

Ventilation Facilitation Techniques

Dr. Hina Vaish (PT)

Assistant Professor, CSJMU

Ventilatory strategies
depends on the patient's individual
problem

The goal with patients with **primary lung disease** is to teach them to **relax the neck and chest accessory muscles and use more diaphragmatic breathing** to reduce the work of breathing.

However, patients with **secondary pulmonary dysfunction** patients, may have accessory muscles intact, but they are not able to use them to facilitate deep breathing or coughing. In these cases the **goal is to teach them to use the accessory muscles to balance the upper and lower chest.**

Inspiratory

Expiratory

Sternocleidomastoids

Scalenes

External
intercostals

Diaphragm

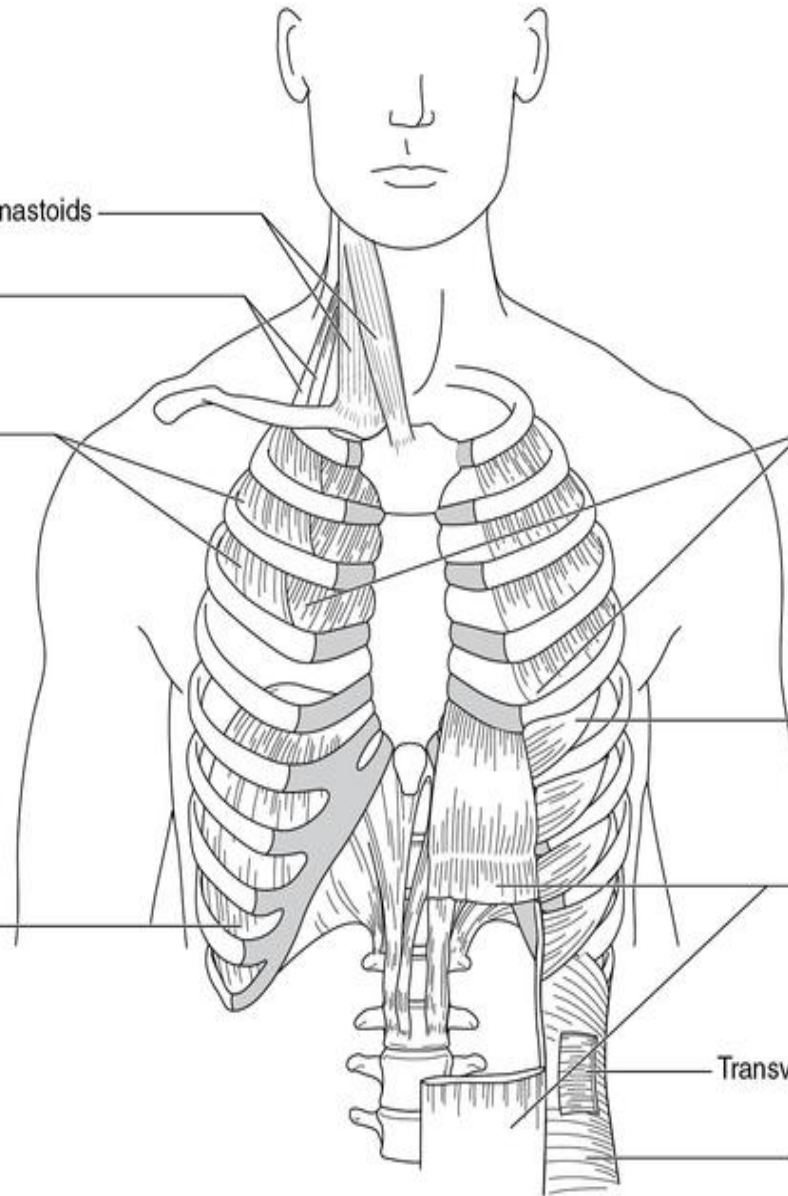
Internal
intercostals

External
oblique

Rectus
abdominis

Transversus
abdominis

Internal
oblique



DIAPHRAGMATIC BREATHING

- For relaxation & coordinated breathing pattern
- Greater tidal volume is achieved with diaphragmatic breathing and improve overall ventilation

Diaphragmatic Facilitation Techniques

- Relaxing techniques
- Re-patterning
- Sniffing
- Diaphragmatic scoop
- Lateral Costal facilitation Technique
- Upper Chest Inhibition Technique
- Normal Timing techniques

The first step in facilitating any breathing pattern is to position the patient for respiratory success.

Relaxation of upper chest and shoulders

- Maximal contractions leads to maximal relaxation
- This technique can be applied to upper chest and shoulders
- Verbal commands can be very important with this procedure.

Cont...



Cont...

- The therapist places his or her hands on the patient's shoulder girdle. The patient is asked to shrug his or her shoulders up into the therapist's hands and hold it.
- The emphasis is on the relaxation phase.

