent your body from reacting to asthma triggers, such as pollen and dust mites. Anti-IgE might be used if other asthma medicines have not worked well. A rare, but possibly life-threatening allergic reaction called anaphylaxis might occur when the Omalizumab injection is given. If you take this medication, work with your doctor to make sure you understand the signs and symptoms of anaphylaxis and what actions you should take.</li><li>• <i>Inhaled long-acting beta2-agonists</i>. These medicines open the airways. They might be added to inhaled corticosteroids to improve asthma control. Inhaled long-acting beta2-agonists should never be used on their own for long-term asthma control. They must be used with inhaled corticosteroids.</li><li>• <i>Leukotriene</i> modifiers. These medicines are taken by mouth. They help block the chain reaction that increases inflammation in your airways.</li><li>• <i>Theophylline</i>. This medicine is taken by mouth. Theophylline helps open the airways.</li></ul> <p>If your doctor prescribes a long-term control medicine, take it every day to control your asthma. Your asthma symptoms will likely return or get worse if you stop taking your medicine. Long-term control medicines can have side effects. Talk with your doctor about these side effects and ways to reduce or avoid them.</p> <p>With some medicines, like theophylline, your doctor will check the level of medicine in your blood. This helps ensure that you are getting enough medicine to relieve your asthma symptoms, but not so much that it causes dangerous side effects.</p> <p><b>Quick-Relief Medicines</b></p> <ul style="list-style-type: none"><li>• All people who have asthma need quick-relief medicines to help relieve asthma symptoms that may flare up. Inhaled short-acting beta2-agonists are the first choice for quick relief.</li><li>• These medicines act quickly to relax tight muscles around your airways when you are having a flareup. This allows the airways to open so air can flow through them.</li><li>• You should take your quick-relief medicine when you first notice asthma symptoms. If you use this medicine more than 2 days a week, talk with your doctor about your asthma control. You may need to make changes to your asthma action plan.</li><li>• Carry your quick-relief inhaler with you at all times in case you need it. If your child has asthma, make sure that anyone caring for him or her has the child's quick-relief medicines, including staff at the child's school. They should understand when and how to use these medicines and when to seek medical care for your child.</li><li>• You should not use quick-relief medicines in place of prescribed long-term control medicines. Quick-relief medicines do not reduce inflammation.</li></ul>
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# LOST TEMPLE FITNESS

## Exercise

WebMD,  
MedicineNet,  
and  
Exercise is  
Medicine.org

### **What Types of Exercise Are Best for People with Asthma?** (WebMD)

- Activities that involve short, intermittent periods of exertion, such as walking, hiking, volleyball, gymnastics, baseball, and wrestling, are generally well tolerated by people with symptoms of asthma. Swimming, which is a strong endurance sport, is generally well tolerated by many people with asthma, because it is usually performed while breathing warm, moist air. It is also an excellent activity for maintaining physical fitness.
- Activities that may be less tolerated involve long periods of exertion, such as soccer, distance running, basketball, and field hockey. Also, cold-weather sports, such as ice hockey, cross-country skiing, and ice-skating, may pose challenges. However, many people with asthma are able to participate fully in these activities.

According to *MedicineNet*, it might be helpful to talk to a doctor before starting an exercise routine. This is especially important with asthma symptoms that worsen with exercise. Many people with asthma benefit from taking a short-acting bronchodilator (such as albuterol [Ventolin, Proventil, Proventil-HFA, AccuNeb, Vospire, ProAir]) about 15 minutes before starting exercise. In extremely cold or hot weather, or if there is a high level of pollution, it may best to exercise indoors. This also applies to patients with both asthma and allergies when the pollen count is high.

### **Here are some good tips for exercising with asthma:** (*Exercise is Medicine.org*)

- Try to breathe through the nose as much as possible.
- Wear a scarf or mask over the nose and mouth in cold weather.
- Avoid outdoor exercise when pollen counts are high if allergies are present with asthma.
- Avoid exercising outdoors if air pollution is high.
- Do not exercise when sick.
- Include a cool-down routine after exercise.
- Do not overexert during exercise.
- Carry an albuterol inhaler for rescue if needed.

### **Aerobic Exercise Cautions**

- Avoid exercising at the coldest times of the day (early morning or evening). Also, do not exercise when pollution or allergens are at their highest. Instead, exercise indoors.
- Watch out for irritants such as smoke or allergens.
- Warm up for 10 minutes before you exercise. This can reduce the duration and severity of an attack during and after exercise.
- Cool down for 10 minutes after your exercise.
- If you have been inactive for a long time, start with short sessions (10 to 15 minutes). Add five minutes to each session, increasing every two to four weeks. Gradually build up to being active at least 30 minutes a day for most days of the week.
- Drink plenty of fluids before, during, and after exercise.
- Do not exercise at an intensity that is too high for you. Doing so might provoke an attack and temporarily prevent exercising. It also increases the risk of injury.

