



Caring Ambassadors Lung Cancer

Medical Writers' Circle

Breathing: Strong Muscles Can Decrease Shortness of Breath

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Breathing and respiration are necessities that often go without much notice in our daily lives, giving us the oxygen we need and removing the carbon dioxide (CO₂) that we don't. It's normal for our breathing patterns to change during physical activity and at rest, but unwanted changes in breathing patterns – like shortness of breath – often occur with lung diseases.

How and why we breathe: A perfect exchange

You breathe in (inhale) air to get oxygen in the lungs, which then travels to the heart, and is pumped out to all cells in the body. Every cell in your body needs oxygen to convert nutrients you eat into energy that you can use. This process of making energy also produces waste products, including CO₂. The blood returns this CO₂ to the lungs, where it leaves the body when you breathe out (exhale). This inhale–exhale exchange of breathing oxygen in and breathing CO₂ out happens with every breath you take.

Breathing is made possible because you are using the muscles of the chest wall and your diaphragm, which separates the heart and lungs from the abdomen. When you inhale, the diaphragm flexes downward allowing the lungs to fill with air. When you exhale, the diaphragm flexes upward to push air out of your lungs. These skeletal muscles are made stronger with exercise, which can therefore improve breathing patterns.

What causes breathlessness

If your muscles become weak from illness or weight loss, breathing takes much more effort because the muscles are weak, which increases fatigue and shortness of breath. When the diaphragm is weak, the “perfect exchange” of getting the air you need and removing the CO₂ you don't need becomes inefficient, causing a reduction in air supply. To meet the body's demand for

air, your exhalations of CO₂ may begin to shorten in order to meet the body's demand for oxygen. This triggers a drive to take in more air before the lungs are even emptied, resulting in a state of breathlessness.

Improving breathlessness

Keeping the diaphragm and muscles of the chest wall strong can help maintain normal respiration. The key to better respiration is actually the breathing out part!

Exhaling gives you the power to perform exercise, and naturally causes one to breathe back in. Practicing the following warm-up and upper body exercises with coordinated breathing can help improve exhalation, which in turn will improve inhalation, and therefore decrease breathlessness. Start slowly and pay attention to the details and form. Some people see results almost immediately. For others it may take some time, but do not be discouraged. You will notice improvements with practice. As these muscles become stronger, your volume and depth of air in the lungs will increase, and your diaphragm will help to push air out better.

Warm-up Exercises (Do These Two First!)

Relaxation Breathing 4-8-8 | *This exercise improves air movement in and out of the lungs to increase both oxygen intake and the expelling of CO₂ waste products. Also great for relaxation, before sleep, and to calm yourself during anxiety.*

Practice at least 2–4 times a day and whenever you're anxious.

Sit with back upright. Place hands on your knees. Feet flat on the floor. Close your mouth.

INHALE through the nose for **4 counts**.
HOLD the breath in your lungs for **8 counts**.
EXHALE SLOWLY for **8 counts** through pursed lips, but don't force the air out.
[repeat 4 times]

Why?

Breathing in through your nose:
Helps you to get a larger amount of air.

Holding the breath:
Lets the air distribute throughout the lung.

EXERCISE NOTES

Coordinate breath with movement:

EXHALE (breathe out)

through pursed lips, when you lift a weight, push, pull, bend or exert energy.

– What are pursed lips? –

When you blow out a candle, whistle, blow a kiss, or blow on a dandelion, you are using pursed lips.

INHALE (breathe in)

when you lower a weight.

– NEVER HOLD YOUR BREATH –

(Except during the 4-8-8 exercise as instructed)

Use 1- or 2-lb dumbbells for weights,
OR hold 2 bottles of water instead.
Start light, and increase weight slowly.

Breathing out through pursed lips:

Keeps airways open longer, which then prompts a larger inhalation through the nose.

Using pursed lips: With any activity prevents shortness of breath.

Counting: Is your mental counting rhythm, and does not necessarily equal seconds.

