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# TRADEOFFS IN USING ALTERNATIVE HEIGHT-WEIGHT STANDARDS

Timothy E. Rupinski

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# **TRADEOFFS IN USING ALTERNATIVE HEIGHT-WEIGHT STANDARDS**

Timothy E. Rupinski

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#### ABSTRACT

This research memorandum examines the feasibility of realigning the weight standards of the Marine Corps to make them more equitable between genders without reducing quality standards. The tradeoffs between equity and recruit quality are summarized to assist policy-makers in selecting the appropriate weight standards.

## EXECUTIVE SUMMARY

### OBJECTIVE

The Commandant requested that the weight standards of the Marine Corps be realigned to be more equitable between genders without reducing the quality of its manpower. This research memorandum summarizes the effect of realigning height-weight standards on several measures of recruit quality, including education, first-term attrition, and physical fitness.

### RESULTS OF STUDY

A much higher proportion of female civilians are ineligible for enlistment in the Marine Corps due to the current accession weight standards than are male civilians from the same age groups. Among 17- to 20-year-olds, 27 percent of female civilians and 3 percent of male civilians exceed the maximum weights under the current accession standards. If equity is defined in terms of civilian eligibility, then the current standards are inequitable. To improve the equity of the standards, male maximum accession weights can be decreased and/or female maximum accession weights can be increased.

Decreasing the maximum accession weights of males could reduce male endstrength or lead to lower educational standards. To offset most of this loss in endstrength and maintain current educational standards, waivers could be granted to male high school graduates who are overweight under the revised accession standards but meet the current accession standards. Alternatively, the Marine Corps could maintain its current weight standards for males, but prioritize potential recruits using the ranking system shown in table I. This system ranks male Marines of a given educational level and weight group based on an analysis of first-term attrition from FY 1982 through FY 1987.

Table I. Relative ranking of male education and weight groups

| Active duty<br>weight group | Education group |     |       |
|-----------------------------|-----------------|-----|-------|
|                             | HSG             | GED | NGRAD |
| Not overweight              | 1               | 2   | 3     |
| Overweight: 1-20 lb         | 2               | 3   | 4     |
| Overweight: 21+ lb          | 3               | 4   | 4     |

The need to meet endstrength requirements in the 1990s will make it difficult to tighten male weight standards, since the size of the eligible male population will continue to shrink. Given the importance of endstrength, the only other way to improve the equity of the weight standards is to increase the maximum accession weights for females. However, higher accession weights for females will reduce the quality of female recruits in terms of physical fitness.

Policy-makers need to assess the tradeoff between physical fitness and eligibility in selecting the appropriate weight standards for females. A 10-pound increase in accession weight for females leads to an estimated reduction in the physical fitness test (PFT) score of 8.4 points. The magnitude of the tradeoff is likely to be understated given the deficiencies with the current PFT. Future research on this issue necessitates that the same PFT be administered to both genders; the test scores be recorded on a semiannual basis as required by current regulations; the first score received on the test be the score that is recorded if the test is retaken; and that height and weight be recorded at the time that the test is given.

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## INTRODUCTION

The Commandant requested that the weight standards of the Marine Corps be realigned to be more equitable between genders without reducing the quality of its manpower [1]. This research memorandum summarizes the effect of realigning height-weight standards on several measures of recruit quality, including education, first-term attrition, and physical fitness. Equity is then measured by differences in civilian eligibility for enlistment that can be attributed directly to maximum weight standards. The effects of alternative accession weight standards on eligibility are analyzed for specific age groups. Both the accession standards designed in [2] and the accession standards currently in use by each of the four services are considered.

## WEIGHT-EDUCATION TRADEOFF

Marines can be accessed at weights that exceed the maximum weights under the current active duty standards.<sup>1</sup> Table 1 shows how the incidence of overweight among Marine recruits has changed over time. From FY 1982 through FY 1987, the proportion of overweight male recruits has increased 3.3 percentage points, from 9.8 percent to 13.1 percent. In sharp contrast, the proportion of overweight female recruits has increased only 0.1 percentage point over this period. The incidence of overweight among female recruits fell by 2.4 percentage points from FY 1982 to FY 1985, but this reduction was offset by a 2.5-percentage-point increase from FY 1985 to FY 1987.

Table 1. Incidence of overweight under current Marine Corps active duty standards

| Year | Proportion<br>overweight |        |
|------|--------------------------|--------|
|      | Male                     | Female |
| 1982 | 9.8                      | 6.6    |
| 1983 | 10.5                     | 5.9    |
| 1984 | 11.4                     | 4.9    |
| 1985 | 12.5                     | 4.2    |
| 1986 | 12.6                     | 4.9    |
| 1987 | 13.1                     | 6.7    |

1. The weights of Marines cited in this research memorandum are their initial weights at the time of accession.

Reference [2] indicated that the higher incidence of overweight among males relative to females is due to the fact that males can be accessed up to weights 23 to 29 pounds above their active duty maximum weights, whereas females can only be accessed up to weights 0 to 7 pounds above their active duty maximum weights. Since first-term attrition increases with pounds over maximum active duty weight, the increased incidence of overweight among males over time requires further investigation.

Weight relative to the active duty standards and education have both been shown to be important determinants of first-term attrition [2]. For each fiscal year, table 2 shows the proportion of male accessions represented by each education and weight group. Combining the weight groups, the proportion of high school graduates (HSGs) has increased 17.6 percentage points, from 72.5 percent to 90.1 percent, from FY 1982 to FY 1987. Nonoverweight HSGs increased 13.1 percentage points, from 65.1 percent in FY 1982 to 78.2 percent in FY 1987, while overweight HSGs increased 4.5 percentage points, from 7.4 percent to 11.9 percent, over this period. The proportion of HSGs who are overweight increased from 10.2 percent (i.e.,  $7.4/72.5$ ) in FY 1982 to 13.2 percent (i.e.,  $11.9/90.1$ ) in FY 1987.

The increase in the proportion of HSGs (+17.6) was associated primarily with reductions in the proportion of nonoverweight recruits with less than a high school diploma (-16.5). The proportion of nonoverweight non-high school graduates (NGRADs) and nonoverweight alternative certificate holders (GEDs) declined respectively by 11.8 and 4.7 percentage points. Consequently, the increased incidence of overweight during this period is associated with the substitution of overweight HSGs for nonoverweight recruits with less than a high school diploma.

Manpower training costs can be reduced to the extent that education-weight groups with lower first-term attrition rates are substituted for those with higher first-term attrition rates. Table 3 provides estimates of the difference in male first-term attrition between each education-weight group and nonoverweight HSGs. These estimates are obtained by combining separate results on first-term attrition due to weight and education from tables 18 and 19, respectively, in [2].