### **Resistance Exercise Cautions**

- Avoid holding your breath when lifting. This can cause large changes in blood pressure. That change may increase the risk of passing out or developing abnormal heart rhythms.
- If you have joint problems or other health problems, do only one set for all major muscle groups. Start with 10 to 15 repetitions. Build up to 15 to 20 repetitions before you add another set.
- Design your exercise program for maximum benefit and minimum risk to your health and physical condition. Consider reaching out to a health and fitness EIM Professional to work with you and your doctor. Together, you can establish realistic goals and design a safe, effective, and enjoyable program. (*Rescate[lo]*)

# LOST TEMPLE FITNESS

## Bronchitis

### Acute Bronchitis

- Infections or lung irritants cause acute bronchitis. The same viruses that cause colds and the flu are the most common cause of acute bronchitis. Sometimes bacteria can cause the condition.
- Certain substances can irritate your lungs and airways and raise your risk for acute bronchitis. For example, inhaling or being exposed to tobacco smoke, dust, fumes, vapors, or air pollution raises your risk for the condition. These lung irritants also can make symptoms worse.
- Being exposed to a high level of dust or fumes, such as from an explosion or a big fire, also may lead to acute bronchitis.

### Chronic Bronchitis

- Repeatedly breathing in fumes that irritate and damage lung and airway tissues causes chronic bronchitis. Smoking is the major cause of the condition.
- Breathing in air pollution and dust or fumes from the environment or workplace also can lead to chronic bronchitis.
- People who have chronic bronchitis go through periods when symptoms become much worse than usual. During these times, they also may have acute viral or bacterial bronchitis.

### Signs, Symptoms, and Complications

#### Acute Bronchitis

- Acute bronchitis caused by an infection usually develops after you already have a cold or the flu. Symptoms of a cold or the flu include sore throat, fatigue (tiredness), fever, body aches, stuffy or runny nose, vomiting, and diarrhea.
- The main symptom of acute bronchitis is a persistent cough, which may last 10 to 20 days. The cough may produce clear mucus (a slimy substance). If the mucus is yellow or green, you may have a bacterial infection as well. Even after the infection clears up, you may still have a dry cough for days or weeks.
- Other symptoms of acute bronchitis include wheezing (a whistling or squeaky sound when you breathe), low fever, and chest tightness or pain.
- If your acute bronchitis is severe, you also may have shortness of breath, especially with physical activity.

#### Chronic Bronchitis

- The signs and symptoms of chronic bronchitis include coughing, wheezing, and chest discomfort. The coughing may produce large amounts of mucus. This type of cough often is called a smoker's cough.

### Treatment

- The main goals of treating acute and chronic bronchitis are to relieve symptoms and make breathing easier.
- If you have acute bronchitis, your doctor may recommend rest, plenty of fluids, and aspirin (for adults) or acetaminophen to treat fever.
- Antibiotics usually are not prescribed for acute bronchitis. This is because they do not work against viruses—the most common cause of acute bronchitis. However, if your doctor thinks you have a bacterial infection, he or she may prescribe antibiotics.
- A humidifier or steam can help loosen mucus and relieve wheezing and limited air flow. If your bronchitis causes wheezing, you may need an inhaled medicine to open your airways. You take this medicine using an inhaler. This device allows the medicine to go straight to your lungs.
- Your doctor also may prescribe medicines to relieve or reduce your cough and treat your inflamed airways (especially if your cough persists).
- If you have chronic bronchitis and also have been diagnosed with COPD (chronic obstructive pulmonary disease), you may need medicines to open your airways and help clear away mucus. These medicines include bronchodilators (inhaled) and steroids (inhaled or pill form).
- If you have chronic bronchitis, your doctor may prescribe oxygen therapy. This treatment can help you breathe easier, and it provides your body with needed oxygen.

