

While the human body is an amazing biological machine, it is adapted to a life on land. However, we are an intelligent species, and one that has been able to innovate and develop technologies that allow us to explore the world we live in.

Despite the environment we are in, the systems of our bodies must work to maintain internal homeostasis, which is a relatively narrow range of operating conditions. Whether you are a scuba diver or snorkeler diving on a coral reef, the respiratory system must exchange gases so that the brain and muscles have an adequate supply of oxygen and carbon dioxide is removed from the blood. The endocrine system ensures that the level of glucose in the blood is adequate to meet demand, while the urinary system maintains the water-salt balance of the body and prepares waste materials for elimination.

Our nervous system is capable of simultaneously processing thousands of signals from our external and internal environments. In the case of a diver, this includes information on the carbon dioxide concentration of the blood, external and internal temperatures, and pressure of the water, as well as a constant reminder as to the positions of the arms and legs. All of this information is processed rapidly at a subconscious level. If our blood carbon dioxide levels rise, the brain increases the rate of respiration. If our body temperature drops, the brain tells the muscular system to shiver to generate heat. This integration is critical to our survival in any environment.

Throughout this text, you will learn more about the complex interactions that occur within the human body. From a genetic, to a cellular, and on to a physiological level, the same processes that make exploring a coral reef possible also control our bodies during our daily activities. By understanding how our bodies function, we can gain a greater understanding of how to prevent disease and lead a healthier life.



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