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In January 2013, the Secretary of Defense reversed the Direct Ground Combat Definition and Assignment Rule, opening all combat arms to females. The Marine Corps then conducted its own assessment, analyzing Marine Corps Recruit Depot, Infantry Training Battalion, and Ground Combat Element Integrated Task Force data. These studies showed a significant difference in the performance of all-male and integrated units in the conduct of combat-related tasks. To ease the transition of gender integration, the Marine Corps should begin by placing female infantry Marines only in the 0311 MOS. After ten years, the integration process can be reassessed, and the remaining infantry MOSs can then be fully opened.

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AUTHOR:
Major Lucas A. Balke

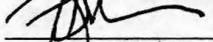
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Mentor and Oral Defense Committee Member: CHRISTOPHER S. STOWE

Approved: 

Date: 4/26/17

Oral Defense Committee Member: Benjamin Jensen

Approved: 

Date: 4/26/17

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Preface

As an infantry officer, I have always been interested in gender integration as it pertains to my MOS. However, prior to attending Command and Staff College, my knowledge of the studies conducted by the Marine Corps was limited to what I read in news articles. As a student with access to the resources provided by Marine Corps University, I wanted to further research this topic. The Marine Corps Archives provided an abundance of information—formal reports, notes, and PowerPoint presentations—which allowed me to adequately research the topic. Doing so has provided me the opportunity to reach an informed opinion on gender integration.

I could not have thoroughly researched gender integration without the help of a few individuals. First, Colonel Matthew Travis provided me with some ideas before I even began my research. Additionally, he put me in touch with a biologist from Alaska, Dr. Matt Cronin. Dr. Cronin had a different interest in the gender-integration topic—one based on biology and evolutionary traits. However, his passion on the topic was of great value to me as he shared articles, suggested books, and discussed ideas over a series of phone calls. Additionally, Dr. Cronin graciously offered to provide feedback on my rough drafts. I am extremely grateful for the time he volunteered while mentoring me through the process.

Additionally, I am extremely grateful for the mentoring provided by Dr. Christopher Stowe throughout the research and writing process. Dr. Stowe kept me on task, provided essential feedback, and helped make me a better writer throughout the editing process.

Finally, I could not have completed this process without the support of my wife, Chelley. Not only did she pick up the slack for me at home while I researched and labored through rough drafts, but she also was invaluable throughout the editing process. Like Dr. Stowe, her edits and comments helped to make me a better writer throughout this process.

Executive Summary

Title: Gender Integration in the United States Marine Corps

Author: Major Lucas A. Balke

Thesis: To better facilitate the integration of women into infantry MOSs, the Marine Corps should implement a phased approach, starting by integrating women into only 0311 billets for the first ten years of the process.

Discussion: Prior to the Secretary of Defense making a final decision regarding gender integration, the Marine Corps conducted a number of studies that compared male and female performance in the execution of physical and combat-related tasks. The primary studies examined in this paper were those conducted by Ground Combat Element Integrated Task Force, Marine Corps Recruit Depot, and Infantry Training Battalion. Additionally, the paper addresses previous military studies, foreign integrated militaries, and female Marine combat awards to provide further information on the topic. Data from these sources showed that there was a statistically significant difference between the performance of men and women in that all-male units outperformed integrated units in the execution of combat-related tasks.

Conclusion: The Secretary of Defense decision regarding gender integration was not supported by empirical data as it did not address data-driven conclusions of the Marine Corps studies. In order to improve the integration process of women into the infantry, the Marine Corps should utilize a phased approach that incorporates the findings of the studies. By initially placing female infantry Marines only in the 0311 MOS, the Marine Corps would capitalize on the negligible differences between 0311 integrated units and all-male units, ensure a support structure is in place for female Marines, and mitigate some of the concerns identified in the 0331, 0341, and 035X billets. This phased approach over a ten-year period would allow the Marine Corps to develop female non-commissioned officers, staff non-commissioned officers, and officers in the infantry. Additionally, the infantry could develop tailored training to improve females' ability to conduct load-bearing tasks. After ten years, a larger pool of female Marines will have gathered in the infantry. This will be an appropriate time to then open the remaining 03XX billets to women.

INTRODUCTION

In June 1981, General Robert Barrow, the 27th Commandant of the United States Marine Corps (USMC), testified before the Senate Armed Services Subcommittee on the topic of women in combat. At the hearing, Barrow stated: “This is not, should not be, about women’s rights, equal opportunity, career assignments for enhancement purposes for selection to higher rank. It is about, most assuredly is about—as has already been pointed out—combat effectiveness, combat readiness, winning the next conflict, and so we’re talking about national security.”¹ Although presented over thirty-five years ago, General Barrow’s comments still address many of the core issues surrounding gender integration today. Opponents of gender integration argue that equal opportunity and women’s rights have driven the push for women in combat arms, not a military need or shortfall. Advocates for change, on the other hand, argue that women have already been serving honorably in direct-combat situations for decades.

Today, the situation surrounding gender integration in the Marine Corps has drastically changed. In January 2013, the Secretary of Defense (SECDEF) rescinded the Direct Ground Combat Definition and Assignment Rule (DGCDAR), opening all military occupational specialty (MOS) positions to women. Following detailed studies, the Marine Corps recommended an exception of policy for particular MOSs. The SECDEF denied the request, upholding the decision to open all jobs to females.

Debate on this topic remains, as proponents of leaving the DGCDAR unchanged argue that those in favor of integration ignore the known physiological differences between men and women in the name of gender equality. The objectives of this paper are as follows:

1. Review data and conclusions in scientific reports by the USMC and other branches of the

military comparing the performance and characteristics of male and female Marines relevant to unit and individual combat effectiveness.

2. Review other nations' policies and experience with women in combat roles.
3. Review documented cases of women in direct combat—specifically, valor awards and combat action ribbons awarded to female Marines.
4. Synthesize and discuss the results of these reviews and other information and derive conclusions regarding women in combat roles.
5. Address two issues regarding the gender-integration debate:
 - a. Considering that combat effectiveness is the primary goal of the USMC, is the SECDEF decision to rescind the 1994 DGCDAR and subsequently deny service requests for exceptions supported by empirical data?
 - b. Is the current gender-integration plan optimal or do adjustments need to be made?

Based on evidence from the Marine Corps Ground Combat Element Integrated Task Force (GCEITF) study, an analysis of women serving in combat arms in other nations, and general research regarding gender integration, units with women perform at a statistically significant lower level than all-male units in combat-related tasks. To better facilitate the integration of women into infantry MOSs, the Marine Corps should implement a phased approach, starting by integrating women into only 0311 billets for the first ten years of the process. After that period, the Marine Corps should then reassess the integration process, with the prospect of opening the remaining infantry billets.

