

The Relationship Between Nutritional Status and Muscle Mass with VO₂Max Among High School Basketball Athletes

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ABSTRACT

VO₂Max is an important indicator in determining the performance of basketball athletes. Nutritional status and muscle mass are factors that influence VO₂Max in adolescent athletes. This study aimed to analyze the relationship between nutritional status and muscle mass and VO₂Max in male high school basketball athletes. This study used an analytical observational design with a cross-sectional approach. The study sample consisted of 60 male basketball players aged 15–18 years from State High School 1 Jember, State High School 2 Jember, and State High School 4 Jember, selected using total sampling. Nutritional status was measured using BMI/U, muscle mass using Bioelectrical Impedance Analysis (BIA), and VO₂Max was estimated using the 12-minute Cooper Test. Data analysis was performed using Spearman's correlation test with a 95% significance level. The results showed that there was no significant relationship between nutritional status and VO₂Max ($p=0.365$; $r=-0.119$). Conversely, there was a significant positive relationship between muscle mass and VO₂Max ($p=0.021$; $r=0.297$), with a weak strength of association. Based on these results, muscle mass is positively associated with VO₂Max, whereas nutritional status as measured by BMI/U is not associated with VO₂Max in high school-level male basketball players.

Keywords: *Nutritional Status, Muscle Mass, VO₂Max, Basketball Players, BMI/U.*