RESPIRATORY MOVEMENTS

Thorax Respiration Movement

1) The curve of each successive rib is greater than the one above it

2) When ribs are "pulled" upward the thoracic diameter increases, increasing thorax volume and decreasing thorax pressure

3) Ribs 1 and 2 are less mobile than the others
   a. They act as a unit with the manubrium
   b. When this unit is raised the superior portion's diameter increases
   c. Raising & fixing ribs 1 and 2 makes it easier to elevate greater the ribs below. This is an important feature in forced inspiration or in voluntary breathing.

Action of Major Thorax Respiration Muscle

1) Quiet respiration
   Raise ribs  
   Lower ribs 
   External intercostals  
   (ribs 3-10)  
   No muscle, passive

2) Deep respiration
   Raise ribs  
   Lower ribs 
   External intercostals  
   No muscle, passive
   Scalene
   Sternocleidomastoids
   Levator costarum muscles
   Serratus posterior superior muscles

3) Forced respiration
   Raise ribs  
   Lower ribs 
   All muscles listed above for deep respiration.
   The levator scapulae, 
   trapezius and rhomboids rise and fix the scapula so that the pectoral muscles and serratus anterior muscles can raise ribs. (See Type II Scapular Dysfunction.)
   Quadratus lumborum
   Internal intercostals
   Subcostals
   Transverse thoracic
   Serratus posterior
   inferior muscles
   Obliques
   (When QL becomes restricted, antagonistically all raising of ribs upon inhalation is forced.)