COHERENT BREATHING®

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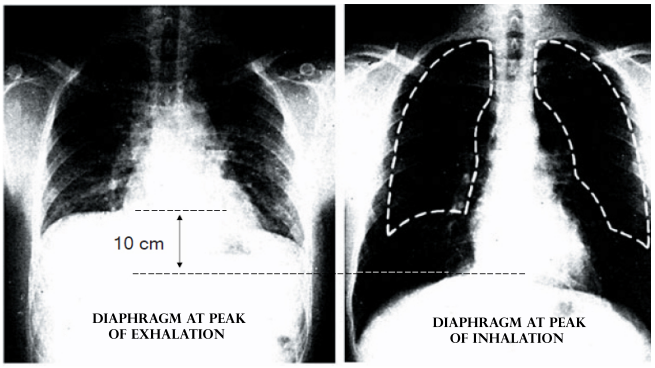
Hello all,

Welcome to Coherent Breathing®, Volume 4, Issue 6, April 2026: ***What Is A Pneumothorax?***



Source: *Physiology of Respiration*, Comore, J.H., Yearbook Medical Publishers, Inc. Chicago 1974. With permission.

Refer To Coherent Breathing - The Definitive Method

As readers know, Coherent Breathing simply employs basic human physiology in a certain way, this way being rhythmic sinusoidal action of the diaphragm, where the stated objective is to employ ~75% of available diaphragm range. This action serves to modulate pressures in thoracic and abdominal cavities, inhalation increasing pressure in the abdominal cavity and decreasing pressure in the thoracic cavity, and exhalation decreasing pressure in the abdominal cavity and increasing pressure in the thoracic cavity.

This modulation of pressure in the thoracic cavity results in "breath", without it we have no breath and ultimately perish. ALS, commonly known as Lou Gehrig's disease results in eventual death due to failure of the phrenic nerve that controls diaphragm motion, both sensory and motor. In the case of ALS, diaphragm movement finally comes to a halt resulting in "respiratory failure". "Breath" is the result of diaphragm motion, specifically inhalation, generation of an internal thoracic cavity pressure that is lower than external environmental pressure. Inhalation results in the air from the external environment rushing into the lungs, inflating them with air. In short, inhalation produces a negative internal pressure relative to external barometric pressure to which external air flows. Failure of inhalation to perform this function, for any reason, results in respiratory distress or eventual failure.

A "pneumothorax", specifically an "open pneumothorax", is a hole in the chest wall and thoracic cavity. It is a very serious life threatening condition. Under normal circumstances, the thoracic cavity is a sealed chamber, the pressure therein modulated by changes in volume as a function of diaphragm position. It works on the basis of simple physics in keeping with Boyle's law. A hole in the chest wall results in a loss of pressure differential between internal and external environments and failure of inhalation to generate negative pressure to which external air normally flows through the nose to fill the lungs. A primary cause of open pneumothorax is gunshot wounds.

Pneumothorax is a very serious life-threatening condition, but because the lungs exist in separate pleural cavities divided by the mediastinum, a single pneumothorax typically involves a single lung where it defeats the flow of both air and blood into that lung, setting off a cascade of events where the lung typically collapses. Blood still flows through the collapsed lung but is impeded by collapsed alveoli and their microscopic arterioles. It can result in a rapid drop in blood oxygen, a rise in blood carbon dioxide, *decreased venous return*, tachycardia, and hypotension. The emergency medical treatment for such a condition is to close the wound with a non-porous material through which air cannot flow, e.g., a plastic wrap or a "chest seal", an adhesive patch that can be applied rapidly. However, the most dangerous potential of a pneumothorax is that air enters the opening and is not evacuated before the wound is sealed, leaving the respective thoracic cavity with a positive pressure as opposed to a normal resting negative pressure, rendering the affected lung inoperable with the potential of compressing the opposite lung.

If a hole exists in the chest wall, air will flow through the hole into the respective thoracic cavity during exhalation and out of the thoracic cavity during inhalation, air bypassing the nose and conducting airways, thereby defeating the action of what I have termed "the thoracic pump", which explains that the lungs fill with both air and blood during inhalation and empty of both air and blood during exhalation, this action generating what we have termed the "Valsalva Wave", a blood wave that rises in the venous tree during inhalation and rises in the arterial tree during exhalation. I have posited that effective inhalation is imperative because it is the physiologic mechanism that compels blood to move upward in the body against gravity – making it vitally important!

Stephen Elliott, President & Life Scientist, COHERENCE

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