BAB I

Background

Cardiorespiratory endurance is vital to athletic performance, particularly in sports requiring sustained physical exertion such as martial arts.

Objectives

This study examined the predictive roles of body composition (BMI), hemoglobin concentration, and motivation on cardiorespiratory endurance among university-level martial arts athletes.

Methods

Using a quantitative path analysis design, data were collected from 20 purposively selected martial arts athletes who regularly trained. Cardiorespiratory endurance was assessed via the multistage fitness test, BMI was calculated using standard anthropometric measures, hemoglobin was measured using the Harenz scale, and motivation was evaluated with a validated Likert-scale questionnaire. **Results:** The analysis showed that BMI ($\rho = 0.705$, $t = 3.071$, $p = 0.007$) and hemoglobin concentration ($\rho = 0.946$, $t = 4.672$, $p < 0.001$) had significant positive effects on cardiorespiratory endurance. Motivation, however, did not have a significant direct effect ($\rho = 0.087$, $t = 0.853$, $p = 0.203$). Additionally, BMI correlated positively with both hemoglobin ($\rho = 0.923$, $p < 0.001$) and motivation ($\rho = 0.670$, $p = 0.034$), suggesting indirect effects through physiological mechanisms.

Conclusions

The findings underscore that physiological indicators, specifically BMI and hemoglobin, are more critical predictors of aerobic capacity than psychological factors like motivation in this athletic population. Due to sport- specific demands, these results may not be generalizable to non-martial arts athletes. Future studies should incorporate additional mediators such as training intensity and account for potential self-report bias in motivation assessments.