

Retention in Service of Recruits Assigned to the Army Physical Fitness Test Enhancement Program in Basic Combat Training

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Recruits are assigned to the Army Physical Fitness Test Enhancement Program (APFTEP) if they are unable to pass the final Army physical fitness test at the end of basic combat training (BCT). The U.S. Army Medical Command tasked the U.S. Army Center for Health Promotion and Preventive Medicine to examine the retention in service of individuals completing this program. To accomplish this tasking, the following data were obtained: a list of APFTEP recruits at Fort Jackson, South Carolina between January 1999 and June 2001; a list of BCT graduates from the Army Training Requirements and Resources System; and a comparison group of non-APFTEP recruits matched 3 to 1 on the basis of age, gender, Army entry date (± 30 days), BCT location, and active Army status from the Army Medical Surveillance Activity. We found that the proportion of recruits who successfully completed the APFTEP and graduated from BCT (85% of men, 80% of women) was lower than documented graduation rates for all recruits (93% of men, 87% of women). Retention in service after 1 year was also lower for APFTEP recruits than for non-APFTEP recruits among both men (74% vs. 92%, $p < 0.01$) and women (63% vs. 84%, $p < 0.01$). Despite the lower BCT graduation success and retention in service for APFTEP recruits, the program does assist in retaining soldiers who would otherwise be discharged for failing the Army physical fitness test. Thus, the program may be a useful tool for limiting attrition.

Introduction

Recruits in basic combat training (BCT) are assigned to the Army Physical Fitness Test Enhancement Program (APFTEP) if they are unable to pass the final Army physical fitness test (APFT) by the end of their BCT cycle. Recruits must have successfully completed all other BCT requirements. The APFTEP allows recruits additional time to concentrate on guided physical fitness improvement and additional opportunities to take the APFT.

The APFT is designed to measure aerobic endurance and muscular strength/endurance.¹ The test involves three events: push-ups, sit-ups, and a 2-mile run, administered in that order. The push-ups and sit-ups are the maximum number completed in two separate 2-minute periods. For the 2-mile run, time to complete the distance is the performance measure. To "pass" the APFT, recruits must meet specific age- and gender-adjusted standards that are based on normative data.²

Recruits assigned to the APFTEP receive both military and

physical training. Military training sustains general knowledge and skills learned in BCT, including drill and ceremony, military justice, and common soldier skills and tasks; in addition, goal-setting, self-control, stress control, and relaxation techniques are covered. Physical training is conducted six times per week and emphasizes working on each individual's weaker areas. Although it is difficult to generalize (because of individual problems), training involves running three times per week and muscular strength and endurance training (push-up/sit-up improvement, partner resisted exercises) three times per week. Soldiers are generally split into groups based on push-up/sit-up difficulties or run difficulties for work on specific problem areas. APFTs are given once a week and a recruit is given 4 weeks to pass (with an option for a fifth week if progressive improvement is evident). Recruits that pass the APFT graduate from BCT and proceed to their next duty assignment. Recruits unable to pass the APFT are discharged from military service.

In June 2001, the U.S. Army Medical Command tasked the U.S. Army Center for Health Promotion and Preventive Medicine to determine the retention rates of soldiers who had been attached to the APFTEP. At that time, programs were in place at Fort Jackson, South Carolina, Fort Knox, Kentucky, and Fort Sill, Oklahoma (three of the five U.S. Army posts conducting BCT or one-station unit training). However, Fort Knox did not have systematic records of APFTEP personnel, and the Fort Sill program had only been in existence for a short period of time. The present study examines the BCT graduation success and 1-year retention in service of personnel assigned to the APFTEP at Fort Jackson, South Carolina.

Methods

The APFTEP at Fort Jackson, South Carolina is part of the Fitness Training Company located at the reception station (where recruits first arrive for BCT). The Fitness Training Company provided information on recruits who were in the APFTEP from January 1999 to June 2001. This included 637 men and 746 women. To evaluate the success of the APFTEP recruits in graduating from BCT, the Army Training Requirements and Resources System provided graduation status.

