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The application of serum creatinine in training monitoring

Chi Xu
Hubei Institute of Sports Science

Objective Study the role of serum creatinine in physiological function assessment of weightlifters combined with other indexes, in order to evaluate the effect of phased training and arrange training plan scientifically.

Methods Taking weightlifters as the main research object, the sports features of Cr, the correlation between Cr and body composition, Cr and physical ability of the athletes were studied, and the exercise load of the athletes were monitored with other physiological and biochemical indexes.

Results There was a significant difference in Cr value between anaerobic metabolism (ATP-CP and glycolysis) and aerobic metabolism ($p < 0.01$); Cr was highly correlated with lean body weight, skeletal muscle content and BMI (R^2 was 0.562, 0.574, 0.871 respectively); Cr was basically consistent with the change trend of hemoglobin, testosterone, creatinine kinase and other physiological and biochemical indicators in terms of training monitoring; Cr was highly correlated with maximum anaerobic work, average anaerobic work and maximum anaerobic work/body weight (R^2 was 0.625, 0.707, 0.660 respectively).

Conclusions In the sports dominated by phosphoric acid, Cr can be used to assess athletes muscle mass and non-invasive measuring level of creatine phosphate in the body. The change of Cr concentration in human body is closely related to athletic train. It can be used to control the quantity and intensity of exercise more scientifically combined with other indexes. At the same time, it can monitor the function of the kidneys in the training process. When the Cr is abnormally higher than the personal threshold, it is necessary to pay attention to the physical function of the athletes, such as diet, nutrient, weight loss control etc. Moreover, excessive fatigue should be adjusted in time to avoid overincrease of Cr which may cause kidney damage.