Three steps are involved in determining whether the changes in weight and education for new accessions over this five-year period would lower first-term attrition. First, table 4 shows a system for ranking weight-education groups based on the differences in their first-term separation rates relative to those of nonoverweight male recruits at each educational level. The rankings of nonoverweight males in descending order are HSG (1), GED (2), NGRAD (3), and much worse than NGRAD (4). The endpoint of the HSG interval was obtained by averaging the predicted separation rates between nonoverweight HSGs and nonoverweight GEDs. Similarly, the endpoint of the GED interval was obtained by averaging the predicted separation rates between nonoverweight GEDs and

Table 2. Distribution of male recruits' education and weight, by year

| Education | Active duty<br>weight group | Proportion in education<br>and weight group |      |      |      |      |      | Change<br>1982-1987 |
|-----------|-----------------------------|---------------------------------------------|------|------|------|------|------|---------------------|
|           |                             | 1982                                        | 1983 | 1984 | 1985 | 1986 | 1987 |                     |
| HSG       | Not overweight              | 65.1                                        | 72.7 | 76.0 | 77.0 | 78.7 | 78.2 | 13.1                |
| HSG       | Overweight: 1-20 lb         | 5.8                                         | 6.9  | 7.9  | 8.7  | 9.0  | 9.5  | 3.7                 |
| HSG       | Overweight: 21+ lb          | 1.6                                         | 1.6  | 1.8  | 2.3  | 2.4  | 2.4  | .8                  |
| GED       | Not overweight              | 11.3                                        | 11.1 | 9.0  | 7.8  | 6.7  | 6.6  | -4.7                |
| GED       | Overweight: 1-20 lb         | .9                                          | 1.2  | 1.0  | 1.0  | .7   | .8   | -.1                 |
| GED       | Overweight: 21+ lb          | .3                                          | .3   | .3   | .3   | .2   | .1   | -.2                 |
| MGRAD     | Not overweight              | 13.8                                        | 5.8  | 3.7  | 2.7  | 2.0  | 2.0  | -11.8               |
| MGRAD     | Overweight: 1-20 lb         | 1.0                                         | .4   | .3   | .2   | .2   | .3   | -.7                 |
| MGRAD     | Overweight: 21+ lb          | .2                                          | .1   | .1   | .1   | .0   | .0   | -.2                 |

Table 3. Estimated differences in male first-term attrition relative to non-overweight HSGs (percent)

| Active duty weight group | Education group |      |       |
|--------------------------|-----------------|------|-------|
|                          | HSG             | GED  | NGRAD |
| Not overweight           | --              | 14.2 | 29.0  |
| Overweight (lb)          |                 |      |       |
| 1 to 5                   | 8.1             | 22.3 | 37.1  |
| 6 to 10                  | 9.7             | 23.9 | 38.7  |
| 11 to 15                 | 13.1            | 27.3 | 42.1  |
| 16 to 20                 | 17.9            | 32.1 | 46.9  |
| 21 to 25                 | 23.9            | 38.1 | 52.9  |
| 26+                      | 23.3            | 37.5 | 52.3  |

Table 4. System for ranking groups using first-term separation rates

| Difference in separation rates (percent) | Comparable active duty nonoverweight group | Relative rank |
|------------------------------------------|--------------------------------------------|---------------|
| 0 to 7.1                                 | HSG                                        | 1             |
| 7.2 to 21.6                              | GED                                        | 2             |
| 21.7 to 36.4                             | NGRAD                                      | 3             |
| 36.5+                                    | Much worse than NGRAD                      | 4             |

nonoverweight NGRADs. The endpoint of the NGRAD interval was chosen so that the midpoint of the interval would be the predicted separation rate for NGRADs.

In the second step, each weight-education group is categorized using the four-level ranking system. Table 5 indicates that nonoverweight HSGs are the best recruits from the standpoint of first-term attrition. The second-ranked group consists of HSGs that are overweight up to 20 pounds over the maximum active duty weight at median height and non-overweight GEDs. The first- and second-ranked groups satisfy the GED criterion discussed in [2] because their first-term attrition is no worse than that of nonoverweight GEDs. The third-ranked group includes HSGs who are overweight beyond the 20-pound limit, GEDs up to the 20-pound limit, and nonoverweight NGRADs. The bottom-ranked group is composed of GEDs over the 20-pound limit and overweight NGRADs.

Table 5. Relative ranking of education and weight groups based on first-term attrition

| Active duty<br>weight group | Education group |     |       |
|-----------------------------|-----------------|-----|-------|
|                             | HSG             | GED | NGRAD |
| Not overweight              | 1               | 2   | 3     |
| Overweight: 1-20 lb         | 2               | 3   | 4     |
| Overweight: 21+ lb          | 3               | 4   | 4     |

In the third step, the distribution of these ranks is computed for each fiscal year to determine whether the quality of male recruits has improved over time. Table 6 shows how the distribution of ranks has changed from FY 1982 through FY 1987. The top-ranked group increased its proportion of recruits by 13.1 percentage points over this period. The proportions represented by each of the other three groups declined over time. The largest reduction is associated with the third-ranked group. Its proportion decreased 11.1 percentage points over the period. Since the shift in composition of male recruits has been in favor of those with lower first-term attrition rates, the increased incidence of overweight is not a problem.

Table 6. Rank distribution of male recruits

| Rank | Proportion of recruits by year |      |      |      |      |      | Change<br>1982-1987 |
|------|--------------------------------|------|------|------|------|------|---------------------|
|      | 1982                           | 1983 | 1984 | 1985 | 1986 | 1987 |                     |
| 1    | 65.1                           | 72.7 | 76.0 | 77.0 | 78.7 | 78.2 | 13.1                |
| 2    | 17.1                           | 18.0 | 16.9 | 16.5 | 15.7 | 16.1 | -1.0                |
| 3    | 16.3                           | 8.6  | 6.5  | 6.0  | 5.1  | 5.2  | -11.1               |
| 4    | 1.5                            | .8   | .7   | .6   | .4   | .4   | -1.1                |

#### MAXIMUM WEIGHT STANDARDS

This section surveys the maximum weights under the current accession and active duty height-weight standards of the four armed services and compares them to maximum weights consistent with a GED-based criterion.<sup>1</sup> The GED criterion links the accession and active duty weight standards so that first-term attrition is the same at the margin under both the weight and educational accession standards. Under the GED criterion, high school graduates (HSGs) who enter the Marine Corps at the maximum weight under the accession standards will have rates of first-term attrition similar to those of nonoverweight male alternative certificate holders (GEDs). The GED criterion allows the maximum accession weight for males to be 20 pounds over the maximum active duty weight at the median height of 69 inches. For females, the maximum accession weight is set at 10 pounds over the maximum active duty weight at the median height of 64 inches.<sup>2</sup>

Tables 7 and 8 respectively show alternative maximum weights for males and females at the median height of their genders. Both the Air Force and Navy have recently revised their accession height-weight standards. In both cases, the standards are uniform across different age groups. The Army and the Marine Corps currently adjust their accession standards for age. However, both of these services are reevaluating their height-weight standards.

