

Physiological Differences between Male and Female Army Soldiers Matched on Age and Years of Service

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US Army Soldiers must optimize physical readiness to minimize the risk of unintentional musculoskeletal injury and optimize performance. All Soldiers follow similar physical training (PT) guidelines and perform gender-integrated PT. In order to optimize performance, male and female athletes train differently; therefore it is possible that traditional PT may not specifically address the unique physical and physiological needs of female Soldiers. **PURPOSE:** To determine if physiological differences exist between genders in US Army Soldiers of the 101st Airborne Division (Air Assault), controlling for age and years of service (YOS). **METHODS:** Data were collected on 53 female Soldiers (age= 25.8± 4.4 years, height= 1.65±0.06 m, mass= 65.9±10.3 kg) and matched with 53 male Soldiers (age= 25.5±4.2 years, height= 1.76±0.06 m, mass=83.5±13.6 kg) based on age (±3 years) and YOS (± 0.5 years). Variables analyzed were: percent body fat, total mass, lean mass, and fat mass; anaerobic power (AP)/capacity (AC); and maximal oxygen uptake (VO_{2max})/lactate threshold (LT). Paired *t*-tests were used to compare all variables between genders. Statistical significance was set at $p < 0.05$ *a priori*. **RESULTS:** Female Soldiers demonstrated significantly higher %BF (F: 27.4±6.0%; M: 21.2±8.4%) and significantly lower total mass (F: 65.9±10.3 kg; M: 83.5±13.6 kg), lean mass (F: 47.6± 6.4 kg; M: 65.0± 8.0 kg), AP (F: 9.3±1.4W/kg; M: 13.6±2.0W/kg), AC (F: 5.9±1.1W/kg; M: 7.8±0.9W/kg), VO_{2max} (F: 39.6±5.4 ml/kg/min; M: 46.6±7.0 ml/kg/min), and VO_2 at LT (F: 33.3±5.3 ml/kg/min; M: 38.2±7.0 ml/kg/min), (all, $p < 0.001$). **CONCLUSIONS:** Gender differences in physiological variables do exist in US Army Soldiers of the 101st Airborne Division (Air Assault). These differences have important implications for potential changes or augmentation to current PT in order to optimize physical performance. Future research should investigate other physical characteristics that may relate to injury and if targeted PT that addresses the identified suboptimal characteristics in female Soldiers mitigates the risk of unintentional musculoskeletal injury and optimizes physical readiness.
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