SECTION 1: EMPIRICAL RESEARCH

While positions on issues such as camaraderie and equality are relevant to the gender-integration discussion, those topics can be subjective in nature and offer little in the way of empirical evidence for or against gender integration.² For an objective assessment of whether women should be allowed to serve in infantry units, an analysis of the issue must be based on controlled studies and their subsequent data. The Marine Corps's GCEITF study, conducted in collaboration with the University of Pittsburgh, is an excellent source of data that objectively compares the physical performance levels of women to men. Additionally, both the Marine Corps Recruit Depot (MCRD) at Parris Island, South Carolina, and the Infantry Training Battalion collected data on male and female Marines who went through recruit training and basic infantry training. Previous military studies also offer supporting evidence to the conclusions reached by modern military examinations, as these studies also tested strength and combat-related tasks. Finally, an objective assessment must examine militaries that currently employ women in combat roles. A 2014 After Action Report (AAR) from the Marine Corps Force Innovation Office (MCFIO) provides a detailed examination of gender integration in Israel and Canada, helping to identify the trends and issues that accompany integration.

Ground Combat Element Integrated Task Force

Methods: In June 2014, the Marine Corps activated the GCEITF with the stated purpose to “evaluate the physical performance of individual Marine volunteers in the execution of individual and collective tasks in an operational environment.”³ While the Marine Corps Operational Test & Evaluation Activity was the lead element in conducting the study, the Marine Corps did not take a unilateral approach to research; eight outside agencies provided additional

expertise. Among the notable contributors, the University of Pittsburgh was the GCEITF focus and provided predictors of MOS success based on physical, physiological, and performance factors. Michigan State University conducted a decision-making study and George Mason University conducted a peer review of the GCEITF research plan. Additionally, the Center for Naval Analysis, the RAND Corporation, the Naval Health Research Center, and the Center for Strategic and International Studies all assisted the Marine Corps in ensuring it conducted the GCEITF study as flawlessly as possible to provide accurate data.

The Marine Corps published the findings of the GCEITF study in the GCEITF Experimental Assessment Report (GCEITFEAR). While the report presented the results of infantry, provisional infantry, and combat arms tasks, this paper will focus on infantry-specific tasks. Appendix A lists the fifteen main evaluated tasks for infantry Marines. It also categorizes the findings of the report for each of the fifteen tasks in one of five categories: all-male units significantly outperforming integrated units (Male ++ column), all-male units performing better than integrated units (Male +), integrated units performing significantly better than all-male units (Integrated ++), integrated units performing better than all-male units (Integrated +), and finally, there being no significant difference between all-male and integrated units (=). Specific MOSs are placed in the appropriate column based on the findings. The chart utilizes the 03XX designator when the assessment applies to all infantry MOSs.⁴ MOSs listed with a superscript had amplifying information listed in the notes column. Other information provided in the notes column offers additional explanation and information on outcomes.

Results: When looking at Appendix A, a few trends become apparent. In thirteen of the fifteen tasks, all-male units performed at least some portion of the task significantly better than integrated units, whether that meant more quickly or effectively engaging a target. On six of the

tasks, integrated units performed at least a portion of the task in a manner that was not significantly distinguishable from all-male units. In other words, performance was relatively equal. Finally, in the employment of the M2 machine gun, integrated units had significantly better effects on target than all-male units when employing the weapon system. However, a deeper analysis of the data provides more insight into these three trends.

Discussion: All-male units significantly outperformed integrated units in tasks that required speed of movement while carrying some type of combat load. During the initial movement to an assault position, an approach march, and while conducting mountain-warfare tasks (such as combat resupply, which required hiking, gorge crossing, and cliff ascent), all-male units completed the tasks significantly faster than did the integrated units. Of these three tasks, the data on approach marches perhaps best illustrates the issue at hand. During the GCEITF study, every infantry MOS conducted an approach march of 7.2 kilometers. Per the T&R Manual standard for twenty-mile hikes (32.2 kilometers), Marines must maintain a four kilometer/hour pace. Thus, the GCEITF study used the four kilometer/hour standard. Despite the hike being only 7.2 kilometers, 0331, 0341, and 035X integrated units failed to meet the time standard and were 36, 20, and 27% slower than the all-male units, respectively. Only the 0311 integrated units met the time standard. Notably, every all-male unit met the time standard, and integrated 0311 units were 3% slower than all-male 0311 units. The primary factor in slowing the 0331, 0341, and 035X female Marines down was determined to be the additional weight of the crew-served weapons and ammunition.⁵

Speed is a tenet of Marine Corps warfighting doctrine. MCDP 1 *Warfighting* states that “Speed is a weapon....Superior speed allows us to seize the initiative and dictate the terms of action, forcing the enemy to react to us. Speed provides security. It is a prerequisite for maneuver

and for surprise. Moreover, speed is necessary in order to concentrate superior strength at the decisive time and place.”⁶ While the concept of speed can entail other things such as decision-making or emplacing a weapon system, speed is essential while moving with a combat load in a combat situation. Having a unit that performs movement significantly slower decreases the chances of having an advantage over the enemy because it compromises the ability to possess initiative, security, and surprise. Applying the concepts of MCDP 1 finds that having slower Marines increases the chance that a unit will be forced to react to enemy actions, putting that unit at a disadvantage.

In addition to speed of movement, a second task that stood out when analyzing data from the GCEITF study was casualty evacuation. The 0311, 0331, and 035X all-male squads performed casualty evacuations significantly faster than integrated squads. The three MOSs performed 8, 77, and 159% faster, respectively. The fact that any delay in conducting an evacuation can have critical effects on the casualty magnifies the importance of this data. The 0341 integrated squads performed casualty evacuations comparably to all-male squads in terms of speed. However, integrated 0341 squads generally used only one Marine—a male—to individually “fireman’s carry” the casualty (one Marine carried the casualty over his shoulders rather than having a group of Marines carrying the casualty on a stretcher), largely mitigating the impact of female Marines on the task.

As already noted, integrated units performed at least a portion of six GCEITF tasks in a manner not significantly distinguishable from all-male units. One of those six tasks was 0341 casualty evacuation. There was also mitigating data for another two of those six tasks. First, 0311 integrated squads negotiated the eight-foot wall obstacle comparably to all-male squads. However, many of the females required help getting their packs to the top of the wall, a fact

noted in the report, but not weighed into the assessment. Males in the squads, on the other hand, required no assistance.⁷ Second, in the squad employment of the 81mm mortar, integrated units completed the task comparably to all-male units in overall time. In this task, the mortar squad moved the mortar system and ten rounds approximately 100 meters to a mortar firing position (MPF), got the system fire capable (FIRECAP), and then displaced back to their starting point. Males regularly compensated for slower-performing females during the physically strenuous portions of the task. As noted in the GCEITFEAR, “when slower members of the squad fell back during the initial movement, their delay was masked (not captured) by the fact that the rest of the team began emplacing the 81-mm mortar system concurrently. By the time the weapon system was FIRECAP, all members had arrived at the MFP.”⁸ This is noteworthy because one cannot assume that movement to an MPF will be only 100 meters in a given situation. If a member of the squad lags behind on a longer movement, the faster Marines may not be able to mitigate the slower Marines. Also, allowing members of a squad to fall behind is not a tactically sound decision. While squad members still had visibility of the slower Marines in this study due to the short distance, it would not be safe in a combat situation to split the unit up into “slow” and “fast” Marines simply to get the system FIRECAP quicker. If attacked during movement, a split squad could not fight as effectively.

