

## Helpful Hints

If a helper is needed to squeeze the bag, maintain eye contact to help them coordinate squeezing the bag with your inhalation and/or coordinate assisting your cough.

Regular breath stacking is of benefit even when an assisted cough is not added. You may find with regular breath stacking that an assisted cough is only needed once daily.

## Strong Cough

Sitting on a firm chair with back support can increase the force of your cough.

Cough is made up of:

1. Full breath in (breath stacking).
2. Ability to hold the air in.
3. Forcefully exhaling air (assisted cough).

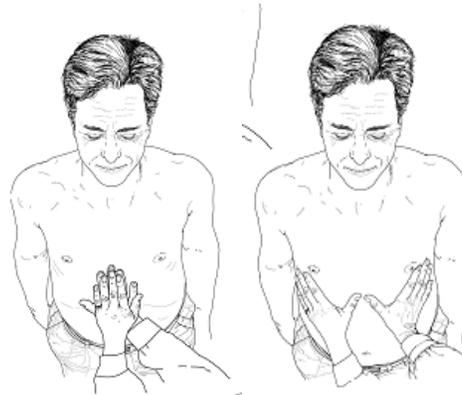
You may or may not have been instructed to perform an assisted cough technique along with your breath stacking. Please check with your Healthcare provider.

## Assisted Cough Technique

Once the lungs are at maximum capacity a more powerful cough can be generated using this technique.

This can be done with a helper who performs an abdominal thrust in coordination with your cough.

If an abdominal thrust can't be done, then the helper's hands can be placed around the lower rib cage and pressure can be applied as you cough (rib shake).



Abdominal Thrust

Rib Shake

**Caution:** If you are sitting in a chair, make sure it is secure prior to the abdominal thrust being performed. It may even be wise to put the back of the chair up against a wall so there is no chance it will tip over.

**Resources:** A Manual for People living with ALS, 3<sup>rd</sup> Ed. Jane McCarthy, Ed. ALS Society of Canada, Copyright 2005 [www.als.ca](http://www.als.ca)

Ottawa Rehabilitation Center,  
[www.rehab.on.ca](http://www.rehab.on.ca) (Online Education,  
Respiratory Care Protocols, Interventions)

London Health Sciences Centre, [www.lhsc.on.ca](http://www.lhsc.on.ca)

# Breath Stacking and Assisted Cough Techniques

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**Caution:** If you have emphysema or other lung disease, please discuss this information with your Healthcare professional before proceeding

## What Is Breath Stacking?

Breath stacking is a breathing exercise that can benefit people who are losing lung capacity due to muscle weakness or other restrictions in chest movement.

## What Are The Benefits?

Breath stacking serves to increase the amount of air that can be moved in and out of the lungs. It works by opening up areas of the lung that are prone to collapse while exercising the lung tissue and chest wall, keeping them flexible. If more air can be taken into the lungs it results in improvements in the ability to cough and speak.

Preventing lung collapse is important for preventing infection. Areas of the lung that are not properly opened are prone to developing pneumonia.

Collapsed lung tissue will not perform as needed. If no air is able to reach the end of the airway, then oxygen will not be taken in and carbon dioxide will not be released, resulting in an added burden on the body.

## What Do I Need?

Breath stacking can be done using a resuscitator that has been modified. A resuscitator, commonly known as a "bag", is a simple device used to give artificial breaths to people who are too ill to breathe on their own. A one-way valve, an extension tube, and either a mask or mouthpiece are added to modify the bag for breath stacking. With these extra attachments, the bag is no longer suitable for resuscitation, and **can ONLY be used for breath stacking.**



## Caution:

If you experience dizziness, chest discomfort or chest pain, stop breath stacking and rest. If done properly, breath stacking should not result in any of these symptoms.

## How Is It Done?

It is best done sitting, but can be done reclining or lying flat. Whichever position is used, there should be no slouching.

If you have been instructed to use a mouthpiece, nose clips need to be used to prevent air from escaping.

## Procedure:

1. Take a deep breath.
2. Place lips tightly around the mouthpiece or have your caregiver hold the mask firmly on your face.

3. Take more air in as the bag is squeezed. Hold this air in your lungs.
4. Try to take in even more air as the bag is squeezed again.

When your lungs are at maximum capacity you should feel a stretch across the front of your chest.

5. Hold the air in as long as is comfortable, then let it go. You can use this air to generate a cough.

This completes one set of Breath Stacking.

## When Should Breath Stacking Be Done?

Breath stacking is best done before meals and at bedtime. An empty stomach allows the diaphragm to move more easily and more comfortably. Performing an abdominal thrust on a full stomach could result in vomiting.

## How Often Should It Be Done?

- 3-5 sets should be performed at each session
- You should do 3-5 sessions daily.
- Breath stacking should not be done more than every ten minutes since dizziness may occur.