INTRODUCTION

As the Reserve Officers Training Corps (ROTC) is the initial entry point for many future U.S. Army officers, it is important to analyze how male and female cadets compare in their physical abilities.

The Army Combat Fitness Test (ACFT) is the U.S. Army's new occupational assessment for measuring a soldier's ability to perform combat tasks. It was developed out of the need for a test that will better connect fitness with combat readiness in soldiers. The scoring standards are gender neutral and are based on the level of physical demands of a soldier's job field (2).

The U.S. Department of Defense recently opened to women all remaining combat jobs in all the military services (1). U.S. Army women are now serving in the combat arms branches of infantry, armor and special forces.

Male cadets scored highest in the SDC and lowest in the 2MR. Female cadets scored highest in the HRP and lowest in the LTK (Table 2).

The total ACFT score (mean and spread) is shown in Figure 1. Mean data for each event is shown in Figure 2 and Table 2 (raw metrics). Male cadets scored significantly (< 0.001) higher than female cadets in ACFT total points and all six events.

Effect sizes for the difference in total points, SDC and SPT were very large. For the 3RM deadlift and LTK, the effect sizes were large; for the HRP and 2MR, the effect sizes were moderate (Table 2).

Female cadets failed to achieve a minimum passing score for the overall ACFT (360 points) and the SDC, SPT, and LTK events (60 points each) (Figures 1 and 2). Male cadets scored highest in the SDC and lowest in the 2MR. Female cadets scored highest in the HRP and lowest in the LTK (Table 2). At a micro-level, this ROTC program reflected the challenges present on a national-scale for the U.S. Army.

CONCLUSIONS

- At a micro-level, this ROTC program reflected the challenges present on a national-scale for the U.S. Army.
- Female cadets were not as physically capable as male cadets in the ACFT, which simulated combat-related tasks. This has major implications for combat readiness in women entering combat arms jobs as to whether they can adequately perform the job tasks.
- The ACFT events where sex had the largest impact were tests in which strength was a major factor (SDC, SPT, 3RM deadlift, and LTK). This is not unexpected, given the between-sex differences that exist in factors such as body size and muscle mass.
- It must be emphasized that these data do not suggest that females should not be serving in the armed forces. Rather, they highlight the need for specific training for female cadets. To close the gap in performance between the sexes, training plans for female cadets should ideally prioritize developing strength, in addition to other fitness qualities (i.e., aerobic and aerobic capacity) important for army personnel.
- The data from this study also suggested that training plans for male cadets should include more aerobic fitness, as the 2MR was their weakest event.

Males Females

<table>
<thead>
<tr>
<th>Event</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing Power Throw (SPT)</td>
<td>4.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Hand Release Push-ups (HRP)</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>Squat-Drag-Carry (SDC)</td>
<td>3.00</td>
<td>1.33</td>
</tr>
<tr>
<td>Leg Tuck (LTK)</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>2-Mile Run (2MR)</td>
<td>21:00</td>
<td>13:30</td>
</tr>
</tbody>
</table>

Table 2. Descriptive data (mean ± SD) for males and females for ACFT total and six event scores (raw metrics).

RESULTS

- The total ACFT score (mean and spread) is shown in Figure 1. Mean data for each event is shown in Figure 2 (points) and Table 2 (raw metrics). Male cadets scored significantly (< 0.001) higher than female cadets in ACFT total points and all six events.

- Effect sizes for the difference in total points, SDC and SPT were very large. For the 3RM deadlift and LTK, the effect sizes were large; for the HRP and 2MR, the effect sizes were moderate (Table 2).

- Female cadets failed to achieve a minimum passing score for the overall ACFT (360 points) and the SDC, SPT, and LTK events (60 points each) (Figures 1 and 2).

- Male cadets scored highest in the SDC and lowest in the 2MR. Female cadets scored highest in the HRP and lowest in the LTK (Table 2).

Table 1. ACFT scoring standards by event for minimum passing (60 points) and maximum (100 points) (d = Cohen’s d).

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Figure 1. Distribution of ACFT total scores by sex.

Figure 2. Mean scores by sex for the six ACFT events.

A retrospective analysis of ACFT data for 101 cadets (76 men and 25 women) from one Midwestern college was conducted.

The ACFT was conducted according to established procedures. Data included total score and the score in each of the six events: three-repetition maximum deadlift (MDL), standing power throw (SPT), hand release push-ups (HRP), sprint-drag-carry (SDC), leg tuck (LTK) and 2-mile run (2MR). A retrospective analysis of ACFT data for 101 cadets (76 men and 25 women) from one Midwestern college was conducted.

The ACFT scoring standards are shown in Table 1.

Total scores and scores for each of the six events were stratified by sex. Independent samples t-tests calculated differences between the sexes. Significance was set at p < 0.05.

Cohen's d calculated effect sizes between the sexes. Thresholds for d strength were 0.20, 0.60, 1.20, 2.0 and 4.0 for small, moderate, large, very large and extremely large (4).

The U.S. Department of Defense recently opened to women all remaining combat jobs in all the military services (1). U.S. Army women are now serving in the combat arms branches of infantry, armor and special forces.

The purpose of this study was to investigate the between-sex differences in ACFT performance by ROTC cadets in one program.

METHODS

- A retrospective analysis of ACFT data for 101 cadets (76 men and 25 women) from one Midwestern college was conducted.

- The ACFT was conducted according to established procedures. Data included total score and the score in each of the six events: three-repetition maximum deadlift (MDL), standing power throw (SPT), hand release push-ups (HRP), sprint-drag-carry (SDC), leg tuck (LTK) and 2-mile run (2MR). The ACFT standard scores are shown in Table 1.

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References


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