The three examples just discussed—of 0341s conducting casualty evacuation, 0311 integrated units negotiating an obstacle, and 0341s employing the 81mm mortar system—are important to the overall discussion of the impact of women in infantry units. The findings show that in 50% of the tasks performed equally by integrated units, males compensated for the strength differences between men and women. This increases the overall superior performance of all-male units even more than shown in Appendix A. More significant is the finding that male

Marines often had to compensate for females when conducting physically challenging combat tasks. The GCEITF study contained two days of combat-simulated tasks. If males had to compensate for the physiological difference in strength of females over two days, it is plausible that, during a week-long operation, units might see an increased percentage of compensation among males. Frequent compensation could eventually start to take its toll on male Marines, as they would be forced to do more physical tasks than normally expected. Another important consideration is that combat does not occur in a controlled environment. An IED strike or other attack may cause the male Marines of a fire team to become casualties. In such a case, male Marines will not be able to compensate for females' lower overall strength. Female Marines will be forced to carry casualties. The GCEITF data identified two trends: all-male units regularly performed tasks faster than integrated units and within integrated units, males were forced to compensate for females in strength-related tasks on numerous occasions.

Finally, the GCEITF study demonstrated that all-male units engage targets more accurately for the majority of weapons. The lone outlier occurred with employment of the M2 machine gun. There, integrated 0331 squads engaged targets significantly more accurately than all-male units. Gunners engage the M2 from a mounted platform, however, and therefore do not have to support the weight of the weapon system. For organic infantry squads, the M4—a carbine weighting 7.5 pounds when loaded—was the only weapon fired without statistically significant differences between males and females. For the M27 automatic grenade launcher, M16A4 rifle, and M203 grenade launcher, all-male units had significantly better effects on target than integrated units. Additionally, all-male assault squads also had significantly better effects on target with the M153 Shoulder-launched Multipurpose Assault Weapon (SMAW) than did integrated units.

In engaging targets with the various infantry weapons, the heavier the weapon, the more inaccurate females were in hitting the targets. When engaging an enemy force in a firefight, one wants every advantage possible. When combined with other tasks, increased inaccuracy with weapons made integrated units more vulnerable and less lethal than the all-male units. This undermines the ability to send the most effective units as possible into combat. If females shoot poorly but move faster, one could argue that speed would offset poor marksmanship. Similarly, if females move more slowly but shoot more accurately, one could argue that better marksmanship would mitigate any differences in speed. However, females performed notably below males in both categories.

In conclusion, the GCEITF study found that all-male units outperform integrated units in basic combat tasks. As stated in the conclusion of the Analysis of the Integration of Female Marines into Ground Combat Arms and Units, “the integration of females into the combat arms MOSs and units will add a level of risk in performance/effectiveness and cost...the bottom line is that the physiological differences between males and females will likely always be evident to some extent.”⁹ The significant differences in speed of movement, casualty evacuations, and engaging targets with progressively heavier weapons had two major effects: reduced combat effectiveness and the necessity for male Marines to compensate for female Marines. While there were still significant differences between all-male and integrated 0311 units, the differences were not as pronounced as with the 0331, 0341, and 035X MOSs. This is something that the Marine Corps should recognize as gender integration progresses so that steps can be taken to address potential detriments to the overall lethality of the force.

MCRD 03XX and Combat Arms Data

Methods: As part of its assessment of women in combat arms, the Marine Corps also analyzed results from MCRD training in order to get a wider pool of data. Specifically, an assessment team gathered scores for the Combat Fitness Test (CFT) and the three events that make up the CFT: Movement to Contact (MTC), Ammo Can Lifts (AL), and Maneuver Under Fire (MUF). The team also gathered scores for the Physical Fitness Test (PFT) and pull-ups (PU), as well as height and weight data.¹⁰ It then compared male recruits designated as 03XX to female recruits designated as 03XX, and male recruits assigned to a combat arms MOS to female recruits assigned to a combat arms MOS. The data is presented in Tables 1 and 2.

Results:

Table 1: 03XX MCRD Male/Female Physical Test Scores Comparison¹¹

EVENT	95 th Female Percentile = ____ Male Percentile	Average Female Score	Average Male Score
Combat Fitness Test	3 rd	237	290
Movement to Contact	16 th	3:25	2:49
Ammo Can Lifts	11 th	63	98
Maneuver Under Fire	9 th	3:18	2:26
Physical Fitness Test	15 th	186	259
Pull-ups	23 rd	6.3	16.1
Height (inches)	24 th	64	69
Weight (pounds)	39 th	131	164

Table 2: Combat Arms Male/Female Physical Test Scores Comparison¹²

EVENT	95 th Female Percentile = ____ Male Percentile	Average Female Score	Average Male Score
Combat Fitness Test	1 st	238	287
Movement to Contact	14 th	3:26	2:54
Ammo Can Lifts	4 th	59	98
Maneuver Under Fire	14 th	3:10	2:28
Physical Fitness Test	22 nd	191	256
Pull-ups	15 th	7	16
Height	17 th	63	69
Weight	28 th	123	164

To put the data in perspective, the Marine Corps determined how the 95th percentile of female Marines compared to male Marines in terms of a corresponding percentile. A percentile is a statistical tool to help rank data. For example, individuals in the 95th percentile have a score in which 95% of the other values lie below that individual, and 5% lie above it. The column labeled “95th Female Percentile = ___ Male Percentile” in both Tables represents this data. In the category with the best performance for female Marines (pull-ups), the 95th percentile 03XX females were equivalent to the 23rd percentile for males (i.e. the top female performers beat 23% of males). If one averages the actual physical events (MTC, AL, MUF, and PU) and ignores the cumulative scores (CFT and PFT) and the height/weight data, the 95th percentile of 03XX female Marines and combat arms female Marines corresponded to the 18.5th and 11.7th percentile, respectively, of male 03XX and combat-arms Marines. This means that the best 5% of females performed as well as the lowest 19% (03XX) and 12% (combat arms) male Marines.

Discussion: The data comparing male and female Marine performance in physical tests as presented in Tables 1 and 2 are noteworthy. While the data are from a small sample of events, they are consistent with the findings of the GCEITF study. Male Marines regularly outperform female Marines in physical events to a significant level. If a male 03XX is replaced by a female 03XX, in the majority of cases it will not be an even exchange in terms of physical capabilities of the Marine. Even a top-performing female (95th percentile) is likely to be in the bottom 20% when compared to men. Females are likely to perform physical tasks slower and in certain cases may need assistance from stronger male Marines.

Infantry Training Battalion Data

Methods: Female Marines that volunteered for basic infantry training proceeded to Infantry Training Battalion (ITB), the MOS-producing school for infantry Marines. ITB compared the

performance of male and female Marines conducting the same tasks. Additionally, it compiled data on conditioning hikes and obstacle course failure rates.

Results: During timed execution of the Marine Corps obstacle course, females failed at a rate of 67.3%, which was 11.5 times that of the male failure rate (5.8%). Additionally, students at ITB conducted hikes of five, ten, fifteen, and twenty kilometers. Male failure rates on these hikes were 0.1%, 4.78%, 3%, and 3%. Female failure rates were 2.31%, 11.48%, 26%, and 28%.¹³ Compared to male Marines, females were 23.1, 2.4, 8.7, and 9.3 times as likely to fail the hikes.

