Science Superpowers of Sherpas


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<p align="justify"><span style="font-family: " helvetica";"=""></span><span lang="EN-US" style="line-height: 107%; font-family: Helvetica; background-color: inherit;"><a href="https://www.britannica.com/topic/Sherpa-people"><span style="font-family: &quot;Helvetica&quot;;" helvetica";"="">Sherpas</span></a></span><span lang="EN-US" style="line-height: 107%; font-family: Helvetica; background-color: inherit;" times="" new="" roman""=""><span style="font-family: &quot;Helvetica&quot;;" helvetica";"=""> are an ethnic group native to the mountainous regions of Nepal,</span><span style="background-position: 0% 0%; background-repeat: repeat; background-attachment: scroll; background-image: none; background-size: auto; background-origin: padding-box; background-clip: border-box; font-family: &quot;Helvetica&quot;;" helvetica";"=""> Sikkim (India), and Tibet (China). </span><span style="font-family: &quot;Helvetica&quot;;" helvetica";"="">Sherpas are renowned for their climbing abilities and capacity to thrive at high altitudes, and they do a variety of activities on the mountain, including serving as guides and porters, as well as putting up camps.</span></span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><span style="font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"=""> </span><ul></ul><span style="font-family: &quot;Helvetica&quot;;" helvetica";"=""> </span><style><span style="font-family: &quot;Helvetica&quot;;">&lt;span style="font-family: "Helvetica";"&gt;&lt;span style="font-family: "Helvetica";"&gt;@font-face {font-family:Helvetica; 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mso-bidi-font-family:Mangal; mso-bidi-theme-font:minor-bidi; mso-font-kerning:0pt; mso-ligatures:none; mso-ansi-language:EN-US; mso-fareast-language:EN-US; mso-bidi-language:NE;}.MsoPapDefault {mso-style-type:export-only; margin-bottom:8.0pt; line-height:107%;}div.WordSection1 {page:WordSection1;}&lt;/span&gt;&lt;/span&gt;</span></style></p><p style="margin: 6pt 0cm;" align="justify"><span lang="EN-US" style="line-height: 107%; font-family: &quot;Helvetica&quot;; background-color: inherit;" helvetica";"="" helvetica";="" color:="" rgb(26,=""
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26,="" 26);="" background:="" white;"=""">People respond to high altitudes in different ways. Most climbers, for example, require supplemental oxygen to reach the summit of Mount Everest, although some have succeeded without it. The Sherpas are among the most famous, living at high altitudes without suffering adverse health effects. When they return to sea level, they suffer as those who live at sea level do at altitude.</p><p style="margin: 6pt 0cm;" align="justify"><b style="background-color: inherit;">What gives them the ability to ascend and survive in such conditions?</p><p style="margin: 6pt 0cm;" align="justify">Mountains have a low oxygen level. Low barometric pressures cause hypoxia (a relative fall in tissue oxygen level) in healthy persons at high altitudes. When the body lacks oxygen, erythropoietin (EPO) rises, increasing red blood cells (RBCs) and distributing the remaining oxygen. However, when the RBC level increases, the blood thickens, and the heart has to work more to pump blood, so you get mountain sickness as you climb higher. Surprisingly, even though Sherpa's body goes to higher altitudes, his RBC did not increase as much as normal humans, and his blood remained relatively thin. Their bodies produce more nitric oxide, a molecule that helps expand blood arteries and increase blood flow. This maintains their alertness and vigor. Research assumes that natural selection has resulted in some groups, including Sherpa, being genetically more adapted to the pressures of high altitude over thousands of years.</p><p style="margin: 6pt 0cm;" align="justify">Researchers discovered that the mitochondria of Sherpas were more effective at utilizing oxygen to make ATP, the energy that drives our body. They also observed lower levels of fat oxidation in the Sherpas, as anticipated by genetic variations, implying that they are more efficient at producing energy. Even at great heights, ordinary individuals waste necessary oxygen by burning fat. On the other hand, Sherpas makes the

most of O2 by converting it into low-cost glucose.</p><p style="margin: 6pt 0cm;" align="justify">Ordinary people and Sherpas have a distinct kind of phosphocreatine. This molecule is a backup resource for muscle contraction when ATP is unavailable. Ordinary people died within two months of arriving in the highlands. However, in Sherpa, the backup of this power rose even higher. Sherpas can readily labor in the mountains for all of these reasons.</p><p style="margin: 6pt 0cm;" align="justify">Understanding the metabolism could be the breakthrough in the medical history of the intensive care unit patients. Falling oxygen levels at high elevations are similar to the drops in levels seen by patients with critical diseases.</p><p style="margin: 6pt 0cm;" align="justify"><b style="background-color: inherit;">"Sherpas" are thought to have high hemoglobin levels in their blood. Is that true? </p><p style="margin: 6pt 0cm;" align="justify">Studies show Sherpas who live permanently above 4000 meters above sea level have similar hematological characteristics (red cell number, hematocrit, hemoglobin content, and 2, 3-diphosphoglycerate/hemoglobin ratio) to other individuals and have a stronger affinity for oxygen in their blood. The Sherpa people of the Himalayas have mastered the capacity to thrive in this environment after generations of living at high altitudes.</p><p style="margin: 6pt 0cm;" align="justify">According to the study, Sherpa adaptation has a metabolic base, which may allow people to survive and perform at high altitudes. Such adaptations might also explain why peak-climbing Sherpas perform so well at high altitudes.</p><p style="margin: 6pt 0cm;" align="justify"><b style="background-color: inherit;">Photo Credit</p><p style="margin: 6pt 0cm; text-align: justify;">Photo by <a href="https://unsplash.com/@christopher__burns?utm_content=creditCopyText&utm_medium=referral&u
style="font-family: "Source Sans Pro";" helvetica";"="">Christopher Burns on Unsplash</p>