

Optimizing U.S. Army Combat Readiness:

A Proposal for Gender-Specific Fitness Standards with Gender-Neutral Combat Tasks

Amy Forza

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Abstract

This dissertation explores the U.S. Army's implementation of the Army Combat Fitness Test (ACFT), introduced in 2020 to replace the Army Physical Fitness Test (APFT). Although designed to better assess soldiers' combat readiness, the ACFT has sparked significant criticism for its legal, practical, and ethical implications. Initial trials revealed stark disparities, as the ACFT drastically lowered standards for men, reducing their failure rate to negligible levels and making the test 20 times easier compared to the APFT. Additionally, men now achieve the "highly fit" category at three times the rate they did under the APFT. A survey of 424 participants revealed that men outperform women by 3.29%, even when age and gender norms are applied, a margin that is statistically significant. This margin persisted despite the survey including an unusually high number of highly fit females, which created a sampling bias. This result highlights the ACFT's inadequate adjustments to accurately reflect female performance. Text analysis conducted on a corpus of Army combat manuals reveals a disconnect between the ACFT's emphasis on brute strength and doctrinally prescribed combat competencies, suggesting that this strength-centric approach redefines rather than reflects combat requirements. Comparing the two fitness tests, I found that the ACFT replaces events that previously helped equalize scoring metrics between genders, such as the sit-up with a plank event that focuses more on shoulder stability and upper body strength, and the traditional push-up with exercises like the hand-release push-up, which repeatedly pounds breast tissue against the ground and seems structured to specifically challenge female physiology. These changes indicate an intent to limit female integration into combat roles, despite legislative efforts to promote gender equity. The study calls for gender-specific fitness testing alongside gender-neutral combat task assessments to ensure fair physical fitness evaluations and effective combat readiness.

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Introduction

The United States Army introduced the Combat Fitness Test (ACFT) in 2020 under the National Defense Authorization Act (NDAA) of 2019,¹ significantly shifting how the Army evaluates physical fitness and combat readiness. Physical fitness tests are critical for soldiers, as they are required to pass these tests to complete basic training, commission, and continue their service in the Army.² Additionally, soldiers' scores on these tests play a crucial role in their evaluation for promotions and access to various military schools. High scores are particularly necessary for those aiming to qualify for combat arms and specialized units, such as Special Operations Forces, making the ACFT a decisive factor in a soldier's career trajectory. This dissertation examines the ACFT's implications, focusing on injury rates, test effectiveness, and broader cultural impacts within the military. In 2015, under the direction of the Secretary of Defense, the NDAA opened combat arms to women.³ The Army's rapid implementation of the ACFT, despite its well-documented flaws,⁴ raise valid criticism and suggest underlying motivations to limit or prohibit women from entering combat roles.⁵

¹ U.S. Senate Armed Services Committee, "FY19 NDAA Executive Summary," accessed August 5, 2024, <https://www.armed-services.senate.gov/imo/media/doc/FY19%20NDAA%20Executive%20Summary%20FINAL.pdf>.

² In this discussion, we limit references to gender to male and female, as the U.S. Army's current scoring system and historical data were collected based on these two sexes, which is reflected in the structure of all Army tests and scoring systems.

³ U.S. Congress, House, *National Defense Authorization Act for Fiscal Year 2015*, H.R. 1735, 114th Cong., 1st sess., introduced in House January 13, 2015, <https://www.congress.gov/bill/114th-congress/house-bill/1735>, accessed August 5, 2024.

⁴ Kyle A. Novak, *A Critical Review of the Baseline Soldier Physical Readiness Requirements Study*, October 6, 2021, pp. 13, 18, <https://www.semanticscholar.org/paper/A-Critical-Review-of-the-Baseline-Soldier-Physical-Novak/a82513de684be05cdf65470c62dd93018a04e3cf>, accessed August 5, 2024.

⁵ Amy Forza, "Rethinking Combat Fitness: Is the ACFT Aligned With Modern Warfare Needs?," *The Defense Post*, May 15, 2024, https://www.thedefensepost.com/2024/05/15/acft-national-security/?utm_content=cmp-true.