Discussion: The ITB hike failure rates are significant for two reasons. First, as presented in the discussion comparing MCRD fitness scores, replacing male infantry Marines with females can be assumed to lower the physical capabilities of the average 03XX Marine in an infantry unit. Second, the integration of females in infantry units can affect their ability to accomplish a key infantry task—the approach march. The GCEITFEAR addresses this topic by referencing the Infantry Training & Readiness (T&R) Manual. Specifically, Marines are to conduct a twenty-mile (32.2 kilometers) hike in eight hours. The manual states that in doing so a unit should expect to maintain a 90% combat effectiveness.¹⁴ Using the given hike data, placing female Marines in infantry units will heighten the expectation placed on male Marines if the unit is expected to remain 90% combat effective.

In an all-male unit, ten out of 100 Marines could fail to complete an approach march and the unit would still be combat effective, according to the T&R Manual. For a comparison, we can assume that an infantry unit contains 10% females. (This would most likely be on the high end in terms of predictions regarding how many females will make up integrated units in the future. However, it is helpful in understanding this hypothetical situation.) If 28% of females fail a twenty-kilometer hike, which is 12.4 miles, it can be assumed three females will fail to

complete a 30.2-kilometer hike. This fact means that of the ninety male Marines, only seven males can be combat ineffective for the unit to still be combat effective. Seven Marines equates to 7.8%. If female hiking statistics do not change, male hike-drops will have to remain below 10% for the unit to remain combat effective.

Critics of this hypothetical situation could make a few points. First, only 3% of male Marines failed the fifteen and twenty kilometer hikes (9.3 and 12.4 miles respectively), so it should not be a problem for male Marines and units should still be able to maintain combat effectiveness. Second, these were entry-level MOS-school Marines, and with continued training, the female Marines should improve at hiking. There is currently no data on how much they could be expected to improve. However, over a quarter of females from the ITB study could not compete their longest hike of twenty kilometers. Female failure rates rose as the length of the hikes increased. Therefore, it can be postulated that even more female Marines from the same group would fail a twenty-mile hike.

This analysis must go back to the fact that if a Marine cannot compete a task, whether male or female, then someone else has to compensate. Approach marches train Marines for long foot movements in combat. In combat, if a Marine becomes combat ineffective, it places an additional burden upon other Marines. Others will need to carry his/her gear, weapon, and ammunition. Therefore, all efforts should be made to keep combat effectiveness high, preferably well above the 90% threshold suggested by the T&R Manual. The ITB data showed a significant delta between male and female failure rates—3% for males compared to 28% for females—on the longest evaluated hike. While approach marches are just one aspect of the overall gender-integration study, the data presented should be appropriately weighed in the overall analysis.

Integrated units must consider how best to improve female hike times to improve overall combat effectiveness.

Previous Military Studies

Newer research, improved technology, or previously unknown information can limit the usefulness of older studies. Thus, the GCEITF study will carry more weight in comparison to older studies. However, as stated in Jude Eden's *Military Review* article entitled "Women in Combat: The Question of Standards," it is notable that many of the current findings merely reinforce previous data. Eden looked at the military services' integration of females into all-male units, and addressed physical testing done as women were first allowed to attend West Point, the Naval Academy, and the Air Force Academy. While Eden made a compelling argument that separate gender standards arose after many women failed to meet minimum standards used for decades prior, the pertinent information for the purposes of this paper is the actual data she presented.¹⁵

In 1981, the Army established MOS-specific tests in order to combat the high injury rate women sustained as they entered fields with no performance-specific physical tests in place. The Army developed the Military Entrance Physical Strength Capacity Test, which tested the ability of men and women to lift various weights. The Army found that in the heaviest weight category—100 pounds—82% of men could pass the test, while only 8% of women succeeded. Despite the fact that the test aimed to prevent further injuries by denying unqualified personnel from being assigned to a particular MOS, it was abandoned over accusations of discrimination and sexism.¹⁶

Eden next discussed a 2013 study by the Marine Corps which produced findings similar to the 1981 Army test. The Marine Corps conducted combat-related tasks on 409 males and 379

females. The tests included the clean-and-press to simulate overhead combat lifting, an artillery round lift-and-carry, and the execution of an obstacle course. For the overhead lifts, the test progressed to heavier weights, with the maximum being 115 lbs. For this final weight, 80% of the men and 8.7% of the females successfully completed the lift. These numbers were almost identical to the 1981 Army test. Thus, in similarly conducted strength tests by two different services, little changed in thirty-two years.¹⁷

Perhaps as important to analysis as the similarity in strength-test results is injury data. The Air Force Academy tracked injury rates following the integration of women into the Cadet Wing. In her article, Eden quoted Brian Mitchell's *Women in the Military* regarding the Air Force Academy's tracking of injury rates following the integration of women into the cadet wing: "Women suffered nine times as many shin splints as men, five times as many stress fractures, and more than five times as many cases of tendinitis."¹⁸ These injuries came as women struggled on runs, obstacle courses, and marches. Eden also cites studies that showed females in the British military were injured 7.5 times more often than men doing the same training. Among those dropped from training at Marine Corps Officer Candidates School, females injury rates were 3.5 times higher than those of males.¹⁹ Data from ITB training showed females were five times as likely to be recycled or placed on light duty due to injury, further supporting higher rates of injury among females under intense physical demands.²⁰ Not only do these injuries potentially affect Marines for the rest of their lives, but they also result in higher medical costs for the government and increased lost work days for the military.

A counterargument to these statistics states that these injury rates have not affected the ability of women to serve in the military. Also, while women still get injured more during the line of duty, in the case of off duty injuries, men are injured more. This argument ignores a key

point. Entry-level training is very rigorous. However, Marines often see a sharp drop-off in training difficulty in terms of hikes and weight-bearing tasks once they begin working in their non-combat arms MOS. For infantry Marines, a sharp drop-off does not exist. In fact, training gets tougher and hikes get longer. In light of this fact, injury data is a critical consideration in the gender-integration process. In the end, Eden's article highlights that the more similarities among test results, the stronger the case that no resounding bias, sexism, or discrimination exists. There are simply physiological differences between men and women, and these differences are shown in multiple research studies to produce similar results regarding injuries when conducting sustained combat tasks.

Foreign Integrated Militaries

In 2014, MCFIO visited foreign military services that have already integrated women into combat arms jobs and subsequently published an After Action Report (AAR) summarizing its findings. Two of the countries analyzed are commonly referenced in pro-integration discussions: Canada and Israel. The MCFIO AAR presents information that is applicable to the US military gender-integration debate.

Gender discussions regarding the military commonly reference the Israeli Defense Force (IDF) because of the large percentage of its military that is female. Women comprise 20% of the professional military and 33% of conscripts in the IDF. This compares to only 14.5% in the United States and 14.8% in Canada.²¹ Israel, however, faces a much different environment than these countries because it is forced to conscript forces due to a manpower shortage. Additionally, a notable portion of its male soldiers are uninterested in holding combat billets. As the MCFIO report highlights, "this lack of quality drives the necessity of finding ways to employ women in

the combat arms.”²² A personnel shortage, as opposed to gaining a specific tactical advantage or supporting equal opportunity, drives women’s service in combat arms in the IDF.