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<p><b>Exercise</b></p> <p><i>Medical News Today</i></p>	<p><b>Acute bronchitis</b></p> <p>What kind and intensity of exercises are appropriate for someone with bronchitis depends on individual needs. It should be safe to exercise if cold or flu symptoms are limited to above the neck. This includes symptoms that affect:</p> <ul style="list-style-type: none"><li>• Sinuses</li><li>• Throat</li><li>• Head</li></ul> <p>Those with acute bronchitis, however, should refrain from physical exertion while they have symptoms. Typically, this means avoiding purposeful exercise, during the 3–10 day recovery window. Once symptoms resolve, it is usually safe to return to low levels of activity. This is the case even if a dry cough remains.</p> <p>Getting back to regular activity levels may take several weeks after acute bronchitis. The lungs often remain inflamed after apparent recovery. This makes them less able to handle stress and more reactive to it.</p> <p>Starting with more gentle exercises, or reduced versions of workouts will help the lungs slowly rebuild strength. Cutting the normal duration, frequency, and intensity of workouts in half is a good starting point for many.</p> <p><b>Chronic bronchitis</b></p> <p>For those with chronic bronchitis, the idea of exercise may seem daunting. However, regular cardiovascular activity is key to maintaining lung health during and after episodes. As with acute cases, those with chronic bronchitis should ease their way into workout routines. A doctor or medical professional should be consulted to help guide the process.</p> <p>There are two key exercise techniques that may help:</p> <ul style="list-style-type: none"><li>• Interval exercises: For those with chronic lung conditions, the European Lung Foundation recommend using intermittent or interval exercises, which alternate between a few minutes of activity, then rest, to help reduce shortness of breath.</li><li>• Controlled breathing exercises: These include pursed lip and belly breathing. They slow exhalation, keeping the airways open longer and allowing in more air. The American Lung Association recommends doing both exercises for 5-10 minutes daily to improve symptoms, such as shortness of breath.<ul style="list-style-type: none"><li>○ Pursed lip breathing involves breathing in through the nose. People then slowly and steadily exhale through pursed lips for twice as long as their inhalation.</li><li>○ Belly breathing requires the same inhalation and exhalation process. However, it is done without pursed lips and attention focuses on the rise and fall of the belly. It is important to keep the head, neck, and shoulders relaxed during breathing exercises. This helps ensure the diaphragm is doing the bulk of the work and retraining the way it needs.</li></ul></li></ul>
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<p><b>Exercise</b></p> <p><i>Continued</i></p>	<p><b><i>Exercises and considerations recommended for those recovering from acute bronchitis or with chronic bronchitis include:</i></b></p> <ul style="list-style-type: none"><li>• Gentle stretching exercises, such as yoga, avoiding downward or upside-down poses, as these encourage phlegm to travel upwards</li><li>• Cardiovascular exercises that promote light, continuous exertion, including walking or distance swimming</li><li>• Continuing everyday activities or hobbies if possible or as symptoms lessen, including housework, gardening, dog walks, or playing golf</li><li>• Following a steady, comfortable pace and not pushing it</li><li>• Warming up and cooling down after exercise, allowing breathing rate to increase slowly and return to normal</li><li>• Focusing on improving muscle strength to improve oxygen inefficiency and decrease demand on the lungs</li><li>• Focusing on the duration of exertion rather than the intensity</li><li>• Mindful breathing, paying attention to the length and frequency of breath</li><li>• Using a humidifier before exercising to help open the airways and loosen mucus</li><li>• Adjusting a workout to meet changes in weather or environmental conditions</li><li>• Taking as many breaks or rest periods as needed</li><li>• Drinking plenty of fluids while exercising</li><li>• Keeping in mind that it may take time, from weeks to months, to see significant results and return to normal routines</li><li>• Basing the intensity of workouts on what feels comfortable instead of other factors, such as heart rate or overheating</li><li>• People with chronic bronchitis may find it easier to walk with their arms braced by a walker, or even by holding onto their pant waistline or belt. Some may also need to use an oxygen machine before exercise.</li></ul> <p><b><i>Precautions When Exercising with Bronchitis</i></b></p> <p>Exercise can help lessen the symptoms of bronchitis and speed up the recovery process, by improving muscle strength and oxygen efficiency. The oxygen levels demanded by physical exertion can exceed lung capabilities, especially when airways are compromised.</p> <p>Exercise should be immediately stopped if shortness of breath is intense. A good rule to follow is that if a person no longer has enough airflow to talk, they have gone too far. Other symptoms that indicate exercise should be stopped immediately include:</p> <ul style="list-style-type: none"><li>• Coughing</li><li>• Wheezing</li><li>• Chest pain, especially a feeling similar to indigestion</li><li>• Uncomfortable increase in chest tightness</li><li>• Feeling faint or lightheaded</li><li>• Increase in body aches or pain</li><li>• Brownish, yellow-colored urine</li></ul> <p>Stamina should increase over time with consistent, progressively challenging exercise. If breathing problems continue to interfere with proper exercise, a doctor should be seen to reassess workout regimes or treatment plans.</p>
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## Cystic Fibrosis

Cystic fibrosis, or CF, is an inherited disease of the secretory glands. Secretory glands include glands that make mucus and sweat. "Inherited" means the disease is passed from parents to children through genes. People who have CF inherit two faulty genes for the disease—one from each parent. The parents likely do not have the disease themselves. CF mainly affects the lungs, pancreas, liver, intestines, sinuses, and sex organs.

### Overview

Mucus is a substance made by tissues that line some organs and body cavities, such as the lungs and nose. Normally, mucus is a slippery, watery substance. It keeps the linings of certain organs moist and prevents them from drying out or getting infected. If you have CF, your mucus becomes thick and sticky. It builds up in your lungs and blocks your airways. (Airways are tubes that carry air in and out of your lungs.)

- The buildup of mucus makes it easy for bacteria to grow. This leads to repeated, serious lung infections. Over time, these infections can severely damage your lungs.
- The thick, sticky mucus also can block tubes, or ducts, in your pancreas (an organ in your abdomen). As a result, the digestive enzymes that your pancreas makes cannot reach your small intestine. These enzymes help break down food. Without them, your intestines cannot fully absorb fats and proteins. This can cause vitamin deficiency and malnutrition because nutrients pass through your body without being used. You also may have bulky stools, intestinal gas, a swollen belly from severe constipation, and pain or discomfort.
- CF also causes your sweat to become very salty. Thus, when you sweat, you lose large amounts of salt. This can upset the balance of minerals in your blood and cause many health problems. Examples of these problems include dehydration (a lack of fluid in your body), increased heart rate, fatigue (tiredness), weakness, decreased blood pressure, heat stroke, and, rarely, death.
- If you or your child has CF, you are also at higher risk for diabetes, or two bone-thinning conditions called osteoporosis and osteopenia.
- CF also causes infertility in men, and the disease can make it harder for women to get pregnant. (The term "infertility" refers to the inability to have children.)