To evaluate retention in service after BCT graduation, a retrospective cohort design was used. Case subjects were recruits assigned to the APFTEP. For each case subject, three control subjects were requested from the Army Medical Surveillance Activity (AMSA). Control subjects were matched with case subjects on the following criteria: age (± 3 years), gender, entry date into the Army (± 30 days), post where BCT was performed, and active Army status (no Army Reserves or National Guard). In selecting controls, soldiers who were on active duty for a period shorter than 11 weeks (the length of BCT plus 2 additional

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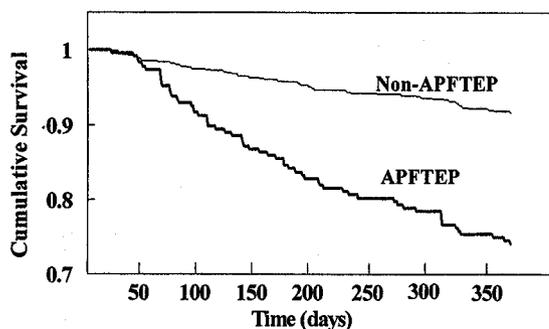


Fig. 1. Pattern of retention in service of male case and control subjects over a 1-year period (Kaplan-Meier survival curve).

weeks) were considered "discharged" while in BCT and were excluded from consideration. The data from the AMSA included each soldier's (case and control subjects) current status in the Army (discharged or still on active service). For those who were discharged, a date of discharge was obtained. From these data, the length of time each discharged soldier served on active duty was calculated.

AMSA data were obtained for 418 APFTEP men and 481 APFTEP women. The reduction in numbers from the original Fort Jackson sample was attributable largely to the exclusion of trainees who were Army Reserves or National Guard. They were excluded because of differences in their service contracts and their jobs after BCT. For the men, the AMSA accomplished a three to one match (controls to APFTEP personnel) in 83% of case subjects, a two to one match in 15% of case subjects, and a one to one match in 2% of case subjects. For the women, the AMSA accomplished a three to one match in 72% of case subjects, a two to one match in 25% of case subjects, and a one to one match in 3% of case subjects.

The proportion of APFTEP recruits graduating from BCT was calculated as a percentage (graduates/total sample \times 100%). SPSS (version 10.1) was used to obtain Kaplan-Meier survival analysis comparing the 1-year retention in service of the APFTEP personnel (case subjects) and non-APFTEP personnel (control subjects). Differences in survival curves were indicated by the log-rank test. EpiInfo (version 6.04b) was used to obtain χ^2 tests, risk ratios, and 95% confidence intervals comparing the proportion of APFTEP and non-APFTEP retained in service after 1 year. These latter two analyses were similar but not identical. The survival analysis looked at changes over the entire time period, whereas the χ^2 test examined differences at a single point in time.

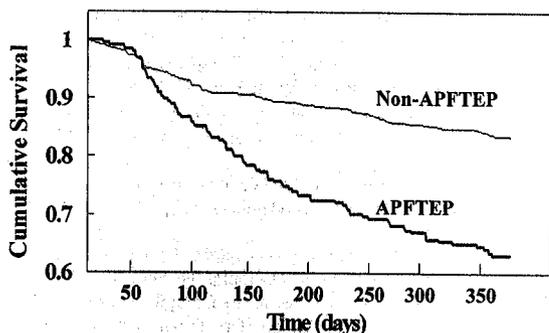


Fig. 2. Pattern of retention in service of female case and control subjects over a 1-year period (Kaplan-Meier survival curve).

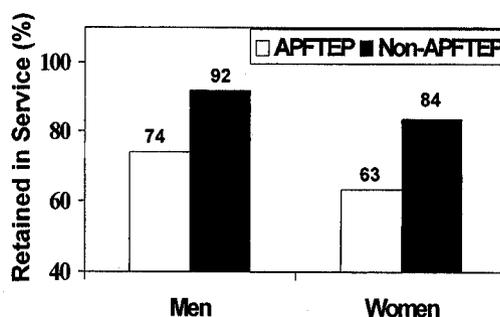


Fig. 3. Proportion of men and women retained in service over a 1-year period (numbers on top of the bars are the percent retained in service).

Results

The proportion of recruits who completed the APFTEP and graduated from BCT was 85.3% of men and 80.0% of women.

Figures 1 and 2 show the survival curves indicating the 1-year post-BCT retention in service for men and women, respectively, who graduated from BCT. There were significant differences in the survival functions of the APFTEP and non-APFTEP soldiers for both men ($p < 0.01$) and women ($p < 0.01$). Figure 3 shows the proportion of APFTEP and non-APFTEP recruits who graduated from BCT and were retained in service at the end of a 1-year period. Fewer APFTEP recruits remained in service both among the men ($p < 0.01$) and the women ($p < 0.01$). The relative risk of discharge within 1 year was 1.24 times higher for APFTEP men than for non-APFTEP men (95% confidence interval, 1.14–1.34). The relative risk of discharge within 1 year was 1.32 times higher for APFTEP women than for non-APFTEP women (95% confidence interval, 1.20–1.46).

The mean \pm SD ages of the male APFTEP and non-APFTEP recruits on entry to service were 20.1 ± 2.1 and 20.0 ± 2.0 years, respectively. Ages for the female APFTEP and non-APFTEP recruits were 19.9 ± 2.2 and 19.8 ± 2.1 years, respectively.

