

## Lower body fat improves physical and physiological performance in Army soldiers

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In the Army the maximal allowable percent body fat varies depending on gender and age, ranging between 30-36% for female and 20-26% for male. However, the Army Weight Control Program policy stipulates all soldiers are encouraged to achieve the more stringent Department of Defense (DOD) goal, which is 18% body fat for males and 26% for females.

**PURPOSE:** To determine if active duty soldiers who meet the DOD body fat goals perform better on physiological, musculoskeletal, and Army Physical Fitness tests (APFT) compared to soldiers who exceed the standards. **METHODS:** A total of 99 male 101st Airborne Division (Air Assault) soldiers (age=28±7.0 years, height= 177±7.4 m, weight= 82.9±12.4 kg) participated. Percent body fat (%BF) was assessed using air-displacement plethysmography. Based on the %BF, subjects were assigned to group 1 (body fat ≤18%) or group 2 (body fat > 18%). Subjects completed a series of physical performance tests consisting of anaerobic power, anaerobic capacity, maximal oxygen consumption (VO<sub>2</sub>max), push-ups, sit-ups, two mile timed run test, shoulder internal and external rotation strength, and knee flexion and extension strength. **RESULTS:** The mean %BF was 13.3±3.7% (group 1) and 25.8±5.2% (group 2). Subjects who met the DOD body fat goals (group 1) performed significantly better on seven of the 10 physical fitness tests including anaerobic capacity (8.3±0.6 w/kg; 7.2±1.0 w/kg; p≤0.001), VO<sub>2</sub>max (52.2±5.4 ml/kg/min; 44.1± 6.8 ml/kg/min; p≤0.001), push-ups (78.2±18.5 reps; 65.7± 13.9 reps; p=0.002), shoulder internal rotation (66.1±16.2 N/kg; 50.4±14.5 N/kg; p≤0.001) and external rotation strength (45.4±7.7 N/kg vs. 36.6±7.4 N/kg; p≤0.001), and knee flexion (127.9±23.9; 103.6±26.6; p≤0.001) and extension strength (263.5±49.0 N/kg; 219.0±41.7 N/kg; p≤0.001). **CONCLUSION:** Soldiers who met the DOD %BF goals performed better on physiological, musculoskeletal and Army APFT than soldiers who exceeded the standards. The higher performance on military physical readiness tests by soldiers with a lower percent body fat substantiates the need to continue to enforce stringent body fat standards for Army personnel in order to optimize military readiness.