Human Factors in High-Altitude Mountaineering

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Abstract
We describe the human performance and cognitive challenges of high altitude mountaineering. The physical (environmental) and internal (health) stresses are first described, followed by the motivational factors that lead people to climb. The statistics of mountaineering accidents in the Himalayas and Alaska are then described. We then present a detailed discussion of the role of decision-making biases in mountaineering mishaps. We conclude by discussing interpersonal factors, adaptation, and training issues.

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High altitude mountaineering requires a mixture of determination, patience, fearlessness, caution, careful planning but the ability to make snap decisions. Traditionally this type of mountaineering has made the use of expedition or 'siege' style tactics to carry vast amounts of bivouac equipment and food, and establish camps at different altitudes on the climb, necessary to allow party members to acclimatise to the changes in altitude. Reserved for the more intrepid mountaineers, where climbers ascend high altitude peaks, using modern lightweight equipment in very short times. It's recommended to start with alpine mountaineering, as diving in at the deep end can have some severely adverse effects. "High-altitude populations offer a unique natural lab that allows us to follow [many] lines of evidence—archaeological, biological, climatological—to answer intriguing questions about social, cultural, and biological adaptations," said Mark Aldenderfer, an archaeologist at the University of California, Santa Barbara, who organized the AAAS symposium with Beall. (Aldenderfer and Beall are both past recipients of research grants from the National Geographic Society Committee for Research and Exploration.) Adapting to High Altitudes. The Andean and Tibetan plateaus rise some 13,000 feet. Introduction. Modern extreme high-altitude mountaineering sport is associated with multiple risk factors for cardiac functions as verified by the cardio-intervals and spectral amplitudes of the cardio-intervalograms [2]; albeit the heart rate (HR) variability appears to be still underexplored. Among these risk factors are: early awakening; continuous (up to 12-16 hrs) physical loads of high intensity; integrated effects of high altitude conditions, in particular altitude and associated hypoxia; weather conditions (wind, frost); difficulty moving over snowy and icy terrain; sense of danger in t