Discussion

The present study indicated that a large proportion of active duty soldiers who entered the APFTEP successfully graduated from BCT. However, APFTEP personnel appear less likely to graduate than their BCT counterparts overall. This is illustrated by comparing the 85% and 80% graduation rates of male and female APFTEP recruits, respectively, to the overall active duty graduation rates at Fort Jackson shown in Table I.

BCT recruits are given considerable advantages that should allow them to pass the APFT. These advantages include regular physical training, performance feedback, and an APFT performance standard that is lower than that required later in service. Physical training in BCT is conducted 4 to 6 times a week, and much of this training is designed to improve performance on the APFT.³ Feedback on APFT performance begins with an initial test administered within the first few days of arrival at BCT and generally continues with two additional diagnostic tests. A final test is given in the seventh week of the 9-week BCT cycle (lengthened from 8 weeks in October 1998) and if a recruit does not pass, training personnel can administer additional APFTs up to the day of graduation. In BCT, "passing" each APFT event re-

TABLE I

TOTAL INPUTS AND GRADUATION RATES OF ACTIVE DUTY ARMY SOLDIERS AT FORT JACKSON (EXCLUSIVE OF RESERVE AND NATIONAL GUARD RECRUITS)^a

Gender	Fiscal Year 1999		Fiscal Year 2000		Fiscal Year 2001		Fiscal Years 1999-2000	
	Total Input (n)	Graduates (%)	Total Input (n)	Graduates (%)	Total Input (n)	Graduates (%)	Total Input (n)	Graduates (%)
Men	11,424	90.4	12,404	93.5	11,922	93.9	35,750	92.6
Women	7,395	85.3	11,600	89.7	11,190	86.5	24,592	87.2

^a Data were obtained directly from the Army Training and Doctrine Command Fort Monroe, Virginia. Fiscal years cover the period from October of 1 year through September of the year listed.

quires 50 points (on an age and gender adjusted 100-point scale), whereas 60 points are required during advanced individual training and for the rest of a soldier's military career.² The 50-point level is approximately the 3rd to 5th percentile (depending on age, gender, and APFT event) for active duty soldiers; the 60-point level is specifically designed as the 8th percentile for active duty soldiers (L. Tomasi, personnel communication).

It is possible that some individuals in the APFTEP were those who had suffered injuries in BCT and had less time to perform physical training. Unfortunately, we had no data on injury rates between APFTEP and non-APFTEP soldiers in this investigation. However, unpublished data from a previous investigation⁴ indicated that injury rates in BCT were similar between APFTEP and non-APFTEP personnel.

It may be that many APFTEP personnel have low fitness on entry to service and lower trainability. Both initial training status and genetic endowment play a role in the adaptive response to a physical training program. Individuals engaged in exercise programs of virtually identical frequency, intensity, and duration show great variations in improvements in aerobic power, endurance performance,⁵⁻⁷ and anaerobic capacity.⁸ Groups with low initial aerobic fitness are those most likely to show the largest relative and absolute improvements in aerobic power,⁹⁻¹¹ and this may also be the case for absolute muscular endurance.¹² However, some studies suggest that some individuals with low initial aerobic power also demonstrate small absolute changes in performance,^{5,11} possibly due to hereditary factors.^{7,13-15} A small proportion of individuals may thus have difficulty meeting the minimum passing standards on the APFT even with training, presumably due to low initial fitness combined with lower trainability.

Active duty APFTEP soldiers who did pass the APFT and graduate from BCT were much less likely to be retained in service after 1 year compared with other active duty soldiers matched on age, gender, and enlistment date. If APFTEP personnel are those with lower trainability, this lack of retention in service may not be surprising. Once a soldier graduates from BCT and enter advanced individual training they must pass the APFT at the higher 60-point level.² If the APFTEP soldier completes advanced individual training, that soldier is required to pass an APFT two times per year and may have great difficulty doing so because of their lower trainability. Also, many military occupational specialties have requirements for high physical capability,¹⁶ and individuals who cannot perform the tasks required by their specialties are likely to be viewed unfavorably by their supervisors and peers. This will affect their Non-Commis-

sioned Officer Evaluation Report, their self-esteem, and their motivation to remain in the military.

In conclusion, recruits who entered the APFTEP appear to be less likely to graduate from BCT and much less likely to remain in service up to 1 year later. However, the APFTEP does appear to retain a number of recruits who would otherwise be discharged from service and lost to the Army. In a period when the recruiting of soldiers is difficult, the APFTEP may be a useful tool for reducing attrition.

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