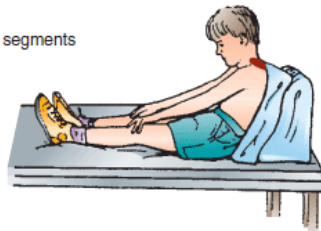


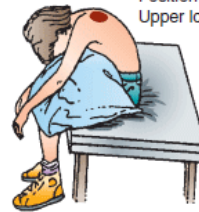
AIRWAY CLEARANCE TECHNIQUES AND DEVICES

- 1. Postural drainage:** this technique uses gravity to help move mucus from the lungs to the throat. You adopt different positions depending on which part of the lung you want to clear up. You usually spend about 20-40 minutes doing these positions. This technique is often combined with percussions (chest clapping/tapping) or vibrations. See the pictures below.

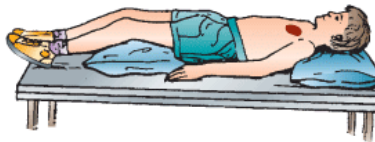
Position 1
Upper lobes, apical segments



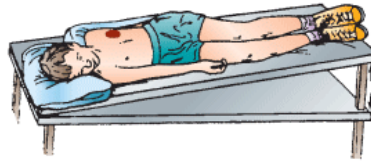
Position 2
Upper lobes, posterior segments



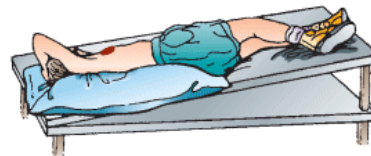
Position 3
Upper lobes, anterior segments



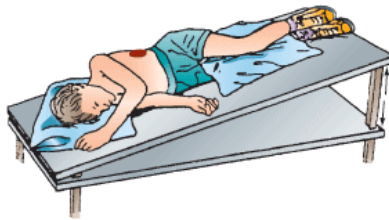
Position 4
Lingula



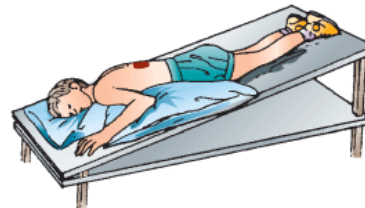
Position 5
Middle lobe



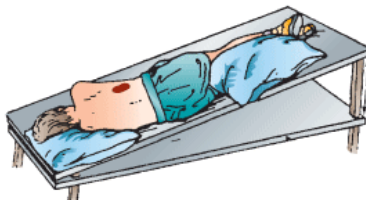
Position 6
Lower lobes, anterior basal segments



Position 7
Lower lobes, posterior basal segments



Positions 8 and 9
Lower lobes, lateral basal segments



Position 10
Lower lobes, superior segments



Source: DeTurk WE, Cahalin LP: *Cardiovascular and Pulmonary Physical Therapy: An Evidence-Based Approach, 2nd Edition*: www.accessphysiotherapy.com
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2. **Clapping / Percussion / Chest shaking / Vibration:** This involves manually clapping/tapping or using a vibrating device against your chest wall while you are breathing normally. This helps to make the mucus thinner and easier to clear. It is often combined with the postural drainage positions above (using gravity to help the mucus flow out of your lungs). See the picture below.



Percussion/ Clapping

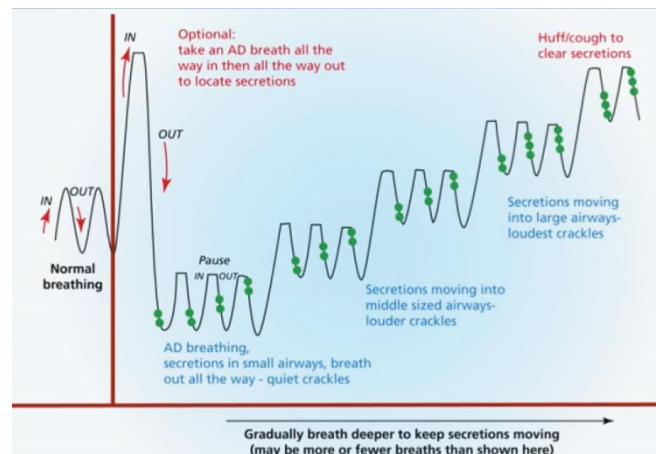


Manual vibrations

3. **Active cycle of breathing technique (ACBT):** This is a repeated cycle of three components. First: Breathing Control - breathing in gently through your nose using your diaphragm and breathing out through your nose or mouth (often with pursed lips). Second: Deep Breathing – three or four very deep breaths in and out (as deep as you can manage) through the nose. Then take a deep breath in, hold it for three seconds, and breathe out to your maximum capacity. Both components should be repeated until you feel the secretions are moving toward your throat. Third: Forced expiration - huffing or quick, forceful breaths out. Breath out with open mouth like 'steaming up a mirror'. This can often bring up the mucus on its own, but if not, you can easily cough it up. See the following diagram.



4. Autogenic Drainage: This is often done sitting up, but you could also lie on your side or on your back. You start with a full breath out and then very slow and limited breaths in through the nose, holding your breath for 2-3 seconds and breathing out slowly through your nose or mouth. When breathing out, you keep your throat open as if you wanted to steam up a mirror. You may also use a mouthpiece to help keep your mouth and throat open. As you go on, and when you hear or feel the secretions moving (crackling), your breaths in should grow larger and your breaths out less deep. See the picture below.



5. Slow expiration with glottis opened in lateral posture (ELTGOL): You lie on your right side to clear the right lung, or on your left side to clear your left lung. Your goal is to exhale the maximum air from your lungs using a series of slow breaths out, with your mouth and throat open, as if you wanted to steam up a mirror. You can also use a mouthpiece to help keep the airway open. A physiotherapist may help you push the air out by standing behind you with one hand on your abdomen and one hand on your ribs. See the picture below.



6. Forced expiratory technique / Huffing: This is a useful technique to clear up sputum from larger airways without coughing or before you cough. Take a small, medium or large breath in, followed by a medium breath out with your mouth and throat open, as if you wanted to steam up a mirror. Breathe out until your lungs are empty. Repeat until more forceful and short breaths (huffing) make the sputum easy to clear. You may use a mouthpiece to help you keep your mouth open.

Cough: You may use cough / coughing manoeuvres to clear up your sputum without combining it with other techniques.

7. Regular physical activity / exercise (walking, running, swimming) or Respiratory Muscles Training Any regular physical activity or exercise that makes your breathing deeper and more rapid, and helps you move up the sputum and clear it more easily. Respiratory Muscle Training (taught by a physiotherapist) involves breathing exercises to improve the function of your breathing muscles.

8. Oscillatory positive expiratory pressure devices (O-PEP): When you breathe out against these devices you feel a slight resistance combined with vibrations within your lungs. This helps lengthen and strengthen your breaths out, and thins your secretions to make them easier to shift.



Flutter /Pari OPEP/TurboForte



RC-Cornet



Acapella



Aerobika



Bubble PEP

9. Fixed positive expiratory pressure devices (PEP): When you breathe out against these devices you feel a slight resistance that allows you to lengthen and strengthen your breaths out. The optimal expiratory pressure is from 10 to 20 cmH₂O.



PEP Mask / PiPEP



Thera-PEP



PARI-PEP



Threshold-PEP

10. Instrumental chest vibration: This is a vest attached to a machine which inflates and deflates the vest rapidly, vibrating your chest to help thin your secretions and make them easier to clear. See picture below.