For males, table 7 indicates that the Air Force has the tightest accession weight standards of the four armed services. In contrast, the Army and Marine Corps, which use the same weight standards for males, are the most lenient in terms of accession weight. The GED-based standards were generated by adding 20 pounds to the maximum weight under the Navy's active duty standards, the Marine Corps' active duty

1. The height-weight standards of the four armed services are contained in appendix A, and the GED-based height-weight standards are contained in appendix B.

2. The methodology used in linking accession and active duty maximum weights is discussed in further detail in [2].

standards, and the overweight standards established by the National Center for Health Statistics (NCHS). The maximum accession weights under the GED-based standards are tighter than the current accession standards of the Marine Corps and looser than the current accession standards of the Air Force.

Table 7. Maximum weight standards for males at median height (69 inches)

| Accession weight standard        | Maximum weight in pounds |             |            |
|----------------------------------|--------------------------|-------------|------------|
|                                  | Accession                | Active duty | Difference |
| Current accession                |                          |             |            |
| Air Force                        | 189                      | 189         | 0          |
| Navy                             | 203                      | 182         | 21         |
| Marine Corps                     |                          |             |            |
| 17 to 20 years old               | 209                      | 186         | 23         |
| 21 to 30 years old               | 215                      | 186         | 29         |
| Army                             |                          |             |            |
| 17 to 20 years old               | 209                      | 175         | 34         |
| 21 to 27 years old               | 215                      | 179         | 36         |
| 28 to 30 years old               | 215                      | 184         | 31         |
| GED-based accession              |                          |             |            |
| Navy active duty + 20 lb         | 202                      | 182         | 20         |
| Marine Corps active duty + 20 lb | 206                      | 186         | 20         |
| NCHS overweight + 20 lb          | 208                      | 188         | 20         |

Reference [2] indicated that first-term attrition is positively related to the difference between accession and active duty maximum weights. This difference represents the number of pounds that a recruit would have to lose if he enters the Marine Corps at the maximum weight allowed under the accession standards. In theory, the Army's weight standards for males could lead to the highest rate of weight-related attrition, whereas the Air Force's standards could lead to the lowest rate of weight-related attrition. The GED-based standards would tend to lower male attrition relative to the current standards of the Army, Navy, and Marine Corps because of the smaller gap between accession and active duty maximum weights. It should be noted that the rate of weight-related first-term attrition is not simply a function of the standards but depends to a large extent on the proportion of recruits in the overweight groups.

For females, table 8 shows that the Army has the tightest accession weight standards, whereas the Navy has the most lenient accession weight standards. The standards of the Marine Corps and Air Force fall between those of the Army and the Navy, although they are much closer to those

of the Army. The GED-based accession standards are generated for females by adding 10 pounds to the maximum weights under the Marine Corps' active duty standards, the Navy's active duty standards, an adjusted version of the overweight standards of the National Center for Health Statistics (NCHS), and two active duty standards based on percentiles. Each of the GED-based accession standards falls between the Marine Corps' current accession standards and the Navy's current accession standards.

Table 8. Maximum weight standards for females at median height (64 inches)

| Accession weight standard        | Maximum weight in pounds |             |            |
|----------------------------------|--------------------------|-------------|------------|
|                                  | Accession                | Active duty | Difference |
| Current accession                |                          |             |            |
| Army                             |                          |             |            |
| 17 to 20 years old               | 135                      | 133         | 2          |
| 21 to 24 years old               | 136                      | 137         | -1         |
| 25 to 27 years old               | 139                      | 137         | -2         |
| 28 to 30 years old               | 139                      | 145         | -6         |
| Marine Corps                     |                          |             |            |
| 17 to 20 years old               | 138                      | 138         | 0          |
| 21 to 24 years old               | 141                      | 138         | 3          |
| 25 to 30 years old               | 145                      | 138         | 7          |
| Air Force                        | 146                      | 139         | 7          |
| Navy                             | 166                      | 145         | 21         |
| GED-based accession              |                          |             |            |
| Marine Corps active duty + 10 lb | 148                      | 138         | 10         |
| 70th percentile + 10 lb          | 151                      | 141         | 10         |
| Navy active duty + 10 lb         | 155                      | 145         | 10         |
| 75th percentile + 10 lb          | 156                      | 146         | 10         |
| Adjusted NCHS + 10 lb            | 162                      | 152         | 10         |

The adjusted NCHS overweight standard for females is designed to control for differences in the variance of body mass between genders. To derive the adjusted standard, the maximum body mass for males under the NCHS overweight standard is divided by the median civilian body mass for males. The product of this ratio and the median body mass for females represents the corresponding maximum body mass for females from which the maximum weight at any given height can be computed. This adjustment ensures that the maximum weight at median height is the same multiple of median body mass for both genders.

The adjusted NCHS standard corresponds to the 80th percentile of body mass for females. Note that, while holding height constant, higher

percentiles of body mass are associated with higher weights. For example, a woman in the 80th percentile of body mass weighs more than 80 percent of female civilians in the 20- to 29-year-old age group controlling for height. Female active duty standards are also shown based on the 70th and 75th percentiles of body mass.

Table 9 shows the current Marine Corps active duty maximum weights expressed in terms of percentiles of body mass. At different heights, the maximum weights for males generally correspond to the same body mass. For females, there is substantial variation in body mass across different heights. Shorter females tend to be subject to far more stringent standards than taller females. Specifically, females with heights of 67 inches or less have maximum weights corresponding to the 65th through 70th percentiles of body mass. In contrast, females with heights of 68 inches or more have maximum weights corresponding to the 72nd through 76th percentiles of body mass.

Table 9. Current Marine Corps active duty standards

| Height<br>(inches) | Maximum weight<br>in pounds |        | Percentile of<br>body mass |        |
|--------------------|-----------------------------|--------|----------------------------|--------|
|                    | Male                        | Female | Male                       | Female |
| 58                 | --                          | 121    | --                         | 70     |
| 59                 | --                          | 123    | --                         | 68     |
| 60                 | 140                         | 125    | 83                         | 66     |
| 61                 | 145                         | 127    | 83                         | 65     |
| 62                 | 150                         | 130    | 84                         | 65     |
| 63                 | 155                         | 134    | 84                         | 66     |
| 64                 | 160                         | 138    | 84                         | 66     |
| 65                 | 165                         | 142    | 84                         | 67     |
| 66                 | 170                         | 147    | 84                         | 70     |
| 67                 | 175                         | 151    | 84                         | 70     |
| 68                 | 181                         | 156    | 84                         | 72     |
| 69                 | 186                         | 160    | 84                         | 73     |
| 70                 | 192                         | 165    | 84                         | 74     |
| 71                 | 197                         | 170    | 84                         | 75     |
| 72                 | 203                         | 175    | 84                         | 76     |
| 73                 | 209                         | --     | 84                         | --     |
| 74                 | 214                         | --     | 84                         | --     |
| 75                 | 219                         | --     | 83                         | --     |
| 76                 | 225                         | --     | 83                         | --     |
| 77                 | 230                         | --     | 83                         | --     |
| 78                 | 235                         | --     | 82                         | --     |

Since body mass varies from the 65th to the 76th percentile for females, one potential solution is to standardize the active duty standards for all heights at the same body mass. Table 10 shows the effect on active duty maximum weights of setting body mass for females at the 70th and 75th percentiles. If the active duty standards are changed to the 70th percentile, then females with heights of less than 67 inches would be subject to higher maximum weights than under current standards. The increase would range from 1 to 5 pounds. However, females who are above 67 inches in height would be subject to tighter standards with reductions in maximum weights of 1 to 7 pounds. Alternatively, if the female active duty standards are adjusted to the 75th percentile, maximum weights would be increased at most heights from the current set of standards. The increase would range from 1 to 9 pounds. Only females at the maximum height of 72 inches would be subject to tighter standards, as their maximum weight would be reduced by 1 pound.