### Outlook

- The symptoms and severity of CF vary. If you or your child has the disease, you may have serious lung and digestive problems. If the disease is mild, symptoms may not show up until the teen or adult years.
- The symptoms and severity of CF also vary over time. Sometimes you will have few symptoms. Other times, your symptoms may become more severe. As the disease gets worse, you will have more severe symptoms more often.
- Lung function often starts to decline in early childhood in people who have CF. Over time, damage to the lungs can cause severe breathing problems. Respiratory failure is the most common cause of death in people who have CF.

# LOST TEMPLE FITNESS

## Signs, Symptoms, and Complications

The signs and symptoms of cystic fibrosis (CF) vary from person to person and over time. Sometimes you will have few symptoms. Other times, your symptoms may become more severe.

One of the first signs of CF that parents may notice is that their baby's skin tastes salty when kissed, or the baby does not pass stool when first born.

Most of the other signs and symptoms of CF happen later. They are related to how CF affects the respiratory, digestive, or reproductive systems of the body.

### **Respiratory System Signs and Symptoms**

- Thick, sticky mucus that builds up in their airways. This buildup of mucus makes it easier for bacteria to grow and cause infections. Infections can block the airways and cause frequent coughing that brings up thick sputum (spit) or mucus that is sometimes bloody.
- Tend to have lung infections caused by unusual germs that do not respond to standard antibiotics. For example, lung infections caused by bacteria called mucoid *Pseudomonas* are much more common in people who have CF than in those who do not. An infection caused by these bacteria may be a sign of CF.
- Frequent bouts of sinusitis, an infection of the sinuses. The sinuses are hollow air spaces around the eyes, nose, and forehead. Frequent bouts of bronchitis and pneumonia also can occur. These infections can cause long-term lung damage.
- As CF gets worse, you may have more serious problems, such as pneumothorax or bronchiectasis.
- Some people who have CF also develop nasal polyps (growths in the nose) that may require surgery.

### **Digestive System Signs and Symptoms**

In CF, mucus can block tubes, or ducts, in your pancreas (an organ in your abdomen). These blockages prevent enzymes from reaching your intestines. As a result, your intestines cannot fully absorb fats and proteins. This can cause ongoing diarrhea or bulky, foul-smelling, greasy stools. Intestinal blockages also may occur, especially in newborns. Too much gas or severe constipation in the intestines may cause stomach pain and discomfort.

As CF gets worse, other problems may occur, such as:

- Pancreatitis. This is a condition in which the pancreas become inflamed, which causes pain.
- Rectal prolapse. Frequent coughing or problems passing stools may cause rectal tissue from inside you to move out of your rectum.
- Liver disease due to inflamed or blocked bile ducts.
- Diabetes.
- Gallstones.

### **Reproductive System Signs and Symptoms**

- Men who have CF are infertile because they are born without a vas deferens. The vas deferens is a tube that delivers sperm from the testes to the penis.
- Women who have CF may have a hard time getting pregnant because of mucus blocking the cervix or other CF complications.

### **Other Signs, Symptoms, and Complications**

Other signs and symptoms of CF are related to an upset of the balance of minerals in your blood.

- CF causes your sweat to become very salty. As a result, your body loses large amounts of salt when you sweat. This can cause dehydration (a lack of fluid in your body), increased heart rate, fatigue (tiredness), weakness, decreased blood pressure, heat stroke, and, rarely, death.
- CF also can cause clubbing and low bone density. Clubbing is the widening and rounding of the tips of your fingers and toes. This sign develops late in CF because your lungs are not moving enough oxygen into your bloodstream.

Low bone density also tends to occur late in CF. It can lead to bone-thinning disorders called osteoporosis and osteopenia.