Initial ACFT testing led to a 60-80% failure rate for female soldiers⁶ while males maintained less than 10% fail rates.⁷ Initial trials also revealed that the ACFT was 20 times easier for male recruits than the APFT.⁸ Such alarming statistics should have raised red flags during the testing phase and prompted further review before the ACFT was officially implemented across the entire U.S. Army. The ACFT was evaluated by academic researchers both before and after its implementation.^{9,10} Revisions that significantly reduced the disparity in pass and fail rates, such as removing the leg tuck event and implementing age and gender scoring, came only in response to pressure from Congress.¹¹ Furthermore, the Army applied these changes retroactively, which left various issues unresolved.¹²

Revisions and Ongoing Issues

Even with recent adjustments for age and gender, the ACFT still requires soldiers to complete heavy lifting tasks without considering their individual height and weight, a standard that would be atypical in professional athletic organizations, where such factors are usually considered. Unlike the APFT, which focused on endurance-based exercises while also measuring strength relative to body weight through activities like sit-ups and push-ups, the ACFT

⁶ David Brown, "Army Combat Fitness Test Fiasco! Slides Reveal 84% of Women Failing ACFT," *ClearanceJobs*, October 5, 2019, <https://news.clearancejobs.com/2019/10/05/army-combat-fitness-test-fiasco-slides-reveal-84-of-women-failing-acft/>, accessed August 5, 2024.

⁷ Steve Beynon, "Nearly Half of Female Soldiers Still Failing New Army Fitness Test While Males Pass Easily," *Military.com*, May 10, 2021, <https://www.military.com/daily-news/2021/05/10/nearly-half-of-female-soldiers-still-failing-new-army-fitness-test-while-males-pass-easily.html>, accessed August 5, 2024.

⁸ Kyle A. Novak, *A Critical Review of the Baseline Soldier Physical Readiness Requirements Study*, October 6, 2021, pp. 13, 18, <https://www.semanticscholar.org/paper/A-Critical-Review-of-the-Baseline-Soldier-Physical-Novak/a82513de684be05cdf65470c62dd93018a04e3cf>, accessed August 5, 2024.

⁹ University of Iowa, "Review Report: Baseline Soldier Physical Readiness Requirements Study," April 2020.

¹⁰ Chaitra M. Hardison et al., "Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations," RAND Corporation, 2022, https://www.rand.org/pubs/research_reports/RRA1825-1.html.

¹¹ U.S. Congress. "H.R. 6395 - William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021." *Congress.gov*. Accessed August 1, 2024. <https://www.congress.gov/bill/116th-congress/house-bill/6395/text>.

¹² Amy Forza. "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness." *Army Times*, July 25, 2024. <https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/>.

emphasizes feats of heavy lifting. This shift places individuals of smaller stature at a distinct disadvantage, raising concerns about performance equity and the potential for injury. This obvious oversight suggests that the ACFT was designed with the objective of limiting or stopping female integration into combat arms and retroactive changes are being implemented illogically to attempt to maintain that agenda. Now, facing backlash, the military appears to be doing the bare minimum to address the issues, necessitating Congressional intervention.

Survey Findings and Performance Disparities

In this dissertation I conducted a survey of 424 participants (286 males and 131 females) to assess current fitness scores and trends. The results showed that males outperformed females by 3.29% on the ACFT, a statistically significant difference that persists despite recent adjustments. This disparity, though smaller than in initial trials, continues to impact career progression and highlights ongoing challenges in ensuring equal opportunities. The overrepresentation of women in the survey and the presence of exceptionally fit female participants exacerbate this performance gap.¹³

Injury Risks and Physical Standards

The RAND study evaluated the ACFT's development and its potential implications, including considerations related to injury risks.¹⁴ The ACFT's emphasis on heavy lifting exercises, like the deadlift and sprint-drag-carry, increases the risk of musculoskeletal injuries, if not performed with proper technique or without adequate physical conditioning. These tasks

¹³Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, "ACFT Scores by Event and Gender," under "T-test to Determine if the Difference Between Male and Female ACFT Scores Is Statistically Significant," Jupyter Notebook, accessed August 20, 2024.

¹⁴Chaitra M. Hardison et al., *Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations* (Santa Monica, CA: RAND Corporation, 2022), 17-18.

challenge female soldiers disproportionately because their typically lower body mass and muscle strength increase the risk of injury.¹⁵ The RAND study identified the deadlift and sprint-drag-carry as exercises that have a moderate relationship to injury risks, with concerns that these risks may be particularly relevant for female soldiers due to differences in physical performance.¹⁶ RAND also found that the plank, along with the now-discontinued leg tuck, lacks strong evidence as indicators of combat task performance or for assisting in injury prevention.¹⁷ Despite these concerns, the plank remains part of the ACFT, and the issues have yet to be fully addressed.

