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Tradeoffs Between U.S. Army Trainees' Performance on the Occupational Physical Assessment Test and Body Composition

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The Occupational Physical Assessment Test (OPAT) was developed as a pre-enlistment screen to determine a recruit's ability to begin training, and is based on occupation-specific physical demands. The OPAT assesses cardiorespiratory fitness (interval aerobic run (IAR)); upper- and lower-body muscular power (seated power throw (SPT) and standing long jump (SLJ), respectively); and muscular strength (strength deadlift (SDL)). **PURPOSE:** To examine relationships between Army trainees' OPAT physical performance and body composition. **METHODS:** College-aged (21 ± 3 y) male ($n=947$; $BMI=25.5 \pm 3.7$ kg·m⁻² (mean \pm SD) and female ($n=233$; $BMI=23.9 \pm 2.7$ kg·m⁻²) Army trainees volunteered for the study. Relative body fat (%BF) for men ($18.4 \pm 4.8\%$) and women ($30.1 \pm 4.3\%$) was estimated using the Gallagher equation and BMI, age, and sex. OPAT individual event performance was compared between men and women (t-tests) or stratified by %BF and compared between %BF quartiles (Q) (ANOVA with Tukey post hoc). The SDL test was analyzed using Mantel-Haenszel chi-square for linear trend. **RESULTS:** Trainees combined completed 53 ± 20 shuttles on the IAR, threw 553.6 ± 112.2 cm on the SPT, jumped 190.1 ± 35.3 cm on the SLJ, and 73% lifted the highest weight tested on the SDL (220 lb.). Comparing by sex, women completed fewer shuttles (-41%), had shorter distances for the SPT (-34%) and SLJ (-25%), and only 15% of women vs. 88% of men lifted the highest weight possible on the SDL ($p \leq 0.05$ for all). Men in the highest (Q4) vs. the lowest (Q1) quartile of %BF demonstrated lower performance on the IAR (-24.3%) and SLJ (-8.0%) events, but higher performance on the SPT (+15.8%) event ($p \leq 0.05$ for all). Women in Q4 vs. Q1 of %BF demonstrated significantly higher performance on the SPT (+12.6%, $p \leq 0.05$). In men and women, as %BF increased from Q1 to Q4, significant trends ($p \leq 0.01$) for the SDL indicated that more trainees were able to lift 220 lb. (men) or 180 lb. (women) (the most frequently lifted weight within each group). **CONCLUSION:** Given that occupationally-relevant performance was enhanced in some cases while decreased in others when examined in the context of increased %BF, there may be operational situations in which increased muscular strength and power attributes associated with higher %BF are more important than suboptimal body composition related health concerns.