Low Oxygen Body Response

Regardless of how much oxygen is in the air, our bodies require certain amounts of oxygen to do different functions. When you exercise, your body requires more oxygen to help your muscles move. Think about a time when you were exercising. How did your body respond to get more oxygen? You may have noticed that you were breathing harder and your heart was beating faster. Similar to when you exercise, your body responds to make sure it has enough oxygen when it is in a low oxygen environment. Use the chart below to see how the body responds in low oxygen environments.

What is affected?	Description of what the body is doing to get more oxygen.	How does it contribute to getting more oxygen to the cells?	Long Term Consequences
Breathing	The body involuntarily starts breathing faster.	By breathing faster, it ensures that more oxygen is getting into the bloodstream.	This can lead to symptoms of hypoventilation which can cause carbon dioxide to drop too quickly in the blood causing you to feel lightheaded and lead to fainting.
Heart Rate	The body involuntarily increases the heart rate.	Increasing the heart rate moves red blood cells faster that are carrying oxygen molecules to different tissues in the body.	When the heart beats too fast it may not pump enough blood to the rest of the body. If left untreated, it could lead to heart failure, stroke, and heart attack.
Blood Cell Production	The body sends signals to increase the production of red blood cells.	If the bloodstream has more red blood cells in it then it would increase the amount of oxygen that could be carried to different tissues in the body.	Blood becomes thicker and harder to move. This can increase a person's risk for blood clots and heart attacks.

*involuntarily - that the body is doing something without actively thinking about it

Reference

Institute of Medicine (US) Committee on Military Nutrition Research; Marriott BM, Carlson SJ, editors. Nutritional Needs In Cold And In High-Altitude Environments: Applications for Military Personnel in Field Operations. Washington (DC): National Academies Press (US); 1996. 16, The Physiology of High-Altitude Exposure. Available from: https://www.ncbi.nlm.nih.gov/books/NBK232874/