Cultural Shift in Army Combat Standards

Through a text analysis of Army combat manuals, I found that Army doctrine has historically placed little emphasis on brute strength tasks, as emphasized by the ACFT. Instead, these manuals frequently cite the importance of teamwork, tactical acumen, and decision-making under pressure.¹⁸ These results further support the analysis that a cultural shift occurred in the Army following legislation that mandated female integration into combat arms. I compare this doctrinal perspective with surveys from three general officers to confirm the disconnect between what has been traditionally prescribed as combat effectiveness and the heavy lifting focus promoted by the ACFT.¹⁹ The alignment between the generals' views on combat effectiveness and the doctrinal focus of combat training manuals indicates that the ACFT's emphasis on

¹⁵Joseph M. Molloy et al., "Musculoskeletal Injuries and United States Army Readiness: Part I: Overview of Injuries and Their Strategic Impact," *Military Medicine* 185, no. 9-10 (2020): e1465-67, <https://doi.org/10.1093/milmed/usaa027>.

¹⁶Chaitra M. Hardison et al., *Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations* (Santa Monica, CA: RAND Corporation, 2022), 11-13.

¹⁷Chaitra M. Hardison et al., *Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations* (Santa Monica, CA: RAND Corporation, 2022), vi.

¹⁸Sketch Engine, "Keyword Analysis Output," "Concordance," and "Word Sketch Visualizations," screenshots of visualizations from the corpus, accessed February 25, 2024, <https://www.sketchengine.eu>. (Subscription required).

¹⁹General David Howell Petraeus, questionnaire response, July 2024, via Microsoft Forms (see Appendix A); Lieutenant General John Evans, questionnaire response, July 2024, via Microsoft Forms (see Appendix B); Major General John Macdonald, questionnaire response, July 2024, via Microsoft Forms (see Appendix C).

strength has reshaped, rather than mirrored, the comprehensive capabilities essential for effective military operations.

ACFT Lowers Fitness Standards for Men

The most recent ACFT scores, published by Military.com in 2024, further highlight ongoing problems.²⁰ The scores released in June 2024, lack associated unit data, and faced intense scrutiny due to the statistical improbability of average female scores.²¹ These issues indicate that the data for females may have been curated, contain grouping issues, and might not accurately represent current averages. Independently verifiable statistics for 2023 and 2024 remain unavailable. Additionally, calculations from the released ACFT data show that men are achieving a highly fit level of 540 or above at almost three times the rate they did on the APFT.²² This data confirms the assertion that the ACFT has lowered the fitness standard for men²³ and demonstrates that the high scores males achieve on the ACFT create a false sense of fitness, disadvantaging them by failing to adequately challenge their physiology.

Background and Context

Before the adoption of the 1980 Army Physical Fitness Test (APFT) standard, the U.S. Army's fitness assessments included various combat-specific tasks that reflected the physical

²⁰Steve Beynon, "How Do You Measure Up? Here's How Soldiers Are Scoring on the Army Combat Fitness Test," Military.com, accessed June 10, 2024, <https://www.military.com/daily-news/how-do-you-measure-heres-how-soldiers-are-scoring-army-combat-fitness-test.html>.

²¹MOPs and MOEs. Instagram post, March 28, 2022.

https://www.instagram.com/p/C8XB9tjuvKs/?utm_source=ig_web_copy_link.

²²Amy Forza, *ACFT and APFT Survey Analysis*, "Analysis of APFT Scores from the National Technical Reports Library," Google Colab, accessed August 20, 2024.

