TACSM Abstract

Creatinine is a Sensitive Blood Biomarker for Muscular Strength and Power in College Students

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ABSTRACT

Creatinine is a chemical metabolic product of creatine phosphate from skeletal muscle metabolism, and it is an indicator of muscular functions in athletic and physically active population. However, creatinine's association with human performance remains yet to be explored. Understanding this correlation may help to identify a sensitive biomarker predicting muscular strength and powers in college students. **PURPOSE**: To explore the correlations between plasma creatinine and muscle strength and power tests, including broad jump (BJ), vertical jump (VJ), isometric mid-thigh pulls (IMTP) and hand grip strength (HGS). **METHODS**: 18 college students were recruited (Male=10, Female=8) and blood samples were collected to quantify plasma creatinine by Quest Diagnostics. Muscular strength was measured with 3 trials of IMTP and HGS, and muscular power was assessed via 3 trials of BJ and VJ. Spearman-R correlations were conducted to determine associations between blood creatinine and the above performance tests. Significance was set at an alpha level of $p<0.05$. **RESULTS**: Creatinine was significantly associated with average HGS ($r_s= 0.624$, $p= 0.007$), average BJ ($r_s= 0.629$, $p= 0.007$), and average IMTP peak force ($r_s = 0.759$, $p= 0.002$). However, creatinine was not found significantly associated with VJ ($r_s = 0.374$, $p= 0.188$). **CONCLUSION**: Plasma creatinine can be used as a sensitive blood indicator for muscular strength and muscular power predictions in the college students.