

The first regulator in  
our body is



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The first regulator in our body is the balance of pH in our blood. When individuals exercise, the heart rate, systolic pressure, and the amount of blood pumped per heartbeat increases. Exercising causes our metabolism to become more active, which produces more CO<sub>2</sub> and H<sup>+</sup> in the muscles.

The increased concentration of H<sup>+</sup> ions drops the pH. A significantly low pH causes acidosis (Figure 3), which affects the protein functions; their dependent on pH change alters their structure and denatures the enzymes purpose. Proteins don't function adequately with low pH values. The excess amount of H<sup>+</sup> then enters the cell; however, to maintain homeostasis proper chemical composition of fluid is needed outside the cell for proper chemical composition inside the cell. The body has buffers that kick in to fix the pH levels - the kidneys eliminating H<sup>+</sup> from the body through the excretory system. The process, known as metabolic acidosis, is very slow and takes a long time to secrete the urine and bring down the pH values.

The lungs, through excessive breathing, provide a faster and efficient process to eliminate the CO<sub>2</sub> concentration and increase the pH, when needed.