Table 10. Percentile-based female active duty standards

| Height<br>(inches) | 70th-percentile<br>standard |                                                 | 75th-percentile<br>standard |                                                 |
|--------------------|-----------------------------|-------------------------------------------------|-----------------------------|-------------------------------------------------|
|                    | Maximum<br>weight           | Change in<br>pounds from<br>current<br>standard | Maximum<br>weight           | Change in<br>pounds from<br>current<br>standard |
| 58                 | 122                         | + 1                                             | 126                         | + 5                                             |
| 59                 | 125                         | + 2                                             | 129                         | + 6                                             |
| 60                 | 128                         | + 3                                             | 132                         | + 7                                             |
| 61                 | 131                         | + 4                                             | 136                         | + 9                                             |
| 62                 | 135                         | + 5                                             | 139                         | + 9                                             |
| 63                 | 138                         | + 4                                             | 143                         | + 9                                             |
| 64                 | 141                         | + 3                                             | 146                         | + 8                                             |
| 65                 | 144                         | + 2                                             | 149                         | + 7                                             |
| 66                 | 148                         | + 1                                             | 153                         | + 6                                             |
| 67                 | 151                         | 0                                               | 156                         | + 5                                             |
| 68                 | 155                         | - 1                                             | 160                         | + 4                                             |
| 69                 | 158                         | - 2                                             | 163                         | + 3                                             |
| 70                 | 161                         | - 4                                             | 167                         | + 2                                             |
| 71                 | 165                         | - 5                                             | 171                         | + 1                                             |
| 72                 | 168                         | - 7                                             | 174                         | - 1                                             |

#### WEIGHT-ELIGIBILITY TRADEOFF

The primary goal of this study is to identify weight standards that are more equitable across genders. One way of measuring equity is to compare the eligibility to enlist in the Marine Corps of male versus female civilians. This section shows how different accession weight

standards affect the eligibility of civilians within a given age bracket and gender. Civilian height-weight data were obtained from the second National Health and Nutrition Examination Survey (NHANES II), which was conducted over the period 1976 through 1980. In addition, the impact of alternative accession standards on the eligibility of previous male accessions will be examined. Height-weight data on Marine Corps accessions was obtained from the Accession Resource Management System (ARMS) over the period 1982 through 1987. Since Marines are typically accessed between the ages of 17 and 30 years, the analysis will focus on eligibility within this range of ages.

In tables 1 through 6, overweight was defined relative to the current active duty standards of the Marine Corps. In this section, overweight will be defined relative to the alternative accession standards presented in tables 7 and 8. Table 11 shows the incidence of overweight in the male and female civilian populations under the current accession standards of each of the four services. Based on the maximum weights under the current Marine Corps accession standards, 3 to 5 percent of male civilians would be ineligible for enlistment. In contrast, 25 to 30 percent of female civilians would be ineligible for enlistment in the Marine Corps because their weight exceeds the maximum weight under the current standards. The differences in eligibility between genders range from 22 to 25 percentage points.

The Army's accession weight standards are the least equitable of the four services. The difference in civilian eligibility between genders ranges from 26 to 31 percentage points. In contrast, the Navy has the most equitable accession weight standards of the four services. Differences in eligibility between genders range from 3 to 7 percentage points. The Air Force's accession weight standards are less equitable than those of the Navy and more equitable than those of the Army and the Marine Corps. Eligibility differences between men and women range from 9 to 11 percentage points.

The greater equity of the Air Force weight standards relative to those of the Marine Corps is partially offset by the Air Force's less equitable height standards. Females in the Marine Corps are required to measure from 58 to 72 inches in height. In contrast, the Air Force excludes women who are less than 60 inches tall but includes women who are more than 72 inches tall. In the civilian sample, 5.9 percent of females have heights of 58 and 59 inches while only 0.3 percent of females have heights exceeding 71 inches. Army and Navy height standards are comparable in terms of equity to those of the Marine Corps because they have the same minimum height requirement for females of 58 inches.

Table 11. Incidence of overweight in civilian population under current service accession standards

|                     | <u>Proportion<br/>overweight</u> |      | Percentage-<br>point<br>difference |
|---------------------|----------------------------------|------|------------------------------------|
|                     | Female                           | Male |                                    |
| <b>Marine Corps</b> |                                  |      |                                    |
| 17 to 20 years old  | 27                               | 3    | 24                                 |
| 21 to 24 years old  | 25                               | 3    | 22                                 |
| 25 to 30 years old  | 30                               | 5    | 25                                 |
| <b>Army</b>         |                                  |      |                                    |
| 17 to 20 years old  | 31                               | 3    | 28                                 |
| 21 to 24 years old  | 29                               | 3    | 26                                 |
| 25 to 30 years old  | 36                               | 5    | 31                                 |
| <b>Navy</b>         |                                  |      |                                    |
| 17 to 20 years old  | 7                                | 4    | 3                                  |
| 21 to 24 years old  | 10                               | 7    | 3                                  |
| 25 to 30 years old  | 16                               | 9    | 7                                  |
| <b>Air Force</b>    |                                  |      |                                    |
| 17 to 20 years old  | 16                               | 7    | 9                                  |
| 21 to 24 years old  | 20                               | 12   | 8                                  |
| 25 to 30 years old  | 28                               | 17   | 11                                 |

Based on the criterion of civilian eligibility, females are subject to stricter weight standards than males in each of the four services. To reduce that difference in eligibility in the Marine Corps, male accession weight standards can be tightened, or female accession weight standards can be loosened, or both. Table 12 shows the incidence of overweight in the male and female civilian populations under the GED-based accession standards. Relative to the current Marine Corps accession weight standards, the male GED-based standards are tighter and the female GED-based standards are looser. Consequently, any combination of the male and female accession standards in this table would lead to more equitable accession standards as defined by differences in civilian eligibility.

Although the primary goal of the study is to improve the equity of weight standards between men and women, this goal is qualified by the proviso that quality standards not be reduced. However, the tightening of accession weight standards for all male recruits could lead to the accession of lower-quality male recruits in terms of education in order to meet endstrength requirements.