Sniffles | *This “fast breathing” exercise strengthens the diaphragm. It may help you feel more alert and can be done in bed, or while sitting or walking. Start out with 15–30 seconds duration, with the goal of doing it for a total of 60 seconds at least once daily.*

Sit with back upright. Place hands on your knees.
Feet flat on the floor. Close your mouth.

INHALE and EXHALE through the nose.

Counts should be equal for both inhale and exhale.

For example INHALE 2 counts, EXHALE 2 counts.

Then... **decrease this duration** as you are able (INHALE 1, EXHALE 1)
to create a faster breathing rate.

Notice how your chest, diaphragm, and abdomen are moving.

Upper Body Exercises

Seated Shoulder Press

Sit with back upright

Tummy is tight to support lower back

Feet hip-width apart flat on the floor

Place hand weights on knees

Raise hand weights so arms are bent 90 degrees,
and elbows are shoulder-height out to the side,
aligned with the shoulders

(just like 2 sideways “L”s or a goal post)

EXHALE through pursed lips as you
push hand weights up overhead

INHALE-lower weights back to shoulder level

to the “L” shape

[repeat 8 times]

BREATHING DURING ACTIVITY

*Do you breathe harder when
you exercise? You should!*

Every muscle contracts during exercise, so
you need to breathe faster to get more
oxygen to all the muscles.

Exercise No Matter What

*Exercise at every level of ability is critical
to maintaining muscular strength.*

Remember: Breathing OUT is key

The power is in the EXHALE.

EXHALE when you are doing something that
takes effort, like bending over, pushing,
pulling, reaching, or lifting a weight.

These same principles can be applied to many other upper and lower body exercises

Chest fly

Shoulder shrug

Shoulder circles

Side and front arm raises

Lat pull down

Lat pull backs

Chair squats

Walking

Upper body weight training sitting in a chair

Stair climbing (always breathe out through pursed lips with each step)

Consistent practice yields results. Do it with a breathing buddy so you can check each other's form. Be sure to notice and celebrate every success in improvement!

Donna Wilson teaches fitness classes for all levels at the Bendheim Integrative Medicine Center in New York City. Her breathing exercises can be found online at:

<https://www.mskcc.org/videos/strengthening-exercises>

<https://www.youtube.com/user/lungexercise=PL1526604DDA1D82AD>

She has also produced the DVD: [The Wilson Technique Workout for Breast Cancer Survivors](#).

Donna Wilson is a clinical nurse specialist (CNS) and personal trainer with the Integrative Medicine Service at Memorial Sloan Kettering since September 2000. She studied at the Massachusetts General Hospital (MGH) Institute of Health Professions, receiving an MSN in 1991. Additionally, Donna was certified as a Personal Trainer by the Aerobics and Fitness Association of America in May 2000. Her professional experience includes working at MGH for 17 years as a CNS in the ICU unit and coordinator of the respiratory care consultation service and lung transplant program. In 1992, Donna joined the nursing staff at Memorial Sloan Kettering Cancer Center as a pulmonary/thoracic CNS. She has a breathing lung exercise video on you tube (www.youtube.com/user/lungexercise). Presently she sets up exercises programs for all types of patients going through cancer treatments, chair aerobics, strong bones, back in shape aerobics class, PEX (class for men) and personal training. Her goals are to rebuild strength, restore flexibility, achieved better balance, and decrease fatigue and breathlessness in all patients. Donna believes in collaboration with all services to give quality care to each patient.

In 2012 Donna produced a DVD called the “[Wilson Technique](#)” for women after breast cancer.

In January 2009 Donna organized the first breast cancer survivor Dragon Boat Team. (www.empiredragonboat.com). This team has joined a worldwide network of 140 women's breast cancer teams to promote dragon boat racing as a part of a healthy lifestyle, as a innovative and unique support for survivors and as a mechanism to raise funds for cancer research and survivorship programs. The Empire Dragon Boat team is 100% volunteer-led and operates as a non-profit charity. Empire Dragon boat women are all ages and from every background, united by our experience of surviving and thriving past cancer. The Empire Dragons attended the International Breast Cancer Festival in Sarasota, Florida, October 2014. There were 101 teams from around the world. The Empire Dragons finished in 14th place out of 101 team.

Spirit + Strength = Success