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<b>Treatment</b>	<p><b>Treatment for Lung Problems</b></p> <p><b>Exercise</b> (Also see Below)</p> <ul style="list-style-type: none"><li>• Aerobic exercise that makes you breathe harder can help loosen the mucus in your airways so you can cough it up. Exercise also helps improve your overall physical condition.</li><li>• However, CF causes your sweat to become very salty. As a result, your body loses large amounts of salt when you sweat. Thus, your doctor may recommend a high-salt diet or salt supplements to maintain the balance of minerals in your blood.</li><li>• If you exercise regularly, you may be able to cut back on your CPT. However, you should check with your doctor first.</li></ul> <p><b>Chest Physical Therapy</b></p> <ul style="list-style-type: none"><li>• CPT also is called chest clapping or percussion. It involves pounding your chest and back over and over with your hands or a device to loosen the mucus from your lungs so that you can cough it up.</li><li>• You might sit down or lie on your stomach with your head down while you do CPT. Gravity and force help drain the mucus from your lungs.</li><li>• Some people find CPT hard or uncomfortable to do. Several devices have been developed that may help with CPT, such as:<ul style="list-style-type: none"><li>○ An electric chest clapper, known as a mechanical percussor.</li><li>○ An inflatable therapy vest that uses high-frequency airwaves to force the mucus that is deep in your lungs toward your upper airways so you can cough it up.</li><li>○ A small, handheld device that you exhale through. The device causes vibrations that dislodge the mucus.</li><li>○ A mask that creates vibrations that help break the mucus loose from your airway walls.</li><li>○ Breathing techniques also may help dislodge mucus so you can cough it up. These techniques include forcing out a couple of short breaths or deeper breaths and then doing relaxed breathing. This may help loosen the mucus in your lungs and open your airways.</li></ul></li></ul> <p><b>Medicines</b></p> <p>If you have CF, your doctor may prescribe antibiotics, anti-inflammatory medicines, bronchodilators, or medicines to help clear the mucus. These medicines help treat or prevent lung infections, reduce swelling, and open up the airways, and thin mucus. If you have mutations in a gene called G551D, which occurs in about 5 percent of people who have CF, your doctor may prescribe the oral medicine ivacaftor (approved for people with CF who are 6 years of age and older).</p> <ul style="list-style-type: none"><li>• Antibiotics are the main treatment to prevent or treat lung infections. Your doctor may prescribe oral, inhaled, or intravenous (IV) antibiotics.</li><li>• Oral antibiotics often are used to treat mild lung infections. Inhaled antibiotics may be used to prevent or control infections caused by the bacteria mucoid <i>Pseudomonas</i>. For severe or hard-to-treat infections, you may be given antibiotics through an IV tube (a tube inserted into a vein). This type of treatment may require you to stay in a hospital.</li><li>• Anti-inflammatory medicines can help reduce swelling in your airways due to ongoing infections. These medicines may be inhaled or oral.</li><li>• Bronchodilators help open the airways by relaxing the muscles around them. These medicines are inhaled. They are often taken just before CPT to help clear mucus out of your airways. You also may take bronchodilators before inhaling other medicines into your lungs.</li><li>• Your doctor may prescribe medicines to reduce the stickiness of your mucus and loosen it up. These medicines can help clear out mucus, improve lung function, and prevent worsening lung symptoms.</li></ul>
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# LOST TEMPLE FITNESS

## Treatment

Continued

### ***Treatments for Advanced Lung Disease***

If you have advanced lung disease, you may need oxygen therapy. Oxygen usually is given through nasal prongs or a mask. If other treatments have not worked, a lung transplant may be an option if you have severe lung disease. A lung transplant is surgery to remove a person's diseased lung and replace it with a healthy lung from a deceased donor.

### ***Pulmonary Rehabilitation***

Your doctor may recommend PR as part of your treatment plan. PR is a broad program that helps improve the well-being of people who have chronic (ongoing) breathing problems. PR does not replace medical therapy. Instead, it is used with medical therapy and may include:

- Exercise training
- Nutritional counseling
- Education on your lung disease or condition and how to manage it
- Energy-conserving techniques
- Breathing strategies
- Psychological counseling and/or group support
- PR has many benefits. It can improve your ability to function and your quality of life. The program also may help relieve your breathing problems. Even if you have advanced lung disease, you can still benefit from PR.

### ***Treatment for Digestive Problems***

CF can cause many digestive problems, such as bulky stools, intestinal gas, a swollen belly, severe constipation, and pain or discomfort. Digestive problems also can lead to poor growth and development in children.

Nutritional therapy can improve your strength and ability to stay active. It also can improve growth and development in children. Nutritional therapy also may make you strong enough to resist some lung infections. A nutritionist can help you create a nutritional plan that meets your needs.

In addition to having a well-balanced diet that is rich in calories, fat, and protein, your nutritional therapy may include:

- Oral pancreatic enzymes to help you digest fats and proteins and absorb more vitamins.
- Supplements of vitamins A, D, E, and K to replace the fat-soluble vitamins that your intestines cannot absorb.
- High calorie shakes to provide you with extra nutrients.
- A high-salt diet or salt supplements that you take before exercising.
- A feeding tube to give you more calories at night while you are sleeping. The tube may be threaded through your nose and throat and into your stomach or the tube may be placed directly into your stomach through a surgically made hole. Before you go to bed each night, you will attach a bag with a nutritional solution to the entrance of the tube. It will feed you while you sleep.
- Other treatments for digestive problems may include enemas and mucus-thinning medicines to treat intestinal blockages. Sometimes surgery is needed to remove an intestinal blockage.
- Your doctor also may prescribe medicines to reduce your stomach acid and help oral pancreatic enzymes work better.

### ***Treatments for Cystic Fibrosis Complications***

- A common complication of CF is diabetes. The type of diabetes associated with CF often requires different treatment than other types of diabetes.
- Another common CF complication is the bone-thinning disorder osteoporosis. Your doctor may prescribe medicines that prevent your bones from losing their density.