Table 12. Incidence of overweight in civilian population under GED-based accession standards

| Accession weight standard        | Proportion overweight<br>in age group |       |       |
|----------------------------------|---------------------------------------|-------|-------|
|                                  | 17-20                                 | 21-24 | 25-30 |
| <b>Male</b>                      |                                       |       |       |
| Navy active duty + 20 lb         | 4                                     | 7     | 10    |
| Marine Corps active duty + 20 lb | 4                                     | 6     | 8     |
| NCHS overweight + 20 lbs         | 3                                     | 5     | 7     |
| <b>Female</b>                    |                                       |       |       |
| Marine Corps active duty + 10 lb | 16                                    | 19    | 27    |
| 70th percentile + 10 lb          | 13                                    | 18    | 24    |
| Navy active duty + 10 lb         | 11                                    | 16    | 21    |
| 75th percentile + 10 lb          | 10                                    | 15    | 21    |
| Adjusted NCHS + 10 lb            | 8                                     | 12    | 17    |

Table 13 shows the incidence of overweight among male recruits in the Marine Corps under the current accession standards used by each of the four services as well as the accession standards implied by the GED criterion. Only .5 percent of the male Marines exceed the maximum weights under the current Marine Corps accession standards. If male Marine recruits had been subjected to the stricter accession standards of the Navy, 3.6 percent would have been ineligible. Under the more stringent standards of the Air Force, 10.0 percent of the male Marine recruits would have been ineligible. Alternatively, the GED-based accession standards would imply ineligibility rates ranging from 1.3 percent to 4.0 percent.

To prevent the lowering of educational requirements to meet end-strength, most of the reductions in eligibility could be offset by waivers to male high school graduates who exceed the weight standards. If the Marine Corps continues to use the same active duty standards for males and applies the GED criteria, 2.3 percent of previous male accessions would have been ineligible. However, a waiver to overweight male high school graduates would lead to the accession of 85.2 percent of those previously considered ineligible under the weight standards. In effect, only 0.3 percent (i.e.,  $(1-.852) \times .023$ ) of previous male accessions would have been ineligible.

Table 13. Incidence of overweight among male Marine recruits under alternative accession standards

| Accession weight standard        | Proportion overweight in age group |       |       |      |
|----------------------------------|------------------------------------|-------|-------|------|
|                                  | 17-20                              | 21-24 | 25-30 | All  |
| Current accession                |                                    |       |       |      |
| Marine Corps                     | .5                                 | .5    | .5    | .5   |
| Army                             | .5                                 | .5    | .5    | .5   |
| Navy                             | 3.1                                | 6.4   | 6.8   | 3.6  |
| Air Force                        | 9.1                                | 14.8  | 15.5  | 10.0 |
| GED-based accession              |                                    |       |       |      |
| Navy active duty + 20 lb         | 3.5                                | 6.9   | 7.2   | 4.0  |
| Marine Corps active duty + 20 lb | 1.8                                | 4.8   | 5.3   | 2.3  |
| NCHS overweight + 20 lb          | 0.9                                | 3.8   | 4.1   | 1.3  |

#### WEIGHT-PHYSICAL FITNESS TRADEOFF

Male end-strength requirements tend to rule out the tightening of male accession weight standards unless sufficient waivers are permitted for overweight high school graduates. The only other way of improving equity is to loosen female accession standards. However, this would have the effect of reducing the physical fitness of female recruits. Reference [3] found that the physical fitness of Marine recruits decreases with respect to weight. For males, a 10-pound increase in accession weight was found to decrease the physical fitness test (PFT) score by 3.5 points. For females, a 10-pound increase in accession weight was associated with an 8.4 point decrease in the PFT score.

The estimated relationship between physical fitness and weight may be understated due to data limitations. Ideally, physical fitness and weight should be measured at the same time. However, height and weight data are only available from the time of accession, and the first PFT score is typically recorded at about six months into the first term. The time lag between these measures may have weakened the estimated relationship between the measures. In addition, unsatisfactory PFT scores were never observed in the data base. The estimated tradeoff between physical fitness and weight would be further understated to the extent that Marines who would have received unsatisfactory scores did not have those scores recorded, retook the PFT until they received a satisfactory score, or separated before taking the test.

1. The mean accession weights are 159 pounds for males and 127 pounds for females. Each gender is given a different PFT. On a scale of 300 points, the mean PFT scores are 245 for males and 222 for females.

## CONCLUSIONS

A much higher proportion of female civilians are ineligible for enlistment in the Marine Corps due to the current accession standards than are male civilians from the same age groups. If equity is defined in terms of civilian eligibility, then the current standards are inequitable. To improve the equity of the standards, male maximum accession weights can be decreased and/or female maximum accession weights can be increased. A variety of GED-based standards that meet this criterion have been presented.

Under current educational standards, decreasing the maximum accession weights of males will tend to reduce male endstrength. To offset most of this loss in endstrength, waivers could be granted to male high school graduates who are overweight under the revised accession standards but meet the current accession standards. Alternatively, the Marine Corps could maintain its current standards, but prioritize potential recruits using the ranking system shown in table 5. In either case, the need to meet endstrength requirements in the 1990s will make it difficult to tighten weight standards, while the size of the eligible male population continues to shrink.

Increasing the maximum accession weights for females will reduce their physical fitness. Policy-makers need to assess the tradeoff between physical fitness and eligibility in selecting the appropriate weight standards for females. The magnitude of the tradeoff is likely to be understated given the estimation problems associated with the current PFT. Future research on this issue necessitates that the same PFT be given to both genders; the test scores be recorded on a semiannual basis, as required by current regulations; the first score on the test be the score that is recorded if the test is retaken; and that height and weight also be recorded at the time the test is given.

## REFERENCES

- [1] Commandant of the Marine Corps, ltr Ser RDD 400505, *Request for MCOAG Analytical Support, Marine Corps Weight and Fitness Standards*, 12 May 1988
- [2] CNA Research Memorandum 89-16, *Using Attrition Rates in Setting Height-Weight Standards*, by Timothy E. Rupinski, May 1989 (27890016)
- [3] CNA Research Memorandum 88-190, *Physical Fitness of Marine Corps Recruits*, by Timothy E. Rupinski, Apr 1989 (27880190)

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1. The number in parentheses is a CNA internal control number.