The IDF’s integration of women into combat arms has brought about a system called the load carriage index (LCI). The LCI is a gender-norming ratio that utilizes lean body mass and dead-mass figures to decrease the chance of physical injury in its soldiers. The result of the index is that females are limited to carrying 33% of their body weight and males 60%. Tied to this limit is that women only serve in light-infantry units that are vehicle mounted and do not conduct regular foot movements like American units. Finally, IDF units tailor tasks to the capability of individual soldiers. An example of this is tasking fourteen female IDF soldiers to do what ten males do in order to spread-load equipment.²³

The information presented on the IDF by the MCFIO AAR is significant because it frames the IDF situation in relation to the US military. Gender integration in the IDF is not driven by an operational need for females or because females have proven to meet the same standards as have their male counterparts. Rather, manpower issues drive integration and the inclusion of females into combat arms necessitated the IDF to develop special accommodations. Another important point is that because IDF female infantry soldiers do not carry out the same missions as US light-infantry units, a true comparison between the two cannot be made. Finally, the LCI, as well as tailored missions for females, demonstrates that the IDF is innovating and thinking “outside the box.” It has not blindly assigned women to fill the same roles as men without accounting for well-documented anatomical, physiological, and behavioral differences. LCI and tailored missions are rarely mentioned by integration advocates, leaving the impression that females serve comparatively to males in the IDF. With the restrictions identified by the MCFIO AAR, as well as the fact that only 3% of combat jobs (not limited to infantry) are filled

by women, the impact of women in the IDF combat arms is below popular assumptions cited in the US debate.

Perhaps a better comparison to the current US situation is that of the Canadian Armed Forces (CAF), as they were driven by political and legal reasons to integrate their forces in the late 1980s. Like the United States situation, an operational shortfall or specific need did not drive the CAF decision. Despite those similarities, there are some significant differences that must be noted. First, all of the individual services within the CAF have minimum-acceptable operational fitness levels. The performance tasks are not a physical-fitness test. In fact, only a limited number of fields, such as special operations, are permitted to have stringent fitness tests. As for combat arms, there is no separate test. Despite the low minimum physical standards used by the CAF, female participation in ground combat arms remains well below the 14.8% of women that fill their overall ranks. Only 2% of officers and 0.4% of enlisted female soldiers fill infantry billets.

Like the comparison with the IDF, it is important to compare the US situation to the CAF to put the debate under another lens. Doing so highlights a few points. First, the US situation cannot be compared to that of Canada without qualification. While the CAF maintained low minimum operational standards, US military leaders and politicians have remained adamant that standards will not be lowered. Additionally, the combat arms will have physical standards tied to tasks pertinent to the specific MOS. Therefore, it will be more challenging for females to earn spots in the combat arms in the US military than in the CAF. Second, the US should recognize that its percentage of females in the combat arms will likely never match the percentage of women in the military at large, if experiences of the CAF and IDF are any indication. This point must be considered for planning purposes. It is noteworthy that Canada has lower physical

standards and only 2% of officer and 0.4% of enlisted infantry billets are filled by women. Finally, gender-integration proponents have long argued that female officers are at a disadvantage for promotion to admiral or general officer because they do not have the same combat experience. Even without combat arms positions, female US officers have actually been promoted to the highest ranks at a higher percentage than their Canadian peers (4.35% of Canadian general-level officers are female compared to 7.1% of US general-level officers). Because of this fact, and despite some predictions to the contrary, the US military might see only negligible changes in promotion percentages.

SECTION 2: DISCUSSION, EVALUATION, AND RECOMMENDATIONS

Integrationist Arguments

Arguments favoring integration have often been strongest coming from women with combat experience. One such example is Zoe Bedell, who served as a Marine logistics officer from 2007-2011. Bedell spoke at a TEDx Harvard Law School event on the topic of women in combat, regarding her time leading a Female Engagement Team (FET) while deployed to Afghanistan. Per Regional Command Southwest's official website, FETs provide a unique interaction with local communities through their direct interaction with women and children. FETs help in respecting cultural sensitivities and often gain valuable information that would not be attained by male units.²⁴

Speaking of her FET, Bedell said "We were living and working with infantry units. That means that when the units went on patrol into the villages if we wanted to talk to Afghans, and that was our job, we went on patrol into the villages. If you're going on patrol, everyone's

wearing the same gear, everyone's carrying the same rifle. And let me assure you that if someone starts shooting, we're shooting back regardless of what the policy says."²⁵ For those without resident knowledge of the infantry, Bedell's comments could be misleading. Her contention that FET Marines patrolled with infantrymen, wore the same gear, and carried the same weapons is not entirely accurate. FET Marines, just like any other unit, carry gear specific to their mission. They do not carry crew-served weapons or the corresponding ammunition. This is a significant point, as the difference between an M240B medium machinegun and M4 carbine is eighteen pounds, not including the extra weight in ammunition or additional gear common to an infantryman. Infantry Marines patrol almost every day for an entire deployment, in addition to conducting sustained offensive operations when the mission dictates. FET Marines, on the other hand, are requested as needed due to their limited availability and unique skillset. Therefore, while they do patrol with infantry Marines, FETs do not patrol as often. While the value of FET Marines should not be undermined, it is also important for those debating the issue of gender integration to understand the context in which FETs typically operate.

Some of the strongest and most compelling integration arguments have come from retired Army Colonel Ellen Haring, who became well known after filing a lawsuit against the government to reverse the ban on women from being able to serve in combat-specific jobs. Haring makes a persuasive case for gender integration while focusing on the concept of collective intelligence.

Haring addressed collective intelligence in her 2013 *Proceedings* article entitled "What Women Bring to the Fight." There she cited a Carnegie Mellon and Massachusetts Institute of Technology study that found "groups are collectively more intelligent than individuals on a range of simple to complex tasks. Additionally, the research found that a group's collective

intelligence tends to increase as the percentage of women in the group increases.”²⁶ In order to continue to be an elite military service, the Marine Corps must aim to be intellectually superior and ensure it takes all measures to outthink the enemy. When planning an operation, a staff must have critical and creative thinkers and must avoid unimaginative groupthink. As Haring indicates, women bring a different perspective and are inherently valuable to a group’s overall intelligence. To the point of collective intelligence, Haring is correct that infantry units would benefit from women, especially in the context of planning.

As strong as Haring’s point is regarding collective intelligence, she leaves the following two questions unanswered: 1) How will physical-strength differences between men and women be mitigated? and 2) Will there be enough women in the infantry to affect a unit’s collective intelligence? Haring closes her article by stating “this intelligence need not come at the expense of physical strength, but rather can complement it.”²⁷ The quote aims to address the anti-integrationist argument that infantry units would suffer by including women because they are not as capable of completing strength-related tasks. She neglects to address the physical-strength concern. Had she argued that there will be some give-and-take by adding women to an infantry unit, and that any loss in capability due to reduced individual strength would be outweighed by the improved collective intelligence, then Haring’s argument would have been more sound. It would have addressed a weakness by mitigating it with facts. Instead, Haring failed to explain how the loss of physical strength would be mitigated.