Re-patterning Techniques

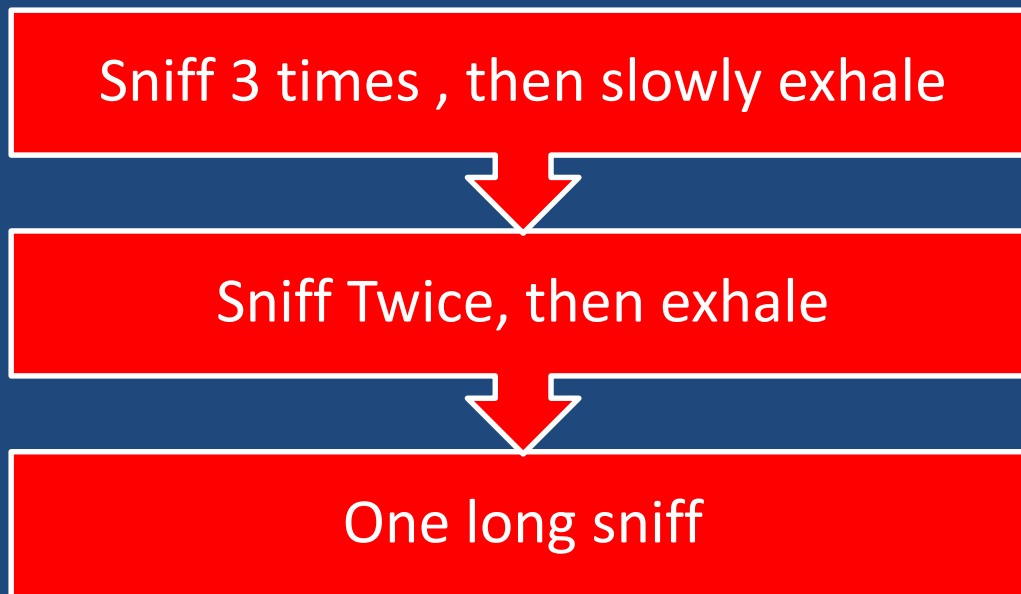
- When the patient needs more support to gain control of breath and is experiencing shortness of breath.
- Ask the patient to exhale “ try to blow out easily with lips pursed. Donot force it, just let it come out.
- Once patient feels some control of breath then ask to hold breath at top of inspiration just for 1-2 seconds.
- Avoid valsalva maneuver

Sniffing

- Sniffing is primarily diaphragmatic breathing
- Place the patient in gravity eliminated position
- Relatively posterior pelvis
- Use pillow under head
- Arms down below 90 degree of flexion

Cont...

- Place the patients hand on their stomach for increased proprioceptive feedback



Diaphragmatic Scoop Technique

- Place patient in gravity eliminated position
- Feel the patient's breathing pattern by placing your hand at the umbilicus
- After normal rate at the end of patient's exhalation, give a slow stretch **and scoop hand up and under** anterior thorax.
- Oral command is given while scoop stretch "breathe into my hand"

Cont...

- Try not to have patients take too many deep breaths; they may begin to feel light-headed because they may hyperventilate and blow off too much Carbon dioxide.

Lateral Costal Breathing

- Lower chest lateral costal expansion facilitate diaphragmatic and intercostal breathing
- Mid chest lateral costal expansion will recruit primarily intercostal activity



Bilateral lower lobe expansion



Bilateral mid-chest expansion exercise.

Upper Chest Inhibition

- Position the patient appropriately.
- For a couple of respiratory cycles without applying any pressure to feel the upper chest's movement

Cont...

- On the patient's next inspiratory effort apply pressure or resistance to the expansion of the upper chest. This gentle pressure will cause postural inhibition to the anterior and superior movement of the upper chest.
- After each expiratory cycle, add more pressure until the patient subconsciously increases the lower chest breathing out of necessity.

Cont.....

- This technique should never cause an increase in anxiety or it will only encourage more upper chest breathing rather than less.

Normal Timing

- A normal timing technique adapted from the physical therapy approach of PNF can help the patient work on this sequence.
- Position the patient in supine or supported sitting with neutral pelvis position.
- At the end of an expiratory cycle using the hand placement of the diaphragm scoop, asks the patient to breathe in "here." With the other hand, the therapist moves up

Cont...

- The chest wall to the lower sternum and touches the patient with the instructions again to "now breathe here."
- Finally, the therapist uses the first hand to move up to the upper sternum (usually around the level of the sternal angle) and asks the patient to "now breathe here."
- The manual cues provide tactile cuing

Facilitating effective ventilation goes far **beyond** just the diaphragmatic exercise, physiotherapists can be incorporate techniques and strategies to get their patients to assist them in reaching their greatest rehabilitation potential.

THANK YOU