## **LOST TEMPLE FITNESS**

<p><b>Exercise</b></p> <p><i>MedScape</i></p>	<p>Research studies have shown that individuals with cystic fibrosis who attain higher levels of aerobic fitness report feeling better and having a higher overall quality of life. And, while cystic fibrosis can certainly make exercise more challenging, regular physical activity may actually improve your symptoms, particularly mucus clearance, and possibly even delay decreases in your pulmonary function. Start exercising regularly and you will likely find it much easier to perform everyday tasks aswell. The key is to determine what type of exercise is best for you and to follow a program that accommodates your individual needs and concerns.</p> <p><b><i>Talk with your health care provider before starting an exercise program and ask for specific programming recommendations.</i></b></p> <p><b><i>Getting Started</i></b></p> <ul style="list-style-type: none"><li>• Take all medications as recommended by your physician.</li><li>• The goals of your program should be to increase your cardiovascular fitness, facilitate mucus clearance, and improve your ability to perform activities of daily living.</li><li>• Choose activities that you enjoy such as walking, cycling, rowing, and swimming andwork up to a moderate intensity.</li><li>• Start slowly and gradually increase the intensity and duration of your workouts. You may need to start with five- to 10-minute sessions and build up to 30-minute sessions, three or more days per week.</li><li>• Two days per week do three 10-repetition sets of light-resistance strength-training exercises targeting all the major muscle groups. Use the Ratings of Perceived Exertion and dyspnea scales as well as heart rate to measure your intensity and adjust your workouts according to fluctuations in your symptoms.</li></ul> <p><b><i>Exercise Cautions</i></b></p> <ul style="list-style-type: none"><li>• Supplemental oxygen may enhance your training effect. Initially, you may want to have your oxyhemoglobin saturation monitored to determine your optimal level of oxygen supplementation.</li><li>• Avoid extreme weather conditions; prolonged exercise in the heat may increase your need for fluids and dietary salt.</li></ul> <p><b><i>Your exercise program should be designed to maximize the benefits with the fewest risks of aggravating your health or physical condition.</i></b></p> <p><b><i>Consider contacting a certified health and fitness professional who can work with you and your health care provider to establish realistic goals and design a safe and effective program that addresses your specific needs.</i></b></p>
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## Idiopathic Pulmonary Fibrosis

Pulmonary fibrosis is a disease in which tissue deep in your lungs becomes thick and stiff, or scarred, over time. The formation of scar tissue is called fibrosis. As the lung tissue thickens, your lungs cannot properly move oxygen into your bloodstream. As a result, your brain and other organs do not get the oxygen they need.

Sometimes doctors can find out what is causing fibrosis. But in most cases, they cannot find a cause. They call these cases idiopathic pulmonary fibrosis (IPF).

IPF is a serious disease that usually affects middle-aged and older adults. IPF varies from person to person. In some people, fibrosis happens quickly. In others, the process is much slower. In some people, the disease stays the same for years.

IPF has no cure yet. Many people live only about 3 to 5 years after diagnosis. The most common cause of death related to IPF is respiratory failure. Other causes of death include pulmonary hypertension, heart failure, pulmonary embolism, pneumonia, and lung cancer. Genetics may play a role in causing IPF. If more than one member of your family has IPF, the disease is called familial IPF.

### Signs, Symptoms, and Complications

The signs and symptoms of idiopathic pulmonary fibrosis (IPF) develop over time. They may not even begin to appear until the disease has done serious damage to your lungs. Once they occur, they are likely to get worse over time.

The most common signs and symptoms are:

- Shortness of breath. This usually is the main symptom of IPF. At first, you may be short of breath only during exercise. Over time, you will likely feel breathless even at rest.
- A dry, hacking cough that does not get better. Over time, you may have repeated bouts of coughing that you cannot control.

Other signs and symptoms that you may develop over time include:

- Rapid, shallow breathing
- Gradual, unintended weight loss
- Fatigue (tiredness) or malaise (a general feeling of being unwell)
- Aching muscles and joints
- Clubbing, which is the widening and rounding of the tips of the fingers or toes.
- IPF may lead to other medical problems, including a collapsed lung, lung infections, blood clots in the lungs, and lung cancer.
- As the disease worsens, you may develop other potentially life-threatening conditions, including respiratory failure, pulmonary hypertension, and heart failure.

# LOST TEMPLE FITNESS

## Treatment

### **Medicines**

Currently, no medicines are proven to slow the progression of IPF. Prednisone, azathioprine, and N-acetylcysteine have been used to treat IPF, either alone or in combination. However, experts have not found enough evidence to support their use.

#### **Prednisone**

- Prednisone is an anti-inflammatory medicine. You usually take it by mouth every day. However, your doctor may give it to you through a needle or tube inserted into a vein in your arm for several days. After that, you usually take it by mouth.
- Because prednisone can cause serious side effects, your doctor may prescribe it for 3 to 6 months or less at first. Then, if it works for you, your doctor may reduce the dose over time and keep you on it longer.

#### **Azathioprine**

- Azathioprine suppresses your immune system. You usually take it by mouth every day. Because it can cause serious side effects, your doctor may prescribe it with prednisone for only 3 to 6 months.
- If you do not have serious side effects and the medicines seem to help you, your doctor may keep you on them longer.