Haring also fails to address a second key factor in her reasoning. Essential to her position is the fact that there will actually be women in an infantry unit to improve collective intelligence. Currently, about 25-33% of female enlisted Marines are successfully completing initial infantry training and will thus proceed to an infantry battalion. These women, although able to counter

some groupthink mentality, will have a limited impact until they pick up sufficient rank and are placed in leadership billets. Even then, enlisted Marines operate more on the tactical level and, unlike officers, are not primary planners for operations. No female officers—out of thirty-three that have attempted—have passed the USMC Infantry Officer Course. While it is likely a female will pass in the future, female officers should not be expected to make up a notable portion of infantry planning staffs until significant changes occur in the percentage of females that pass the course. Until then, female officers will have a minimal impact on collective intelligence in the infantry.

Women Serving in Combat Units

Gender-integration proponents have long argued that women have served in combat roles and have done the same thing as their combat arms-serving male counterparts. They cite examples of females being awarded for valor in combat. While there is no reason to discount the actions of these women who served remarkably in combat, there is a difference between engaging the enemy and actually being in an infantry unit. Engaging the enemy does not prove infantry capability.

This assessment will look specifically at the Marine Corps, as data is made available through the Marine Corps Archives. In February 2015, the MCFIO, with the help of the Awards Branch (MMMA-2), Manpower and Reserve Affairs (MR&A), pulled data on all Combat Action Ribbons (CAR) and combat valor awards for female Marines. This included award citations and full summary of actions.²⁸ They found evidence of 443 CARs awarded to females, 422 of which were from the wars in Iraq and Afghanistan. All CARs involved defensive actions in response to an enemy attack; no female Marines awarded CARs were part of offensive operations. The female Marines were members of units conducting convoys, security at forward operating bases,

or often serving as a Lioness or part of a FET, in Iraq and Afghanistan respectively.

Additionally, only 15% of the females that received CARs actually returned fire on the enemy.²⁹

MCFIO also pulled data on four valor awards for female Marines in Iraq and six from Afghanistan.³⁰ Of those awards, again, all were from defensive actions in response to an enemy attack. All of the females awarded from Afghanistan served as members of a FET. The common narrative for those events was that the FET Marines were supporting an infantry unit, came under enemy fire, and often returned fire. The FET Marines were normally identified as having conducted thirty to seventy patrols over the course of their deployment. In all cases, the actions that earned the Marines a valor award were not part of sustained offensive operations.³¹

This information was not presented to diminish what female Marines have done in combat. In fact, by reading the summary of actions from the FET Marines awards, one can find numerous examples of how these female Marines were able to have success gathering information that male Marines were not able to do. Rather, this information is presented to correct claims that female Marines are doing the same things as infantry Marines in combat. The fact that female Marines have been attacked and returned fire is irrelevant. The Marine Corps has long trained all recruits under the motto “every Marine a rifleman.” Thus, it is expected that Marines will return fire and fight the enemy. Rather, the job of an infantry Marine entails much more. It includes continuous offensive operations to close with and destroy the enemy and daily operations carrying crew-served weapons in addition to the assault load. These were not the daily tasks of the Marines identified in the CAR and valor-award analysis. An infantry Marine may be expected to perform numerous tasks that are more physically challenging than actually engaging the enemy in combat. This was evident in the GCEITF study. The most physically challenging tasks were not engaging targets, but rather getting to the fight—approach marches, negotiating

obstacles, and occupying firing positions. Using examples of females returning fire on the enemy or of individual heroic actions to build an argument for gender integration neglects to account for the physical demands of combat that females physiologically have difficulty achieving or sustaining. This viewpoint ignores enduring missions, gear carried by the Marines in the examples, and data from the GCEITF study. To go back to General Barrow's 1981 testimony before the Senate Armed Services Subcommittee, he perhaps summed it up best when he said:

Those who advocate change have some strange arguments, one of which is that the de facto women in combat situation already. That women have been shot at, that they've heard gunfire, they've been in the areas where they could be hit by missiles, well, exposure to danger is not combat. Combat is a lot more than that. It's a lot more than getting shot at or even getting killed by being shot at. Combat is finding and closing with and killing or capturing the enemy.

General Barrow's comments apply to the discussion at hand. The performance of FET and Lioness Marines is not an appropriate comparison when looking to project how women will perform in the infantry. A more valid predictor of performance would be based on how female Marines perform infantry-specific tasks.

Gender Norming

The Marine Corps currently has gender-normed physical-fitness standards for the PFT and CFT. This means that scoring standards are based on one's gender, and are not the same for all Marines. The reasoning given by the Marine Corps for the use of gender-normed scoring is that these tests are a health assessment, not a job-related skills test. If specific MOSs have a physical requirement, those tests will be scored utilizing the same standards for males and females. Integrationists see no issue with this fact because job-specific standards have not been lowered. The problem with this argument is two-fold.

PFT and CFT scores factor into promotions for young Marines. Thus, female Marines have the benefit of being able to run slower and do fewer pull-ups and still earn the same score

as male Marines. By accepting gender-normed scoring for fitness tests, integrationists acknowledge anatomical, physiological, and behavioral differences between males and females. However, this same group minimizes the significance of these differences as presented in the studies discussed throughout this paper. Thus, integrationists want the benefit of gender-normed scoring for fitness tests to make females more competitive for promotion, but then ignore the same anatomical, physiological, and behavioral differences while not offering solutions to address issues such as the large gap in conditioning hike failure rates.

Second, since 2009, Marines have been required to run the CFT to ensure they maintain combat readiness. The test's three events are all combat-focused. The CFT, therefore, is not a health assessment like the PFT. The CFT was added as a combat-related test and should be treated as such.

In some aspects, gender norming is fair. A female who runs a 21:00 three-mile test has been found to be in better physical shape than a male that runs the same time. Therefore, it can fairly be applied to the promotion process. Additionally, gender norming can occur while still having gender-neutral MOS standards. Gender norming is important to the topic of gender integration because there is inconsistency in its current application. Because CFT tasks are combat related, not health-based, utilizing the same scoring standard for both genders fixes the discrepancy. There is no reason to change the current PFT scoring system as the test is a health assessment.

Final Thoughts

Gender integration is a highly controversial topic. Individuals on opposing sides of the issue will often accuse the other of either being a sexist or a feminist with clouded vision. The issue is too important for emotional labels. Rather, the United States is morally obligated to

make the best decision to maximize national security. If there are no compelling reasons to keep women from combat arms, or if the existing reasons could be mitigated, then qualified women should be given the opportunity to serve in them. However, if women present a specific vulnerability, decrease the lethality and combat effectiveness of a unit, or decrease the capacity to process casualties, then the nation is morally obligated to mitigate these factors.

The Way Forward: Recommendations

To conclude the discussion on gender integration in the infantry, the two questions that opened up this paper must be readdressed: 1) Considering that combat effectiveness is the primary goal of the USMC, is the SECDEF decision to rescind the 1994 DGCDAR and subsequently deny service requests for exceptions supported by empirical data? 2) Is the current gender-integration plan optimal or do adjustments need to be made? The information presented on MCRD fitness scores, ITB fitness scores, and the GCEITF study are of great value because in addressing these questions, the studies offer unbiased data.

