Physical, Physiological, and Dietary Comparisons Between Marine Corps Forces Special Operations Command Critical Skills Operators and Enablers

Scott D Royer, D Travis Thomas, Joshua D Winters, John P Abt, Stuart Best, Kathleen M Poploski, Andrejs Zalaiskalns, Scott M Lephart

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Abstract

Introduction

Tactical demands of a Marine Corps Forces Special Operations Command (MARSOC) Critical Skills Operator (CSO) require high levels of physical performance. During combat deployments, teams of CSOs are supplemented with enablers who specialize in mission-specific tasks. MARSOC CSOs and enablers serve alongside each other in extreme combat environments, often enduring the same physical demands, but the selection process for each group is very different. The purpose of this observational study was to quantify the physical, physiological, and dietary differences of MARSOC CSOs and enablers, as this may have a direct impact on tactical performance and provide important information to shape future research.

Materials and Methods

Fat free mass (FFM), fat mass (FM), fat mass index (FMI), fat free mass index (FFMI), anaerobic power (AP), anaerobic capacity (AC), aerobic capacity (VO_2max), knee flexion (KF), knee extension (KE), trunk extension (TE), and trunk flexion (TF) isokinetic strength were collected. Dietary intake was collected using automated self-administered 24-hr dietary recalls (ASA24) for a subgroup of subjects.

Results

Testing on 164 male CSOs (age: 27.5 ± 3.8 yr, height: 178.7 ± 6.5 cm, mass: 85.7 ± 9.1 kg, and 7.6 ± 2.9 yr of military service) and 51 male enablers (age: 27.8 ± 5.4 yr, height: 178.4 ± 8.5 cm, mass: 83.8 ± 11.8 kg, and 7.9 ± 5.4 yr of military service) showed there were no significant differences for age, height, mass, or years of military service. ($p > 0.05$). CSOs demonstrated greater physiological performance in AP (W/kg) ($p = 0.020$), AC (W/kg) ($p = 0.001$), and VO_2max (ml/kg/min) ($p = 0.018$). There were no significant differences in FM and FFM ($p > 0.05$), however CSOs demonstrated significantly higher FFMI ($p = 0.011$). CSOs also demonstrated greater KF (%BW) ($p = 0.001$), KE (%BW) ($p = 0.001$), TE (%BW) ($p = 0.010$), and TF (%BW) ($p = 0.016$). No differences in energy or macronutrient intake were observed in the subgroup.

Conclusions

MARSOC CSOs demonstrated significantly greater FFMI, AP, AC, VO_2max, KF, KE, TE, and TF compared with enablers. Dietary intake was consistent between groups, but fueling concerns were identified for all personnel in the subgroup. These findings suggest the need for future studies to examine what physiological and strength thresholds are necessary to operate effectively as a member of a MSOT and determine the relationship between specific performance deficits and risk of injury. In addition, the integration of nutrition strategies that augment and optimize the performance of both CSOs and enablers may be beneficial.

Keywords: special operations, marines, performance, military, nutrition

Topic: diet, military personnel, self administration, science of nutrition, aerobic capacity, trunk structure, knee flexion, extension of knee, military deployment, macronutrient, trunk extension

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