**APPENDIX A**  
**ARMED FORCES MAXIMUM WEIGHT STANDARDS**

Table A-1. Marine Corps maximum weight standards (male)

| Height<br>(inches) | Maximum accession weight, by age group |       |       |       |         | Maximum<br>active duty<br>weight |
|--------------------|----------------------------------------|-------|-------|-------|---------|----------------------------------|
|                    | 16-20                                  | 21-30 | 31-35 | 36-40 | Over 40 |                                  |
| 60                 | 158                                    | 163   | 162   | 157   | 150     | 140                              |
| 61                 | 163                                    | 168   | 167   | 162   | 155     | 145                              |
| 62                 | 168                                    | 174   | 173   | 168   | 160     | 150                              |
| 63                 | 174                                    | 180   | 178   | 173   | 165     | 155                              |
| 64                 | 179                                    | 185   | 184   | 179   | 171     | 160                              |
| 65                 | 185                                    | 191   | 190   | 184   | 176     | 165                              |
| 66                 | 191                                    | 197   | 196   | 190   | 182     | 170                              |
| 67                 | 197                                    | 203   | 202   | 196   | 187     | 175                              |
| 68                 | 203                                    | 209   | 208   | 202   | 193     | 181                              |
| 69                 | 209                                    | 215   | 214   | 208   | 198     | 186                              |
| 70                 | 215                                    | 222   | 220   | 214   | 204     | 192                              |
| 71                 | 221                                    | 228   | 227   | 220   | 210     | 197                              |
| 72                 | 227                                    | 234   | 233   | 226   | 216     | 203                              |
| 73                 | 233                                    | 241   | 240   | 233   | 222     | 209                              |
| 74                 | 240                                    | 248   | 246   | 239   | 228     | 214                              |
| 75                 | 246                                    | 254   | 253   | 246   | 234     | 219                              |
| 76                 | 253                                    | 261   | 260   | 252   | 241     | 225                              |
| 77                 | 260                                    | 268   | 266   | 259   | 247     | 230                              |
| 78                 | 267                                    | 275   | 273   | 266   | 254     | 235                              |

Table A-2. Marine Corps maximum weight standards (female)

| Height<br>(inches) | Maximum accession weight, by age group |       |       |       |       |         | Maximum<br>active duty<br>weight |
|--------------------|----------------------------------------|-------|-------|-------|-------|---------|----------------------------------|
|                    | 16-20                                  | 21-24 | 25-30 | 31-35 | 36-40 | Over 40 |                                  |
| 58                 | 121                                    | 123   | 124   | 126   | 135   | 135     | 121                              |
| 59                 | 123                                    | 125   | 129   | 129   | 139   | 138     | 123                              |
| 60                 | 125                                    | 127   | 132   | 132   | 142   | 141     | 125                              |
| 61                 | 127                                    | 129   | 135   | 136   | 145   | 147     | 127                              |
| 62                 | 130                                    | 132   | 139   | 141   | 148   | 147     | 130                              |
| 63                 | 134                                    | 137   | 141   | 145   | 151   | 150     | 134                              |
| 64                 | 138                                    | 141   | 145   | 150   | 156   | 154     | 138                              |
| 65                 | 142                                    | 145   | 149   | 155   | 161   | 159     | 142                              |
| 66                 | 147                                    | 150   | 154   | 160   | 165   | 164     | 147                              |
| 67                 | 151                                    | 155   | 159   | 165   | 171   | 169     | 151                              |
| 68                 | 156                                    | 159   | 163   | 169   | 176   | 174     | 156                              |
| 69                 | 160                                    | 164   | 168   | 175   | 181   | 179     | 160                              |
| 70                 | 165                                    | 169   | 173   | 180   | 186   | 184     | 165                              |
| 71                 | 170                                    | 174   | 178   | 185   | 192   | 190     | 170                              |
| 72                 | 175                                    | 178   | 183   | 190   | 197   | 195     | 175                              |

Table A-3. Army maximum weight standards (male)

| Height<br>(inches) | Maximum<br>accession<br>weight                   | Maximum active duty weight,<br>by age group |       |       |         |
|--------------------|--------------------------------------------------|---------------------------------------------|-------|-------|---------|
|                    |                                                  | 17-20                                       | 21-27 | 28-39 | Over 39 |
| 60                 | Same as<br>Marine Corps<br>accession<br>standard | 132                                         | 136   | 139   | 141     |
| 61                 |                                                  | 136                                         | 140   | 144   | 146     |
| 62                 |                                                  | 141                                         | 144   | 148   | 150     |
| 63                 |                                                  | 145                                         | 149   | 153   | 155     |
| 64                 |                                                  | 150                                         | 154   | 158   | 160     |
| 65                 |                                                  | 155                                         | 159   | 163   | 165     |
| 66                 |                                                  | 160                                         | 163   | 168   | 170     |
| 67                 |                                                  | 165                                         | 169   | 174   | 176     |
| 68                 |                                                  | 170                                         | 174   | 179   | 181     |
| 69                 |                                                  | 175                                         | 179   | 184   | 186     |
| 70                 |                                                  | 180                                         | 185   | 189   | 192     |
| 71                 |                                                  | 185                                         | 189   | 194   | 197     |
| 72                 |                                                  | 190                                         | 195   | 200   | 203     |
| 73                 |                                                  | 195                                         | 200   | 205   | 208     |
| 74                 |                                                  | 201                                         | 206   | 211   | 214     |
| 75                 |                                                  | 206                                         | 212   | 217   | 220     |
| 76                 |                                                  | 212                                         | 217   | 223   | 226     |
| 77                 |                                                  | 218                                         | 223   | 229   | 232     |
| 78                 |                                                  | 223                                         | 229   | 235   | 238     |
| 79                 |                                                  | 229                                         | 235   | 241   | 244     |
| 80                 |                                                  | 234                                         | 240   | 247   | 250     |

Table A-4. Army maximum accession weight standards  
(female)

| Height<br>(inches) | Maximum accession weight, by age group |       |       |       |       |         |
|--------------------|----------------------------------------|-------|-------|-------|-------|---------|
|                    | 16-20                                  | 21-24 | 25-30 | 31-35 | 36-40 | Over 40 |
| 58                 | 120                                    | 124   | 126   | 129   | 132   | 135     |
| 59                 | 122                                    | 126   | 128   | 131   | 134   | 137     |
| 60                 | 124                                    | 128   | 130   | 133   | 136   | 139     |
| 61                 | 127                                    | 130   | 132   | 135   | 139   | 141     |
| 62                 | 128                                    | 132   | 134   | 137   | 140   | 144     |
| 63                 | 132                                    | 134   | 136   | 139   | 143   | 145     |
| 64                 | 135                                    | 136   | 139   | 143   | 145   | 149     |
| 65                 | 138                                    | 140   | 144   | 148   | 150   | 153     |
| 66                 | 141                                    | 145   | 148   | 151   | 154   | 157     |
| 67                 | 145                                    | 149   | 152   | 156   | 158   | 162     |
| 68                 | 150                                    | 153   | 156   | 160   | 162   | 166     |
| 69                 | 154                                    | 157   | 161   | 164   | 167   | 170     |
| 70                 | 158                                    | 162   | 165   | 168   | 171   | 174     |
| 71                 | 162                                    | 166   | 169   | 173   | 175   | 179     |
| 72                 | 167                                    | 171   | 174   | 178   | 181   | 184     |
| 73                 | 171                                    | 177   | 179   | 183   | 186   | 190     |
| 74                 | 175                                    | 182   | 185   | 188   | 191   | 195     |
| 75                 | 179                                    | 187   | 190   | 194   | 196   | 200     |
| 76                 | 184                                    | 192   | 196   | 199   | 202   | 205     |
| 77                 | 188                                    | 197   | 201   | 204   | 207   | 211     |
| 78                 | 192                                    | 203   | 206   | 209   | 213   | 216     |
| 79                 | 196                                    | 208   | 211   | 215   | 218   | 220     |
| 80                 | 201                                    | 213   | 216   | 219   | 223   | 225     |