#### **N-acetylcysteine**

- N-acetylcysteine is an antioxidant that may help prevent lung damage. You usually take it by mouth several times a day.
- A common treatment for IPF is a combination of prednisone, azathioprine, and N-acetylcysteine. However, this treatment was recently found harmful in a study funded by the National Heart, Lung, and Blood Institute (NHLBI). If you have IPF and take this combination of medicines, talk with your doctor. Do not stop taking the medicines on your own.

### **Other Treatments**

Other treatments that may help people who have IPF include the following:

- Flu and pneumonia vaccines may help prevent infections and keep you healthy.
- Cough medicines or oral codeine may relieve coughing.
- Vitamin D, calcium, and a bone-building medicine may help prevent bone loss if you are taking prednisone or another corticosteroid.
- Anti-reflux therapy may help control gastroesophageal reflux disease (GERD). Most people who have IPF also have GERD.
- Oxygen Therapy
- Pulmonary Rehabilitation - PR is now a standard treatment for people who have chronic (ongoing) lung disease. PR is a broad program that helps improve the well-being of people who have breathing problems.

### **Lung Transplant**

- Your doctor may recommend a lung transplant if your condition is quickly worsening or very severe. A lung transplant can improve your quality of life and help you live longer.
- Some medical centers will consider patients older than 65 for lung transplants if they have no other serious medical problems.
- The major complications of a lung transplant are rejection and infection. ("Rejection" refers to your body creating proteins that attack the new organ.) You will have to take medicines for the rest of your life to reduce the risk of rejection.



## **LOST TEMPLE FITNESS**

### **Lifestyle Changes**

No cure is available for idiopathic pulmonary fibrosis (IPF) yet. Your symptoms may get worse over time. As your symptoms worsen, you may not be able to do many of the things that you did before you had IPF. However, lifestyle changes and ongoing care can help you manage the disease.

- If you are still smoking, the most important thing you can do is quit. Talk with your doctor about programs and products that can help you quit. Also, try to avoid secondhand smoke. Ask family members and friends not to smoke in front of you or in your home, car, or workplace.
- Staying active can help with both your physical and mental health. Physical activity can help you maintain your strength and lung function and reduce stress. Try moderate exercise, such as walking or riding a stationary bike. Ask your doctor about using oxygen while exercising.
- As your condition advances, use a wheelchair or motorized scooter, or stay busy with activities that are not physical in nature.
- You also should follow a healthy diet. A healthy diet includes a variety of fruits and vegetables. It also includes whole grains, fat-free or low-fat dairy products, and protein foods, such as lean meats, poultry without skin, seafood, processed soy products, nuts, seeds, beans, and peas. A healthy diet is low in sodium (salt), added sugars, solid fats, and refined grains. Solid fats are saturated fat and trans fatty acids. Refined grains come from processing whole grains, which results in a loss of nutrients (such as dietary fiber).
- Eating smaller, more frequent meals may relieve stomach fullness, which can make it hard to breathe. If you need help with your diet, ask your doctor to arrange for a dietitian to work with you.
- Getting plenty of rest can increase your energy and help you deal with the stress of living with a serious condition like IPF.
- Try to maintain a positive attitude; relaxation techniques may help you do this. These techniques also may help you avoid excessive oxygen intake caused by tension or overworked muscles.

Avoid situations that can make your symptoms worse. For example, avoid traveling by air or living at or traveling to high altitudes where the air is thin and the amount of oxygen in the air is low.