The answer to the first question, regarding whether the SECDEF decision is supported by empirical data, is no. After analyzing data from the MCRD, ITB, and GCEITF studies, it is evident that there are tactical disadvantages to gender integration. As discussed throughout this paper, numerous studies identify that all-male units provide greater speed, combat effectiveness, and, ultimately, lethality in the face of the enemy. That point cannot be understated, as it relates to the core of the infantry mission. At the same time, integrationists raise a valid question: If a female Marine can meet the same minimum standards that a male can meet, then why should she not be allowed to join the infantry? Even if the 95th percentile of female Marines are likely to fall in the bottom 20% when compared to male physical capabilities, those female Marines still meet the minimum standard.

The primary reason the SECDEF decision is not supported by empirical data is because it ignores empirical data; it does not address the results of any study. When the Marine Corps made its recommendation to the SECDEF regarding gender integration, both the Marine Corps and the SECDEF had the benefit of having plentiful data upon which to base a decision. Data presented throughout this paper provide two logical decisions for the SECDEF: 1) Gender integration is not approved because all-male units significantly outperformed integrated units or 2) MOSs will integrate females, but will consider the results of the studies conducted. The first option does not warrant further discussion in this paper because the SECDEF already made his decision. For the second option, specific factors could then be identified to the combat arms MOSs as focus areas for the integration process. Tasking MOSs to address focus areas is a proactive measure that would ease the transition process. The following are examples of possible focus areas: load-bearing and conditioning hike capacity, common injuries, and marksmanship performance. Addressing these areas through proactive training would increase the success of integration because doing so capitalizes on the data-based conclusions of the Marine Corps studies. The current gender-integration plan does not reference conclusions of the studies and is therefore not supported by empirical data.

Because gender integration has already been approved, and all services have already begun to execute their integration plans, the second question is the most pertinent: Is the current gender-integration plan optimal or do adjustments need to be made? This question allows the Marine Corps to take advantage of the substantial effort that was made studying gender integration as well as resulting data. While previously discussed data clearly demonstrated that all-male units outperformed integrated units, it did not show as significant a difference between 0311 integrated units and 0331, 0341, and 035X integrated units. Coupled with the fact that there

will likely be only a small percentage of infantry billets filled by females, it would be prudent to begin gender integration in a phased approach. Specifically, female Marines should only integrate to the 0311 MOS for the first ten years of the process.

Beginning gender integration by initially opening only the 0311 MOS provides a few advantages. Concentrating infantry-qualified females into 0311 billets would initially mitigate the vulnerabilities identified in 0331, 0341, and 035X MOSs. Second, it would capitalize on the fact that there was a more negligible difference between 0311 integrated units and all-male units by putting the first female infantry Marines in a better position to succeed. Third, doing so would increase the support structure for female infantry Marines. While female Marines rightfully want equality and the chance to be treated the same as their male counterparts, support structures help people get through challenges. Having female infantry Marines initially serve only in 0311 billets would increase the chances that these Marines would get to serve with other females at the small-unit level. This would help improve long-term resiliency.

This proposed plan is not an argument against integration. Rather, it is an argument for conducting the process in a more informed, progressive manner. The recommended ten-year period for only 0311 integration builds on this logic. In order to move closer to the end state of the projected percentage of females to ultimately fill the infantry ranks, battalions need more than just first-term enlistment female Marines. They need non-commissioned officers, staff non-commissioned officers, and officers. The only way to build this experience within the infantry MOS is through time. Ten years will give the infantry time to develop Marines in these ranks. A ten-year period will also provide other benefits such as giving the Marine Corps time to evaluate how integration is proceeding and identify training plans that help females improve their hiking capabilities, load-bearing capacity, and their ability to fire the heavier weapons.

Finally, a phased approach to integration would give the Marine Corps time to mitigate the impact of having female Marines in crew-served weapon billets. To begin this discussion, it is assumed that the Marine Corps will no longer need to have a Lioness or FET program because females will already be in infantry units. To capitalize on the past success demonstrated by such programs, all female infantry Marines should receive basic FET-type training. Such skills are most applicable to the basic rifleman (0311) billet. Initially, there will be a minimal number of women in the infantry. If some of the few females filled the 0331, 0341, or 035X billets instead of the 0311 billets, it could be counterproductive. Either the female Marine would be unused as a FET because she was required to fill her crew-served weapon billet in support of the infantry, or she would fill the FET-type role and leave a shortfall in a critical crew-served weapon billet. Neither situation is ideal. For these reasons, it would be beneficial to initially integrate women into 0311 billets within the infantry until a bigger pool of such Marines accumulated, giving the commander more options in terms of how to best task-organize his/her personnel.

Gender integration is often an emotionally charged topic. Using data-driven discussion helps to neutralize the debate. The Marine Corps has a plethora of objective data available through its own testing at MCRD, ITB, and through the GCEITF study. Additionally, it has examined how other nations have already utilized women in combat arms jobs. Data has shown that anatomical, physiological, and behavioral differences simply cannot be ignored as all-male units outperform integrated units. At the same time, it is recognized women offer unique capabilities by their ability to interact with women in other cultures and through the benefits of diversity in the area of collective intelligence. In the end, these benefits do not eliminate one main fact—combat effectiveness and lethality will likely be reduced to some extent based on the physiological differences between male and female Marines. This conclusion is based on all

studies addressed in this paper. Allowing female Marines to join the infantry—as long as standards remain the same—is a fair policy. However, it is not prudent to make such a policy change without applying any of the data-based conclusions of the Marine Corps studies. In conclusion, to best facilitate the integration of women into the infantry MOSs, the Marine Corps should implement a phased approach that initially places female Marines in the 0311 MOS for the first ten years of the integration process. After that period, the Marine Corps can reassess the process, with the ability to open the additional infantry billets. Such an approach will increase the likelihood of success for the initial female infantry Marines and will help the Marine Corps best support the process.

