

The effect of altitude on the anaerobic power of bolivian boys of high and low socio-economic status.

P. Obert, G. Falgairette, M. Bedu, N. Fellemann, E. Van Praagh, H.C.G. Kemper, B. Post, H. Spielvogel and J. Coudert. UFR STAPS, Fac. Med., Clermont Ferrand, France
Fac. Of Human Mov. Sc., Amsterdam, The Netherlands, IBBA, La Paz Bolivia.

The aim of this study was to compare the anaerobic power of Bolivian boys of high and low socio-economic status living at high and low altitudes. The study consisted of 150 prepubertal boys (average age 11 years) living in La Paz (altitude 3600 m, n = 67) and Santa Cruz de la Sierra (altitude 500 m, n = 83), Bolivia. Among the boys studied at high altitude. 23 were from a high socio-economic background (HA1) and 44 from a low socio-economic background (HA2). The group studied at low altitude consisted of 35 boys from a high socio-economic background (BA1) and 48 from a low socio-economic background (BA2). The maximal anaerobic power (P max) was determined by a force-velocity test and the mean anaerobic power (P 30s) was determined by a Wingate test. The tests were realised at high and low altitude on a Brue bicycle ergometer. At both high and low altitude, P max and P 30s (w, w/kg of body weight, w/kg of lean body mass) of the boys of high socio-economic status (HA1: respectively 251 ± 69 , 6.8 ± 0.9 and 8.7 ± 1.2 for P max and 193 ± 53 , 5.2 ± 0.8 and 6.7 ± 1 for P 30s; BA1: respectively 251 ± 41 , 6.1 ± 1 and 9 ± 1 for P max and 183 ± 29 , 5.2 ± 0.7 and 6.6 ± 0.8 for P 30s) were significantly higher than the P max and P 30s of the boys of low socio-economic status (HA2: respectively 164 ± 35 , 5.5 ± 0.8 and 6.6 ± 1 for P max and 133 ± 34 , 4.5 ± 0.9 and 5.4 ± 1 for P 30s; BA2: respectively 166 ± 34 , 5.4 ± 0.9 and 6.06 ± 1 for P max and 127 ± 25 , 4.1 ± 0.7 and 5 ± 0.8 for P 30s). When the boys belonging to the same socio-economic class were considered, there was no significant difference between the highland and lowland boys as regards P max and P 30s. In conclusion, it appears that an attitude of 3600 m has no influence on the maximal and mean anaerobic power of prepubertal boys of the same socioeconomic class. However, socioeconomic status, which in developing countries is clearly linked to nutritional status, has a determinant effect on the capacity to develop anaerobic power.