Table A-5. Army maximum active duty weight standards (female)

| Height<br>(inches) | Maximum active duty weight,<br>by age group |       |       |         |
|--------------------|---------------------------------------------|-------|-------|---------|
|                    | 17-20                                       | 21-27 | 28-39 | Over 39 |
| 58                 | 109                                         | 112   | 115   | 119     |
| 59                 | 113                                         | 116   | 119   | 123     |
| 60                 | 116                                         | 120   | 123   | 127     |
| 61                 | 120                                         | 124   | 127   | 131     |
| 62                 | 125                                         | 129   | 132   | 137     |
| 63                 | 129                                         | 133   | 137   | 141     |
| 64                 | 133                                         | 137   | 141   | 145     |
| 65                 | 137                                         | 141   | 145   | 149     |
| 66                 | 141                                         | 146   | 150   | 154     |
| 67                 | 145                                         | 149   | 154   | 159     |
| 68                 | 150                                         | 154   | 159   | 164     |
| 69                 | 154                                         | 158   | 163   | 168     |
| 70                 | 159                                         | 163   | 168   | 173     |
| 71                 | 163                                         | 167   | 172   | 177     |
| 72                 | 167                                         | 172   | 177   | 183     |
| 73                 | 172                                         | 177   | 182   | 188     |
| 74                 | 178                                         | 183   | 189   | 194     |
| 75                 | 183                                         | 188   | 194   | 200     |
| 76                 | 189                                         | 194   | 200   | 206     |
| 77                 | 193                                         | 199   | 205   | 211     |
| 78                 | 198                                         | 204   | 210   | 216     |
| 79                 | 203                                         | 209   | 215   | 222     |
| 80                 | 208                                         | 214   | 220   | 227     |

Table A-6. Navy maximum weight standards (male)

| Height<br>(inches) | Maximum<br>accession<br>weight | Maximum<br>active duty<br>weight |
|--------------------|--------------------------------|----------------------------------|
| 60                 | 155                            | 139                              |
| 61                 | 160                            | 143                              |
| 62                 | 165                            | 148                              |
| 63                 | 170                            | 152                              |
| 64                 | 176                            | 157                              |
| 65                 | 181                            | 162                              |
| 66                 | 186                            | 167                              |
| 67                 | 192                            | 172                              |
| 68                 | 197                            | 176                              |
| 69                 | 203                            | 182                              |
| 70                 | 209                            | 187                              |
| 71                 | 215                            | 192                              |
| 72                 | 220                            | 197                              |
| 73                 | 226                            | 202                              |
| 74                 | 232                            | 208                              |
| 75                 | 239                            | 213                              |
| 76                 | 245                            | 219                              |
| 77                 | 251                            | 224                              |
| 78                 | 257                            | 230                              |

**Table A-7. Navy maximum weight standards (female)**

| Height<br>(inches) | Maximum<br>accession<br>weight | Maximum<br>active duty<br>weight |
|--------------------|--------------------------------|----------------------------------|
| 58                 | 144                            | 124                              |
| 59                 | 148                            | 127                              |
| 60                 | 151                            | 131                              |
| 61                 | 155                            | 135                              |
| 62                 | 159                            | 138                              |
| 63                 | 162                            | 142                              |
| 64                 | 166                            | 145                              |
| 65                 | 169                            | 149                              |
| 66                 | 173                            | 153                              |
| 67                 | 177                            | 156                              |
| 68                 | 180                            | 160                              |
| 69                 | 184                            | 163                              |
| 70                 | 187                            | 167                              |
| 71                 | 191                            | 171                              |
| 72                 | 195                            | 175                              |
| 73                 | 198                            | 178                              |
| 74                 | 202                            | 181                              |
| 75                 | 205                            | 185                              |
| 76                 | 209                            | 189                              |
| 77                 | 213                            | 192                              |
| 78                 | 216                            | 196                              |

Table A-8. Air Force maximum weight standards (male)

| Height<br>(inches) | Maximum weight under<br>both accession and<br>active duty standards |
|--------------------|---------------------------------------------------------------------|
| 60                 | 153                                                                 |
| 61                 | 155                                                                 |
| 62                 | 158                                                                 |
| 63                 | 160                                                                 |
| 64                 | 164                                                                 |
| 65                 | 169                                                                 |
| 66                 | 174                                                                 |
| 67                 | 179                                                                 |
| 68                 | 184                                                                 |
| 69                 | 189                                                                 |
| 70                 | 194                                                                 |
| 71                 | 199                                                                 |
| 72                 | 205                                                                 |
| 73                 | 211                                                                 |
| 74                 | 218                                                                 |
| 75                 | 224                                                                 |
| 76                 | 230                                                                 |
| 77                 | 236                                                                 |
| 78                 | 242                                                                 |
| 79                 | 248                                                                 |
| 80                 | 254                                                                 |

**Table A-9. Air Force maximum weight standards (female)**

| Height<br>(inches) | Maximum<br>accession<br>weight | Maximum<br>active duty<br>weight |
|--------------------|--------------------------------|----------------------------------|
| 60                 | 136                            | 130                              |
| 61                 | 138                            | 132                              |
| 62                 | 141                            | 134                              |
| 63                 | 142                            | 136                              |
| 64                 | 146                            | 139                              |
| 65                 | 150                            | 144                              |
| 66                 | 155                            | 148                              |
| 67                 | 159                            | 152                              |
| 68                 | 164                            | 156                              |
| 69                 | 168                            | 161                              |
| 70                 | 173                            | 165                              |
| 71                 | 177                            | 169                              |
| 72                 | 182                            | 174                              |
| 73                 | 188                            | 179                              |
| 74                 | 194                            | 185                              |
| 75                 | 199                            | 190                              |
| 76                 | 205                            | 196                              |
| 77                 | 210                            | 201                              |
| 78                 | 215                            | 206                              |
| 79                 | 221                            | 212                              |
| 80                 | 226                            | 218                              |

**APPENDIX B**  
**GED-BASED MAXIMUM WEIGHT STANDARDS**

Table B-1. GED-based accession  
standards assuming Navy active duty  
standards (male)

