



Hello all,

Welcome to *Swan & Stone, Volume 1, Issue 10. Circulatory Physiology - A Functional Model.* I hope you enjoyed *Issue 9* where we discussed the sinusoidal nature of resonant breathing. I'm making some exciting discoveries in this area and you'll be hearing more from me about sinusoidality in future issues.

You may recall the illustration at the right from *Issue 8, The Physiology Of Resonance.* Here in my local area I've been presenting a course on the phenomenon of *Essential Hypertension*, what it is, and how to avoid it. This "functional model" is proving to be a very effective teaching tool. I'm glad that its proving to be useful, but the unfortunate reason it is, is that many of us carry around a 6th grade understanding of how the human body works.

When most of us think of "circulation" we think of blood. However, while the red blood cell is the single most abundant type of cell in the body, ~25 trillion in number, the "blood" proper represents a relatively small percentage (~12%) of total body fluid, the remainder of which resides in the other 75 trillion cells that make up the rest of the body and the extra-cellular fluid that services those cells. The 25 trillion red blood cells transport oxygen from the lungs to the remaining 75 trillion cells via hemoglobin which has the capacity to bind with and carry oxygen. Red blood cells give up their oxygen as they travel deep into the capillary circulation meeting with the extra-cellular fluid environment where the content of oxygen in-solution is relatively low due to metabolism. On the flip side, the passing blood captures from the extra-cellular fluid, carbon dioxide produced by metabolism. The interface between the capillary circulation and the extra-cellular environment is complex and fulfills many important functions enabling the bi-directional flow of water, gases, nutrients, metabolic waste and everything the body needs.

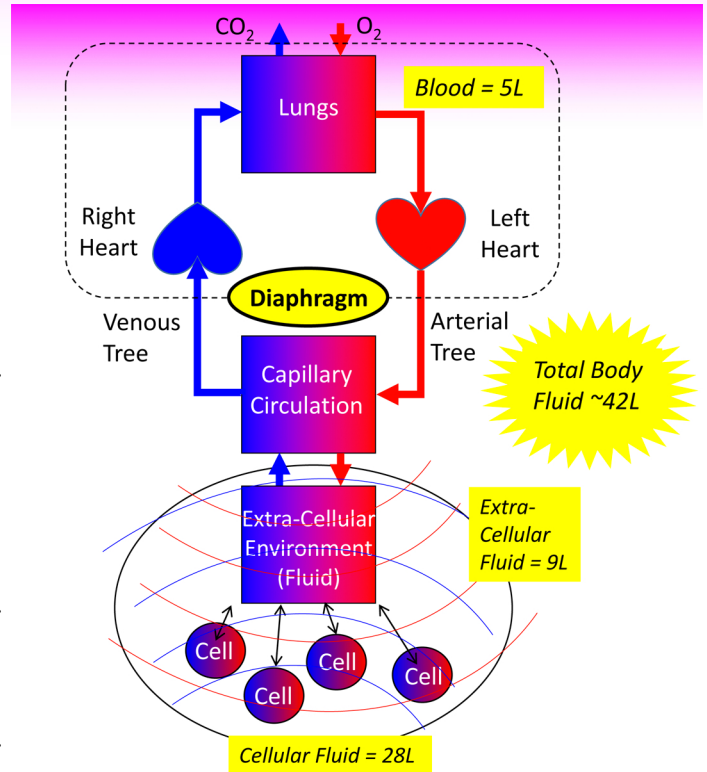


Fig.1: Circulatory Physiology - A Functional Model

Figure 2: Signature Of Typical Adult Diaphragm Movement Monitored At the Earlobe

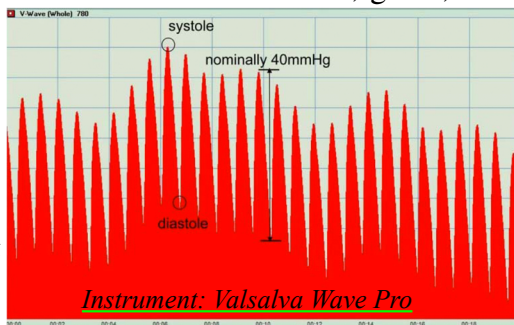
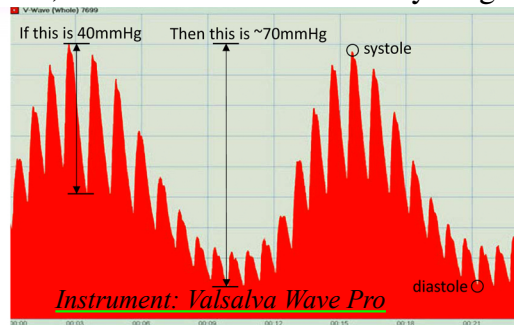


Figure 3: Signature Of Coherent Diaphragm Movement Monitored At the Earlobe



The point I would like to emphasize is that while "blood" proper only represents 12% of total body fluid, it's movement is the primary motive force behind the movement for the remaining 88% of fluid in the body. To this point, *it is the job of the circulation of blood to facilitate viability of the internal environment to support life.* There are two fundamental internal forces that govern the movement of blood - and fluid. They are: 1) the heartbeat, and 2) diaphragm movement. [Figures 2 & 3 demonstrate blood activity in the capillary circulation of the earlobe over a period of ~28 heartbeats.] Many of us live out our lives with our body being sustained almost exclusively by the heartbeat, without the circulatory advantage of diaphragm movement. In coming issues I will argue that this is the root cause of *essential hypertension -> a symptom of circulatory malfunction.*

Stephen Elliott, President, COHERENCE

Zoom for clarity.

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