

Hemoglobin concentration and resilience of professional soccer players residing at sea level and moderate altitude regions

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This study compared the hemoglobin (Hb) concentration and resilience of professional soccer players residing at sea level and moderate altitude regions. Subjects included 42 players (22 of the region at sea level and 20 of the region moderate altitude) with an age range of 20-35 yrs. We evaluated the weight, height, %fat, fat mass, fat-free mass, $\dot{V}O_2$ max, and Hb concentration. The results showed no differences between the two groups of professional soccer players in age, experience, body weight, height, %fat, fat mass, and fat-free mass. Differences ($P < 0.001$) emerged in the concentration of Hb ($\text{g}\cdot\text{dl}^{-1}$) and $\dot{V}O_2$ max ($\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$). The group of professional soccer players living, training, and playing in Arequipa at a moderate altitude (2320 m above sea level) showed higher levels of Hb ($16.2 \pm 0.7 \text{ g}\cdot\text{dl}^{-1}$) and $\dot{V}O_2$ max ($54.1 \pm 5.9 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$) compared to players residing in regions at sea level ($14.4 \pm 0.7 \text{ g}\cdot\text{dl}^{-1}$) and ($49.0 \pm 5.9 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$).

Altitude

Hemoglobin

Soccer

$\dot{V}O_2$ max