²³Amy Forza. "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness." *Army Times*, July 25, 2024. <https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/>.

demands of the battlefield dating back to 1852.²⁴ These assessments included timed marches carrying a 20-pound rucksack, which was designed to evaluate a soldier's ability to sustain prolonged physical exertion under load, simulating the realities of moving quickly and efficiently while carrying essential gear. Other tasks included various obstacle courses, horse riding, wall climbing, grenade throwing, and distance running, all aimed at ensuring soldiers could perform effectively in combat situations.²⁵

The Army introduced the Army Physical Fitness Test (APFT) to modernize fitness assessments and better align with the evolving demands of warfare. The APFT focused on ensuring soldiers were healthy, fit, and capable of performing in contemporary combat environments. Unlike previous assessments that centered on specific tasks, the APFT aimed to measure soldiers' overall physical readiness, making it more relevant to modern military operations. Designed for flexibility, the APFT is composed of three events, the sit-up, push-up, two-mile run, and could be conducted anywhere with minimal equipment.²⁶ The test set a standard for 90% of soldiers to pass, with the top 5% expected to achieve a perfect score of 300 points. Dr. Kenneth H. Cooper, known as the "father of aerobics," influenced these standards by stressing that, with healthy recruits and consistent, challenging training, the Army could develop soldiers who would meet and exceed these fitness benchmarks.²⁷

²⁴"History of the APFT," *Mountain Tactical Institute*, accessed August 18, 2024, <https://mntactical.com/knowledge/history-of-the-apft/>.

²⁵*Ibid.*

²⁶Whitfield B. East, *A Historical Review and Analysis of Army Physical Readiness Training and Assessment* (Fort Leavenworth, KS: Combat Studies Institute Press, 2013), 151.

²⁷*Ibid.*

Military Policy Shifts

However, by 2010, the Army shifted back to a combat-specific task assessment approach, as detailed in Whitfield B. East's *History of United States Army Physical Fitness and Physical Readiness Training*. On March 1, 2010, the Army published Training Circular 3-22.20, signed by General George W. Casey, which superseded previous fitness manuals and established the new physical readiness training doctrine for all Army components. By June 2010, the U.S. Army Physical Fitness School (USAPFS) began revising the APFT. On October 26 - 27, 2010, the Physical Fitness School hosted an APFT Working Group to redefine the test, focusing on physical readiness measures and developing new testing constructs.²⁸

In the late 2000s, the U.S. military fitness test discussions underwent a significant cultural shift, marked by a renewed emphasis on assessing soldiers based on combat-specific tasks. This shift is directly correlated with the discussions and legislative actions occurring in Congress during the same period, particularly the debates surrounding the integration of women into combat roles. The period from 2008 to 2010 saw a deliberate move by the U.S. Army to refocus its physical readiness training and assessments on combat-related tasks. The Army began prioritizing combat-focused physical training, emphasizing skills deemed essential for battlefield effectiveness.

Legislative Developments

During this same timeframe, Congress was actively engaged in discussions about gender integration in the military. The Duncan Hunter National Defense Authorization Act for Fiscal

²⁸Whitfield B. East, *A Historical Review and Analysis of Army Physical Readiness Training and Assessment* (Fort Leavenworth, KS: Combat Studies Institute Press, 2013), 191-193.

Year 2009 established the Military Leadership Diversity Commission, which was tasked with evaluating diversity in the Armed Forces, including the roles available to women. By March 2011, the Commission released its report, recommending the elimination of combat exclusion policies for women and advocating for a more inclusive approach to military service.²⁹ These recommendations were part of a broader legislative push to open more combat roles to women, challenging the longstanding barriers they faced in the military.³⁰

The military's refocus on combat-specific tasks during this period was a direct response to legislative pressures, likely influenced by concerns regarding the integration of women into combat roles. While framed as necessary for modern warfare, this shift emphasized tasks requiring significant physical strength and power, implicitly questioning women's ability to meet these demands. This approach, arguably unnecessary given the evolving nature of warfare, highlights the resistance within military culture to fully integrate women. The focus on combat fitness served as a mechanism to reinforce existing gender norms, despite legislative and societal pressures to challenge and change them.

ACFT Development

The United States Army replaced the Army Physical Fitness Test (APFT) with the Army Combat Fitness Test (ACFT) purportedly to more accurately assess soldiers' effectiveness in combat and to establish a more rigorous and comprehensive measure of their physical

²⁹U.S. Congress, Congressional Research Service, *Women in Combat: Issues for Congress*, by David F. Burrelli, April 5, 2012, 7-8.

