

The Changes of Blood Indexes during Altitude Training in Young Swimmers

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Abstract

Introduction: Try to find the changes of physiological function by blood indexes in altitude training for young swimmers.

Methods: Twelve young swimmers (6 male and 6 female, 12.5±0.6yr) took part in altitude training for 8 weeks, including 1 week pre-altitude (100m), 3.5 weeks altitude training (1890m), 3.5 weeks post-altitude (100m). Nine times in the altitude training stage for blood test, including red blood cell (RBC), white blood cell (WBC), hemoglobin (HGB) and hematocrit (HCT), serum testosterone (T), cortisol (C), creatine kinase (CK), blood urea (UREA).

Results: In the whole process of altitude training, the trend of blood index is consistent in male and female athletes; Comparing with pre-altitude, RBC and HGB was higher at D2, D14 of on-altitude ($p<0.01$, respectively) significantly; HCT was higher at D2, D14 of on-altitude ($p<0.01$, respectively) significantly; CK was higher at D2, D7, D14 and D21 of on-altitude, D+11 of post-altitude ($p<0.01$, respectively) significantly; UREA was higher at D7, D14 of on-altitude, D+4, D+11, D+18 and D+25 of post-altitude ($p<0.01$, respectively) significantly. Comparing with D2 of on-altitude, T was lower at D14 of on-altitude, D+11 and D+25 of post-altitude ($p>0.05$, respectively); T/C was significantly lower at D+11 ($p<0.05$) and D+25 ($p<0.01$) of post-altitude.

Conclusions: Young swimmers were sensitive to plateau environment, physiological function was stable which inferred a good adaption in phase of altitude training. The effect of altitude training had been maintained in subsequent stage. Deep stimulation for young swimmers by means of altitude training, fatigue occurred after altitude training.

Keywords: Young swimmer, Altitude training, Blood indexes