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<p><b>Exercise &amp; Breathing Exercises</b></p> <p><i>Lung Institute</i></p>	<p>Supervised exercise training programs have demonstrated clinical benefits in improving exercise capacity, dyspnea (difficulty breathing) and quality of life in patients with PF. The underlying mechanisms of chronic adaptation to a regular exercise regimen in PF have yet to be well-described and require further investigation.</p> <p>The benefit of exercise training is well-established for chronic conditions such as pulmonary fibrosis. Moderate levels of exercise that do not result in significantly worsened symptoms are generally safe, though it is imperative to monitor oxygen levels and be sure that the person exercising has safe blood-oxygen levels.</p> <p><b><i>Pulmonary Fibrosis and Exercise</i></b></p> <p>Under the <i>supervision of a pulmonologist</i>, patients with pulmonary fibrosis should exercise. With exercise, the lungs will work at maximum efficiency, and exercise enables the heart and other muscles to do more with the oxygen available to them. Many people find participating in pulmonary rehabilitation helpful as well. Once they learn how to exercise properly and safely, they feel ready to try exercising on their own. In combination with exercise, staying on top of your pulmonary fibrosis treatments is important.</p> <p style="text-align: center;"><b>Breathing Exercises</b></p> <p style="text-align: center;"><b><i>It is important to discuss these pulmonary fibrosis breathing exercises with your doctor before trying them.</i></b></p> <p>Done properly, pulmonary fibrosis breathing exercises may help you breathe deeper and stay calmer.</p> <p><b><i>Belly Breathing Technique</i></b></p> <p>Belly breathing or diaphragmatic breathing helps people strengthen their diaphragm, so they breathe better. In fact, belly breathing can also be used to help people relax. This pulmonary fibrosis breathing exercise can be done while lying down or sitting in a chair.</p> <ul style="list-style-type: none"><li>• Lie on your back with your knees bent with a pillow underneath them or sit in a comfortable chair.</li><li>• Place one hand on your upper chest and the other on your belly just below your ribcage.</li><li>• Inhale slowly and gently through your nose and keep the hand on your chest as still as possible.</li><li>• Focus on feeling your belly move as you breathe.</li><li>• Exhale slowly and gently through your mouth, keeping the hand on your chest still.</li><li>• You can practice belly breathing 3-4 times a day for about 5-10 minutes.</li></ul>
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<p><b>Exercise &amp; Breathing Exercises</b></p> <p><i>Continued</i></p>	<p><b><i>Huff-Cough Technique</i></b></p> <p>Coughing is a common problem for people with pulmonary fibrosis and other chronic lung diseases as it can cause fatigue. Doctors recommend the Huff-Cough Technique to help their patients cough more effectively, so their patients do not become overly fatigued.</p> <ul style="list-style-type: none"><li>• Sit in a comfortable chair.</li><li>• Take several deep, gentle breaths as best you can, like you would in belly breathing.</li><li>• Put one hand on your stomach and breathe normally.</li><li>• Tighten your stomach and chest muscles.</li><li>• Keep your mouth open.</li><li>• Whisper the word “huff” while forcing the air out.</li></ul> <p><b><i>Forced Coughing Technique</i></b></p> <p>The forced coughing technique helps remove excess mucus from your airways. Excessive mucus is a common problem for people with chronic lung diseases. Here is how to do the forced coughing technique:</p> <ul style="list-style-type: none"><li>• Sit in a comfortable chair.</li><li>• Keep your back straight and your feet pressed against the floor.</li><li>• Breathe as deeply as you can.</li><li>• Focus on feeling your diaphragm expand.</li><li>• Hold your breath for three counts.</li><li>• Open your mouth and cough twice.</li><li>• If mucus comes up, discard it in a tissue.</li><li>• Repeat until your airways feel clear of mucus.</li></ul> <p><b><i>Pursed Lips Breathing</i></b></p> <p>Pursed lips breathing helps address shortness of breath and offers many benefits. The benefits of pursed lips breathing include opening the airways to ease breathing, relieving shortness of breath, and promoting relaxation. This technique can be done sitting, standing, or lying down. However, to maximize the benefits, many people choose to sit or lie down.</p> <ul style="list-style-type: none"><li>• Relax your neck and shoulders.</li><li>• Breathe in slowly through your nose for two seconds with your mouth closed.</li><li>• Breath out slowly through your mouth for four seconds with your lips puckered.</li><li>• As you exhale, keep it slow and steady.</li><li>• Repeat and extend the counts as you go.</li></ul>
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## Oxygen Therapy

Oxygen therapy is a treatment that provides you with extra oxygen. Oxygen is a gas that your body needs to function. Normally, your lungs absorb oxygen from the air you breathe. But some conditions can prevent you from getting enough oxygen.

You may need oxygen if you have:

- COPD (chronic obstructive pulmonary disease)
- Pneumonia
- A severe asthma attack
- Late-stage heart failure
- Cystic fibrosis
- Sleep apnea

You can receive oxygen therapy from tubes resting in your nose, a face mask, or a tube placed in your trachea, or windpipe. This treatment increases the amount of oxygen your lungs receive and deliver to your blood. Oxygen therapy may be prescribed for you when you have a condition that causes your blood oxygen levels to be too low. Low blood oxygen may make you feel short of breath, tired, or confused, and can damage your body.

Oxygen therapy can be given for a short or long period of time in the hospital, another medical setting, or at home. Oxygen is stored as a gas or liquid in special tanks. These tanks can be delivered to your home and contain a certain amount of oxygen that will require refills. Another device for use at home is an oxygen concentrator, which pulls oxygen out of the air for immediate use. Because oxygen concentrators do not require refills, they will not run out of oxygen. Portable tanks and oxygen concentrators may make it easier for you to move around while using your therapy.

Oxygen poses a fire risk, so you should never smoke or use flammable materials when using oxygen. You may experience side effects from this treatment, such as a dry or bloody nose, tiredness, and morning headaches. Oxygen therapy is generally safe.

A different kind of oxygen therapy is called hyperbaric oxygen therapy. It uses oxygen at high pressure to treat wounds and serious infections.

*(MedLine Plus and NIH – Oxygen)*

### ***Should I Use My Oxygen When I Exercise?*** *(American Lung Association)*

If you use oxygen, you should exercise with it. Your doctor may adjust your flow rate for physical activity, which will be different than your flow rate when you are resting. Work with your doctor to adjust your oxygen for physical activity.

Here are some other tips for breathing during exercise:

- Remember to inhale (breathe in) before starting the exercise and exhale (breathe out) through the most difficult part of the exercise.
- Take slow breaths and pace yourself.
- Purse your lips while breathing out.

# LOST TEMPLE FITNESS

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