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | Navy<br>active duty             | GED-based<br>accession |
| 60                 | 139                             | 153                    |
| 61                 | 143                             | 158                    |
| 62                 | 148                             | 163                    |
| 63                 | 152                             | 168                    |
| 64                 | 157                             | 174                    |
| 65                 | 162                             | 179                    |
| 66                 | 167                             | 185                    |
| 67                 | 172                             | 190                    |
| 68                 | 176                             | 196                    |
| 69                 | 182                             | 202                    |
| 70                 | 187                             | 208                    |
| 71                 | 192                             | 214                    |
| 72                 | 197                             | 220                    |
| 73                 | 202                             | 226                    |
| 74                 | 208                             | 232                    |
| 75                 | 213                             | 239                    |
| 76                 | 219                             | 245                    |
| 77                 | 224                             | 252                    |
| 78                 | 230                             | 258                    |

**Table B-2. GED-based accession standards assuming Marine Corps active duty standards (male)**

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | Marine Corps<br>active duty     | GED-based<br>accession |
| 60                 | 140                             | 156                    |
| 61                 | 145                             | 161                    |
| 62                 | 150                             | 166                    |
| 63                 | 155                             | 172                    |
| 64                 | 160                             | 177                    |
| 65                 | 165                             | 183                    |
| 66                 | 170                             | 188                    |
| 67                 | 175                             | 194                    |
| 68                 | 181                             | 200                    |
| 69                 | 186                             | 206                    |
| 70                 | 192                             | 212                    |
| 71                 | 197                             | 218                    |
| 72                 | 203                             | 224                    |
| 73                 | 209                             | 231                    |
| 74                 | 214                             | 237                    |
| 75                 | 219                             | 243                    |
| 76                 | 225                             | 250                    |
| 77                 | 230                             | 257                    |
| 78                 | 235                             | 263                    |

**Table B-3. GED-based accession standards assuming NCHS overweight active duty standards (male)**

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | NCHS<br>active duty             | GED-based<br>accession |
| 60                 | 142                             | 157                    |
| 61                 | 147                             | 163                    |
| 62                 | 152                             | 168                    |
| 63                 | 157                             | 173                    |
| 64                 | 162                             | 179                    |
| 65                 | 167                             | 185                    |
| 66                 | 172                             | 190                    |
| 67                 | 177                             | 196                    |
| 68                 | 183                             | 202                    |
| 69                 | 188                             | 208                    |
| 70                 | 194                             | 214                    |
| 71                 | 199                             | 220                    |
| 72                 | 205                             | 226                    |
| 73                 | 211                             | 233                    |
| 74                 | 216                             | 239                    |
| 75                 | 222                             | 246                    |
| 76                 | 228                             | 252                    |
| 77                 | 234                             | 259                    |
| 78                 | 240                             | 266                    |

**Table B-4. GED-based accession standards assuming Marine Corps active duty standards (female)**

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | Marine Corps<br>active duty     | GED-based<br>accession |
| 58                 | 121                             | 128                    |
| 59                 | 123                             | 131                    |
| 60                 | 125                             | 134                    |
| 61                 | 127                             | 138                    |
| 62                 | 130                             | 141                    |
| 63                 | 134                             | 145                    |
| 64                 | 138                             | 148                    |
| 65                 | 142                             | 151                    |
| 66                 | 147                             | 155                    |
| 67                 | 151                             | 159                    |
| 68                 | 156                             | 162                    |
| 69                 | 160                             | 166                    |
| 70                 | 165                             | 169                    |
| 71                 | 170                             | 173                    |
| 72                 | 175                             | 177                    |

**Table B-5. GED-based accession standards assuming 70th-percentile active duty standards (female)**

| Height<br>(inches) | <u>Maximum weight in pounds</u>    |                        |
|--------------------|------------------------------------|------------------------|
|                    | 70th-<br>percentile<br>active duty | GED-based<br>accession |
| 58                 | 122                                | 130                    |
| 59                 | 125                                | 134                    |
| 60                 | 128                                | 137                    |
| 61                 | 131                                | 141                    |
| 62                 | 135                                | 144                    |
| 63                 | 138                                | 147                    |
| 64                 | 141                                | 151                    |
| 65                 | 144                                | 155                    |
| 66                 | 148                                | 158                    |
| 67                 | 151                                | 162                    |
| 68                 | 155                                | 165                    |
| 69                 | 158                                | 169                    |
| 70                 | 161                                | 173                    |
| 71                 | 165                                | 176                    |
| 72                 | 168                                | 180                    |

Table B-6. GED-based accession standards assuming Navy active duty standards (female)

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | Navy<br>active duty             | GED-based<br>accession |
| 58                 | 124                             | 134                    |
| 59                 | 127                             | 137                    |
| 60                 | 131                             | 141                    |
| 61                 | 135                             | 144                    |
| 62                 | 138                             | 148                    |
| 63                 | 142                             | 151                    |
| 64                 | 145                             | 155                    |
| 65                 | 149                             | 159                    |
| 66                 | 153                             | 162                    |
| 67                 | 156                             | 166                    |
| 68                 | 160                             | 170                    |
| 69                 | 163                             | 174                    |
| 70                 | 167                             | 177                    |
| 71                 | 171                             | 181                    |
| 72                 | 175                             | 185                    |

Table B-7. GED-based accession standards assuming 75th-percentile active duty standards (male)

| <u>Maximum weight in pounds</u> |                                             |                                |
|---------------------------------|---------------------------------------------|--------------------------------|
| <u>Height<br/>(inches)</u>      | <u>75th-<br/>percentile<br/>active duty</u> | <u>GED-based<br/>accession</u> |
| 58                              | 126                                         | 135                            |
| 59                              | 129                                         | 138                            |
| 60                              | 132                                         | 142                            |
| 61                              | 136                                         | 145                            |
| 62                              | 139                                         | 149                            |
| 63                              | 143                                         | 152                            |
| 64                              | 146                                         | 156                            |
| 65                              | 149                                         | 160                            |
| 66                              | 153                                         | 163                            |
| 67                              | 156                                         | 167                            |
| 68                              | 160                                         | 171                            |
| 69                              | 163                                         | 175                            |
| 70                              | 167                                         | 178                            |
| 71                              | 171                                         | 182                            |
| 72                              | 174                                         | 186                            |

**Table B-8. GED-based accession standards assuming adjusted NCHS overweight active duty standards (female)**

| Height<br>(inches) | <u>Maximum weight in pounds</u> |                        |
|--------------------|---------------------------------|------------------------|
|                    | Adjusted NCHS<br>active duty    | GED-based<br>accession |
| 58                 | 131                             | 140                    |
| 59                 | 134                             | 143                    |
| 60                 | 138                             | 147                    |
| 61                 | 141                             | 151                    |
| 62                 | 145                             | 154                    |
| 63                 | 148                             | 158                    |
| 64                 | 152                             | 162                    |
| 65                 | 155                             | 166                    |
| 66                 | 159                             | 170                    |
| 67                 | 162                             | 174                    |
| 68                 | 166                             | 177                    |
| 69                 | 170                             | 181                    |
| 70                 | 173                             | 185                    |
| 71                 | 177                             | 189                    |
| 72                 | 181                             | 193                    |