³⁰Barbara Starr, "Women on Submarines: Navy Changes Policy," *CNN*, February 23, 2010, <https://edition.cnn.com/2010/US/02/23/women.sub.duty/index.html>.

readiness.³¹ This section reviews the historical context, development, and objectives of the ACFT. The U.S. Army Center for Initial Military Training at Fort Eustis, Virginia, conducted the Baseline Soldier Physical Readiness Requirements Study (BSPRRS) between 2013 and 2019. This pivotal effort aimed to transition the Army's fitness assessment from gender- and age-specific standards to a gender-neutral standard reflecting the physical demands of combat tasks.³² However, despite these intentions, the ACFT's implementation has introduced significant legal and practical challenges, particularly by conflating various laws governing military fitness standards.

The ACFT reflects a problematic merging of multiple laws that were originally intended to address distinct aspects of military physical standards. Public Law 103-160 (1994) mandated that occupational standards in the military must be age- and gender-neutral, ensuring that all service members, regardless of gender, can meet the specific physical demands required for their military roles. This law explicitly aimed to create a fair and equitable environment where standards are applied uniformly across all genders.³³ In 2014, Public Law 113-66 further reinforced this requirement, emphasizing that occupational standards must not only be gender-neutral but also scientifically validated to ensure they accurately predict job performance. This law sought to eliminate any potential bias in the application of physical standards, focusing solely on the physical abilities required for specific military tasks.³⁴

³¹U.S. Department of Defense. "Army Combat Fitness Test Set to Become Test of Record." *Defense.gov*, March 23, 2021. <https://www.defense.gov/News/News-Stories/Article/Article/1571878/army-combat-fitness-test-set-to-become-test-of-record/>.

³²Whitfield B. East, David DeGroot, and Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study* (Fort Eustis, VA: U.S. Army Center for Initial Military Training, November 2019), 11-12.

³³U.S. Congress, "H.R. 2401 - National Defense Authorization Act for Fiscal Year 1994," *Congress.gov*, accessed August 1, 2024, <https://www.congress.gov/bill/103rd-congress/house-bill/2401/text>.

³⁴U.S. Congress. "H.R. 3304 - National Defense Authorization Act for Fiscal Year 2014." *Congress.gov*. Accessed August 1, 2024. <https://www.congress.gov/bill/113th-congress/house-bill/3304/text>.

The 2015 NDAA, while not explicitly mandating gender-neutral standards, laid the groundwork for reassessing military fitness tests to ensure they are job-related and measure the actual physical performance required for military duties. The NDAA required the Secretary of Defense to ensure that fitness assessments were fair, effective, and relevant to the roles service members perform, regardless of gender.³⁵ However, the ACFT has conflated these distinct laws, combining general physical fitness assessments with occupational standards in a manner that undermines the original intent of the legislation.

Initially, the ACFT applied a single, gender-neutral standard to all service members, leading to significant disparities in pass rates between male and female soldiers. This approach blurred the distinction between general fitness standards, which can consider age and gender, and occupational standards, which must remain gender neutral. As a result, female soldiers were evaluated against male-oriented fitness benchmarks, leading to higher failure rates and revealing the need for gender-normed scoring. The Army has since adjusted the ACFT to incorporate age and gender norming after congressional pressure to recognize these disparities.³⁶ However, these changes were made as an afterthought and have not fully resolved the test's fundamental issues.

The ACFT asserts that it is a combat fitness test but still conflates gender-neutral occupational standards with general fitness standards, imposing tasks that do not adequately consider female physiology. This oversight has led to ongoing concerns, including higher injury rates among female soldiers and the absence of height and weight requirements, which disadvantages all soldiers of smaller stature in proportionate weight and heavy lifting tasks.

³⁵U.S. Congress. "H.R. 3979 - Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015." *Congress.gov*. Accessed August 1, 2024. <https://www.congress.gov/bill/113th-congress/house-bill/3979/text>.

³⁶U.S. Congress. "H.R. 6395 - William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021." *Congress.gov*. Accessed August 1, 2024. <https://www.congress.gov/bill/116th-congress/house-bill/6395/text>.

These issues highlight the ACFT's failure to create an equitable testing environment and raise serious questions about its effectiveness and fairness as a measure of military readiness. The Army's attempt to address these disparities retroactively does not fully align with the legislative intent to ensure fairness in military fitness evaluations, leading to significant legal and ethical concerns.

