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Review Article

An overview of Impact and Benefits of Respiratory Exercise with Lung Disease

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Abstract

Background : Regular exercise is part of a healthy lifestyle, but if you have lung disease, you may wonder if you can or should exercise. Paying attention to how we breathe can often be overlooked because it's completely automatic. However, becoming aware of and incorporating breathing exercises into our daily routine has many benefits, including promoting calmness, increasing focus, and performing your best.1Breathing exercises can help your lungs recover after COVID-19. As well as helping you deal with feelings of anxiety and stress, breathing exercises can help restore diaphragm function and increase lung capacity. Breathing should be effortless and quiet - if you can hear your breathing; you may be working too hard.2

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Why is exercise important?

Exercise is an approach to help control overall health. It is considered an important part of care for individuals with pulmonary fibrosis [1, 2]. Pulmonary rehabilitation involves endurance, strength, and flexibility training, as well as, education on tools to better manage your lung condition. Research on exercise has shown improvements in walk distance, symptoms and quality of life for individuals with pulmonary fibrosis. During pulmonary rehabilitation, you will establish a home exercise program. Continuing this exercise program will be key to maintaining your fitness and improving your ability to be physically active. If you have stopped exercising and want to start back you may find this exercise guide helpful.[3]

Why Breathing Exercises Help

When you have healthy lungs, breathing is natural and easy. You breathe in and out with your diaphragm doing about 80 percent of the work to fill your lungs with a mixture of oxygen and other gases, and then to send the waste gas out. Lung Helpline respiratory therapist Mark Courtney compares the process to a screen door with a spring, opening and shutting on its own. "Our lungs are springy, like the door. Over time, though, with asthma and especially with COPD, our lungs lose that springiness. They don't return to the same level as when you start breathing, and air gets trapped in our lungs," Courtney explains.

Over time, stale air builds up, leaving less room for the diaphragm to contract and bring in fresh oxygen. With the

diaphragm not working to full capacity, the body starts to use other muscles in the neck, back and chest for breathing. This translates into lower oxygen levels, and less reserve for exercise and activity. If practiced regularly, breathing exercises can help rid the lungs of accumulated stale air, increase oxygen levels and get the diaphragm to return to its job of helping you breathe.[4]

Pursed Lip Breathing

This exercise reduces the number of breaths you take and keeps your airways open longer. More air is able to flow in and out of your lungs so you can be more physically active. To practice it, simply breathe in through your nose and breathe out at least twice as long through your mouth, with pursed lips.[5]

Lion's breath for asthma

Learning to control your breath can also benefit people with asthma.

Research from 2017 found that breathing exercises may be a useful tool in managing childhood asthma. These breathing techniques benefitted children with mild and moderate chronic asthma and uncontrolled asthma. They did not improve acute severe asthma, though.

Breathing practices were shown to reduce hyperventilation. This helps to normalize carbon dioxide levels, while decreasing the bronchospasm that causes breathlessness. Pranayama was also shown to reduce anxiety, improve respiratory endurance, and boost immunity.

Further research that takes into consideration factors such as quality of life, medication use, and patient-reported outcomes is needed.

Deep Breathing

Most people take short, shallow breaths into their chest. It can make you feel anxious and zap your energy. With this technique, you'll learn how to take bigger breaths, all the way into your belly.

1. Get comfortable. You can lie on your back in bed or on the floor with a pillow under your head and knees. Or you can sit in a chair with your shoulders, head, and neck supported against the back of the chair.
2. Breathe in through your nose. Let your belly fill with air.
3. Breathe out through your nose.
4. Place one hand on your belly. Place the other hand on your chest.
5. As you breathe in, feel your belly rise. As you breathe out, feel your belly lower. The hand on your belly should move more than the one that's on your chest.
6. Take three more full, deep breaths. Breathe fully into your belly as it rises and falls with your breath.[6]

Here are a few tips to help you exercise safely

- Talk to your healthcare provider before starting a new exercise program (or simply changing your current level of activity and exercise). Your healthcare provider will ensure that you are healthy enough to exercise and can guide you as to what kind of exercises are right for you.
- Reduce your sitting time by standing up every hour. Take a short walk every other day.
- Walking is a safe and low-cost form of exercise for most people.
- Pace yourself, so that you do not get too short of breath during exercise.
- You can exercise indoors or outdoors, but do not exercise outdoors when air quality is poor.
- Ask a friend, family member, or neighbour to be your exercise buddy; you can help each other to stay on track.
- Ask your healthcare provider about: ?Using medicines, such as inhalers, to prevent breathing problems while exercising ?Whether you would benefit from oxygen during exercise or if you need a higher flow if you already use it at other times.

Benefits of exercise

- Improved endurance, strength, mood, independence, self-confidence, and well-being
- Reduced breathlessness, fatigue, depression and anxiety
- Overall increased health-related quality of life.

Set SMART goals for yourself.

Follow these guidelines and you will be surprised at what you can-do.

1. **Specific :** Your goal should be clear and easy to understand. "I will start exercising."
2. **Measurable :** How will you track your progress and how you will know when you have reached your goal? Making your goal measurable means adding a number.
3. **Attainable :** Prior to adding a number, you have to set a range of days you can exercise per week. It's

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good to 'shoot for the stars', but you don't want to overdo it. Research suggests exercising a minimum of 3 days a week per American College of Sports Medicine (ACSM) (2). Only you and your physician know your limits. A measurable, attainable goal would be, "I will exercise 2-4 days per week."

4. **Realistic :** Set goals that fit where you are in your life right now. Don't set a goal that someone else wants you to do or doesn't fit your schedule. It's not motivating, and this may set you up for failure. Examine your goal so far. Does it seem realistic to you? If so, let's continue. If this isn't the right time in your life to focus on this goal, then choose something that is motivating to you.

5. **Time Oriented :** Include an end point. Knowing that you have a deadline motivates you to get started. For our example we can use 8 weeks. "I will exercise 2-3 days per week for 8 weeks.

"Congratulations! You now have a SMART goal! To have a good game plan, set a few additional action-oriented SMART goals. For example:

a) I will set up a designated area in my home to exercise safely.

b) I will plan my work out for the time of day I normally have the most energy.

c) I will track my exercise sessions on an exercise log. This will show my progress. Re-evaluate your goals every 30 days, adjust as needed.

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