SWACSM Abstract

How does maximal aerobic capacity predict the performance of ROTC cadets on the ACFT

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ABSTRACT

The Army Combat Fitness Test (ACFT) is a newly developed test that assesses the combat readiness of U.S. Army soldiers. Maximal aerobic capacity (VO_{2max}) characteristics vary between soldiers and have the ability to affect performance outcomes. The purpose of this cross-sectional study is to determine if VO_{2max} can predict performance outcomes of the ACFT in ROTC cadets. **METHODS:** ROTC cadets (46 males, 15 females; aged 21.06 ± 3.6 years) completed the 6-event ACFT (3-repetition maximum trap-bar deadlift [MDL], standing power toss [SPT], hand-release pushups [HRPU], sprint-drag-carry shuttle run [SDC], plank [PLK], and 2-mile run [2MR]). The cadets were invited into the laboratory to conduct a maximal treadmill running test following the Bruce protocol. The ability for VO_{2max} ($mL \cdot kg^{-1} \cdot min^{-1}$) to predict ACFT performance was determined with a linear regression model. Significance was set at $p < 0.05$. **RESULTS:** VO_{2max} was significantly and positively correlated to MDL ($r = .301$, $p = .018$), HRP ($r = .525$, $p < .001$), SDC ($r = .573$, $p < .001$), PLK ($r = .668$, $p < .001$) 2MR ($r = .642$, $p < .001$) and overall ACFT score ($r = .666$, $p < .001$) except SPT ($r = .225$, $p = .082$). VO_{2max} significantly explained 43% ($p = .001$) of the variance on the total ACFT scores with a beta coefficient of 4.911. **CONCLUSION:** There is a gap in the understanding of how VO_{2max} impacts performance in the newly implemented ACFT. VO_{2max} is a predictor of the ACFT total and significantly correlates with the MDL, HRP, SDC, PLK, and 2MR. VO_{2max} did not correlate with the individual event SPT. For every .715 $mL \cdot kg^{-1} \cdot min^{-1}$ increase in VO_{2max}, ACFT total scores increased by 4.911 points. These findings create the need for further research due to the majority of U.S. Army personnel failing the PLK and 2MR, which can be associated with an insignificant aerobic capacity.