Baseline Soldier Physical Readiness Requirements Study

By using Warrior Tasks, Battle Drills (WTBD), and Common Soldier Tasks (CST) as benchmarks for combat readiness, the BSPRRS aimed to create a comprehensive fitness test, meeting both operational needs and legislative mandates. The BSPRRS had three primary objectives: first, to determine the baseline physical requirements for WTBD and CST; second, to assess the effectiveness of the existing Army Physical Fitness Test (APFT) in predicting performance in these tasks; and third, to identify alternative physical fitness test events that better predict combat task performance.³⁷ The study found that the APFT could explain less than half of the variability in WTBD/CST performance, highlighting the need for a more comprehensive fitness assessment. Consequently, the BSPRRS developed six test events that form the foundation of the ACFT. They claimed that the ACFT predicts soldier performance more accurately, accounting for 70-85% of the variability in WTBD/CST outcomes.³⁸

The BSPRRS was conducted in three phases. Phase I involved a systematic review, interviews, and surveys with soldiers to identify the most physically demanding tasks. Researchers then developed an obstacle course simulating these tasks and tested it with soldiers.

³⁷Whitfield B. East, David DeGroot, and Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study* (Fort Eustis, VA: U.S. Army Center for Initial Military Training, November 2019), 11-12.

³⁸Whitfield B. East, David DeGroot, and Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study* (Fort Eustis, VA: U.S. Army Center for Initial Military Training, November 2019), 31-32.

In Phase II, soldiers performed the obstacle course, the APFT, and 23 physical fitness tests to determine which events best predicted performance. This phase included 275 male and 46 female soldiers. Phase III involved validating the final set of eight test events on a new group of soldiers, comprising 136 males and 16 females, before refining it to the six-event ACFT.³⁹

Research Flaws

Despite this outwardly comprehensive approach, the BSPRRS faced criticism for the low proportion of women in the study,⁴⁰ which could bias the results and lead to an underestimation of injury risks for women, thus contradicting the ACFT's goal of reducing musculoskeletal injuries.⁴¹ The study focused primarily on young male volunteers with participants averaging 24 years old, the significant underrepresentation of female soldiers raised concerns about how well the findings apply to the broader Army population.⁴² The study also failed to adequately represent National Guard and Reserve soldiers, who often span different age demographics, or soldiers in the medical field, who typically vary in age due to their specialized skills. This lack of representation calls into question the study's relevance to the roughly 976,000 soldiers in the Army,⁴³ including 465,239 active-duty soldiers, 336,000 Army National Guard members,⁴⁴ and 174,800 Army Reserve soldiers.⁴⁵ Moreover, the study's emphasis on heavy-load strength-based

³⁹Whitfield B. East, David DeGroot, and Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study* (Fort Eustis, VA: U.S. Army Center for Initial Military Training, November 2019), 11.

⁴⁰ University of Iowa, *Review of Technical Report: T19.041-13.1 "Baseline Soldier Physical Readiness Requirements Study"*, April 1, 2020, [PDF file], 10-11.

⁴¹ U.S. Army. "Army Combat Fitness Test (ACFT)." Accessed August 1, 2024. <https://www.army.mil/acft/>.

⁴²Kyle Novak, *A Critical Review of the Baseline Soldier Physical Readiness Requirements Study* (PDF, 2024), 5.

⁴³USAFacts, "How Many People Are in the US Military? A Demographic Overview," accessed July 1, 2024, <https://usafacts.org/articles/how-many-people-are-in-the-us-military-a-demographic-overview/>.

⁴⁴U.S. Department of the Army, *Reserve Army Personnel Volume 1, Fiscal Year 2024* (Washington, DC: U.S. Department of the Army, 2024),

<https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2024/Base%20Budget/Military%20Personnel/Reserve%20Army%20Personnel%20Volume%201.pdf>.

