

Airway Clearance and Active Cycle of Breathing
(may re-print with permission)
Mary Spremulli, MA, CCC-SLP

The **active cycle of breathing technique** is used to clear secretions. There are three parts to it:

Breathing Control- Deep Breathing Exercises –Huffing

Breathing Control

Airways are very sensitive and can feel tight and wheezy especially after coughing or when you are breathless. Breathing control is used to **relax the airways** and relieve these symptoms.

- Rest one hand on your stomach and allow your shoulders to drop down. Breathe quietly and gently. As you breathe in your stomach should rise slightly, it should fall as you breathe out – do not force the air out. (Emphasize I :E ratio of 1:3 i.e. breathe out approximately twice as long as breath in)

Deep Breathing Exercise

Deep breathing is used to get air behind the sputum stuck in small airways.

- Relax your upper chest, neck and shoulder muscles
- Breathe in slowly and deeply and breathe out gently through pursed lips until your lungs are empty.
- Feel your abdominal muscles support the breath out.
- Repeat 3 – 4 times. If you feel lightheaded go back to relaxed breathing. Purse lip breathing helps open and stent the small airways.

Huffing

The Huff technique helps to avoid small airway collapse that occurs with elevated pleural pressures of strenuous coughing. Huffing moves sputum from the small airways to the larger airways, from where they are removed by coughing. Coughing alone does not remove sputum from small airways.

Instruction to patient:

- Take a medium sized breath in through the nose, squeeze the breath out by contracting your tummy muscles, and keep your mouth and throat open (ha,ha,ha without voice). The breath should be prolonged, but don't continue until the lungs are empty.
- Take a large breath in, squeeze the air out as before, and cough and expectorate any sputum. If you don't produce any sputum with 1 or 2 coughs, try to stop coughing by using your breathing control.
- Allow your breathing to settle with breathing control and then repeat the cycle until your chest feels clear.

Low resistance PEP device added to huffing may:

- Improve strength of the diaphragm, and thoracic and abdominal muscles used during inspiration-exhalation.
- Increase intra-thoracic pressure during the expiratory phase, which will decrease premature small airways closure (similar to pursed-lip breathing).
- Facilitate airway resistance, decrease WOB, decrease SOB, decrease RR, increase tidal volume and gas exchange.
- (Follow manufacturer recommendations for specific device use.)

Lo Tech Breaths

- Use a party favor and instruct the patient to blow 3 slow breaths, exhaling as long as you can, then inhale normally to replenish your breath. This is how you might use the breath during speaking. Focus on relaxed upper body.
- Blow 3 quick breaths similar to how you engage the abdominal muscles for coughing.
- Repeat the 3/3 cycle 5 times.