Appendix A

	Male ++	Male +	=	Integrated +	Integrated ++	Notes
Initial Movement	03XX					-Integrated squads took 5, 18, 14, and 17% longer for 0311, 0331, 0341, and 035X movement times
Negotiate Obstacles (8ft wall)	035X		0311			-Females required help getting packs to the top of the wall -0331s and 0341s occupied firing positions during this time
Mortar Squad: provide indirect fire	0341					
Machine Gun Squad: provide suppressive fire	0331 ¹		0331 ²			1. All-male squads were performed task significantly faster 2. No significant differences in effects on target
Rifle Squad attack and counterattack	0311 ¹					1. Probability of hit on target was significantly higher in all-male units for every organic squad weapons except the M-4 (M27, M16A4, and M203) -For integrated squads, accuracy declined and the % difference between males and females increased as the weight of the weapon increased -Provisional infantry males (didn't go to MOS school) still significantly outshot females that went to MOS school
Assault Squad: engage target	0341 ¹ 0341 ²					1. Speed in engaging targets with weapon system 2. Hits on target
Movement to limit of advance	0311 ¹					1. Based on speed -Longer time means less time to prepare for an enemy counterattack
Casualty evacuation	0311 ¹ 0331 ² 035X ⁴		0341 ³			1. Integrated 0311 units took 8% longer 2. Integrated 0331 units took 77% longer 3. Integrated 0341 units generally performed a single-Marine fireman's carry using a male to carry the casualty 4. Integrated 035X squads generally took 159% longer
Approach march	03XX ¹					-7.2km was hiked at a 4km/hr pace based on T&R standards for 20mi/32.2km hike at a 4km/hr pace -All-male squads, regardless of MOS, were significantly faster -03XX male units met all standards -Of integrated units, only 0311s met the standard -0331, 0341, and 035X did not meet the standard -0331, 0341, and 035X had to carry crew-served weapon, tripod, ammo, etc. 1. 0311, 0331, 0341, and 035X took 3, 36, 20, and 27% longer respectively to complete the approach march
Fire teams prepare defensive fighting positions			0311			-0311 fire teams dug two 2-man fighting holes in a two-hour time limit -50% dug while 50% stood security -Marines rotated digging every 15 minutes
Squad employment of M2 Machine Gun	0331 ³		0331 ¹	0331 ²		1. Time to mount/dismount M2 from a vehicle 2. Integrated squads had significant more hits on target than all male units 3. Integrated squads took significantly longer to displace from the firing line to a position of cover
Squad employment of 81mm mortar			0341 ¹			-81mm mortar and 100 rounds were moved 100m 1. Slower female Marines were "masked" because faster Marines kept going and often had the system FIRECAP by the time slower Marines arrived
Squad employment of TOW Missile System	035X ¹ 035X ² 035X ³					1. Time to mount/dismount system in a vehicle 2. Time to employ and engage system on a tripod 3. Target hit percentage
Mountain Warfare	03XX ¹					-Hike was 4.6km with 175m increase in elevation 1. All-male units were faster on hikes, gorge crossing, and cliff ascent
Fatigue and workload	03XX					-Stats based on individual Marine responses to a survey
				Male ++		Significantly better performance by all-male units
				Male +		Better performance by all-male units
				+		No significant difference between all-male and integrated units
				Integrated ++		Better performance by integrated units
				Integrated +		Significantly better performance by integrated units

Notes

¹ <https://www.youtube.com/watch?v=fy--whDNNKk>

² In preparation for this paper, I read a number books on the topic of women in the military. Portions of the books discussed the negative effect of women on male morale, discipline, etc. Opponents of integration argue that these are significant factors and weigh in favor of the overall argument to keep women out of the combat arms. Integration proponents generally argue that these are “men’s issues” to overcome. I.e. women would bring added benefit to combat arms units and the males need to learn to deal with integration, just as the military as a whole, has already done. According to their arguments, moral and discipline issues are largely overblown. For a more in-depth look at this topic, see *Co-Ed Combat* by Kingsley Browne; *Men, Women & War* by Martin van Creveld; and *The Kinder, Gentler, Military* by Stephanie Gutmann. While these topics help frame the gender-integration argument, and are important for discussion, they are not the primary focus of my paper, as I wanted to focus on empirical research.

³ Marine Corps Operational Test and Evaluation Activity, *Ground Combat Element Integrated Task Force Experimental Assessment Plan*, staff study, 2014, 2.

⁴ 03 is the designator for the infantry MOS. The third and fourth number identify the specific job within infantry such as 11 for rifleman, 31 for machine gunner, 41 for mortarman, and 51/52 for assaultman. In this paper, 035X will refer to all assaultmen—0351 and 0352 Marines.

⁵ Marine Corps Operational Test and Evaluation Activity, *Ground Combat Element Integrated Task Force Experimental Assessment Plan*, staff study, 2015, 1-43.

⁶ Headquarters US Marine Corps, *Warfighting*, MCDP 1 (Washington, DC: Headquarters US Marine Corps, June 30, 1991), 40-41.

⁷ Marine Corps Operational Test and Evaluation Activity, *Ground Combat Element Integrated Task Force Experimental Assessment Plan*, staff study, 2015, 4.

⁸ *Ibid*, 15.

⁹ Marine Corps Combat Development Command, *Analysis of the Integration of Female Marines into Ground Combat Arms and Units*, staff study, 2015, vii.

¹⁰ Specifics for how events of the PFT and CFT are conducted and scored can be found in MCO 6100.13.

¹¹ Marine Corps Recruit Depot, *Gender-Integration Physical Fitness Statistics* (Marine Corps Archives, Quantico, VA, 2015) Power Point Presentation.

¹² *Ibid*.

¹³ MAGTF Training & Education Standards Division, *Assessment of Female Enlisted Marines at Infantry Training Battalion* (Marine Corps Archives, Quantico, VA, 2014) PowerPoint presentation.

¹⁴ Marine Corps Combat Development Command, *Analysis of the Integration of Female Marines into Ground Combat Arms and Units*, staff study, 2015, 10.

¹⁵ Jude Eden, “Women in Combat: The Question of Standards,” *Military Review* (March-April 2015): 39-47, <http://search.proquest.com>.

¹⁶ *Ibid*, 41.

¹⁷ *Ibid*.

¹⁸ *Ibid*.

¹⁹ *Ibid*.

²⁰ MAGTF Training & Education Standards Division, Assessment of Female Enlisted Marines at Infantry Training Battalion (Marine Corps Archives, Quantico, VA, 2014) PowerPoint presentation.

²¹ RAND Corporation, “RAND Assessment of Gender-Integration in Foreign Militaries” (Marine Corps Archives, Quantico, VA, 2013), 1-2.

²² Marine Corps Force Innovation Office, *Marine Corps Force Innovation Office (MCFIO) Visit to the Israeli Defense Force (IDF) Ground Forces International Talks and the United Kingdom (UK) Ground Close Combat Review Team*, staff study, 2014, 2.

²³ *Ibid*, 3.

²⁴ <https://regionalcommandsouthwest.wordpress.com/about/female-engagement-team-usmc/>.

²⁵ <https://www.youtube.com/watch?v=qsyJ198XGqk>.

²⁶ Ellen L. Haring, “What Women Bring to the Fight,” *Parameters* 43(2), (Summer 2013): 27-28, <http://search.proquest.com>.

²⁷ *Ibid*, 28.

²⁸ Any inaccuracy in data presented is the responsibility of the author. I acknowledge that MCFIO is more capable of pulling accurate awards data than I am. Thus, I am reliant on the accuracy of their report. However, if there are CARs or valor awards missing from the report, I accept responsibility for the shortcomings. Data pulled is from the beginning of the wars in Iraq and Afghanistan to February 2015. The report is part of the Marine Corps Archives collection on gender integration.

²⁹ Marine Corps Force Innovation Office, *Female Marines in Combat Operations: Iraq/Afghanistan*, staff study, 2015.

³⁰ The MCFIO report lists five female valor awards from Iraq. However, when the author read the citations and summary of actions, one of the five had been upgraded from a Navy and Marine Corps Commendation Medal to a Meritorious Service Medal, without a combat distinguishing device for valor. Thus, this paper presents only four female valor awards from Iraq.

³¹ Marine Corps Force Innovation Office, *Female Marines in Combat Operations: Iraq/Afghanistan*, staff study, 2015.

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