⁴⁵Congressional Research Service, *Defining Readiness: Background and Issues for Congress*, IF10540, updated July 2024, <https://crsreports.congress.gov/product/pdf/IF/IF10540>.

tasks, which require proper form to avoid injury—often necessitating professional coaching—has been criticized for likely increasing the risk of musculoskeletal injuries.⁴⁶

Further criticisms prompted the question of whether the ACFT should have been gender- and age-neutral in the first place. RAND and others state that fitness assessments are meant to be designed 'to maintain a culture of military discipline, bearing, and appearance; to keep health care costs to a minimum; to ensure personnel are not likely to be hampered by chronic illness' should be gender- and age-specific."⁴⁷ Combining male and female fitness under a male standard disregards individual physiology and undermines the goal of reducing health care costs, especially as women face greater injury risks. The study's design inherently created an unbalanced representation by mirroring the current proportion of women in the U.S. Army (16.2% in Phase I, 14.3% in Phase II, and 10.5% in Phase III). The University of Iowa reviewed the BSPRRS and raised concerns about the use of proportional representation, noting that the study assumed strategies effective for men would be equally effective for women.⁴⁸

Examining Motives Behind ACFT Implementation

The University of Iowa conducted a peer review of the BSPRRS, noting concerns about demographic representation and discussing the importance of continued evaluation to ensure the ACFT effectively reduces injury risks. Additionally, RAND's independent review reinforced these concerns, providing further analysis of the ACFT and its implications. However, the University of Iowa completed this review in April 2020, prior to the ACFT rollout in October

⁴⁶Chaitra M. Hardison et al., "Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations," RAND Corporation, 2022, 37, https://www.rand.org/pubs/research_reports/RRA1825-1.html.

⁴⁷Kyle Novak, *A Critical Review of the Baseline Soldier Physical Readiness Requirements Study* (PDF, 2024), 1.

⁴⁷USAFacts, "How Many People Are in the US Military? A Demographic Overview," accessed July 1, 2024,

⁴⁸University of Iowa, "Review Report: Baseline Soldier Physical Readiness Requirements Study," April 2020, 10.

2020. Critiques were being given at least in part well in advance of this review and before the ACFT implementation. The Army also conducted various focus groups and pilot testing phases to assess the ACFT before its official implementation.⁴⁹

In April 2020, the Army put basic trainees at Fort Sill, Oklahoma, through both the APFT and the ACFT. The results were stark: only 3% of men failed the ACFT, compared to a staggering 45% of women. In contrast, 61% of men and 31% of women failed the APFT. These numbers reveal that the ACFT drastically lowered the failure rate for male recruits, making the test 20 times easier for them. Meanwhile, it made the test 45% harder for women,⁵⁰ pushing their failure rate even higher.⁵¹ The Army's apparent preference for a standard that barely challenged male soldiers, while effectively weeding out female soldiers, raises significant concerns about the underlying logic and intent of the test. It is inherently illogical and counterproductive to establish a fitness standard where the failure rate for men is so low that the test ceases to be a meaningful challenge.

These detailed evaluations provided feedback and identified areas of concern, including the challenges faced by female soldiers and the potential for increased injuries. Despite these thorough critiques, the Army pushed forward with the ACFT rollout. This decision demands a critical examination of why the Army would implement the ACFT across a force of over one million soldiers without first addressing the serious concerns and potential injuries highlighted in

⁴⁹University of Iowa, *Review of Technical Report: T19.041-13.1 "Baseline Soldier Physical Readiness Requirements Study"*, April 1, 2020, [PDF file], 6.

⁵⁰The failure rate for women on the APFT was 31%, while the failure rate on the ACFT was 45%. The relative increase in difficulty is calculated as follows: the increase in failure rate is 14% (45% - 31%), and the percentage increase relative to the APFT failure rate is $(14\% \div 31\%) \times 100 \approx 45.16\%$ ($31\% \div 14\%$) $\times 100 \approx 45.16\%$. Therefore, the ACFT was approximately 45% harder for women compared to the APFT.

⁵¹Kyle A. Novak, *A Critical Review of the Baseline Soldier Physical Readiness Requirements Study*, October 6, 2021, pp. 13, 18, <https://www.semanticscholar.org/paper/A-Critical-Review-of-the-Baseline-Soldier-Physical-Novak/a82513de684be05cdf65470c62dd93018a04e3cf>, accessed August 5, 2024.

these studies. It is illogical to quickly implement a test with so many observable flaws onto a massive force like the U.S. Army. In this dissertation, I assert that the swift implementation of a new physical fitness test with so many observable flaws aimed to exclude women from combat roles as quickly as possible after congress mandated the opening of combat arms to them in 2015. Specifically, I argue, that implementing a fitness test that disproportionately affected female soldiers reflects a strategic move to limit their integration into these roles.

Design and Implementation

In response to the legislative directives outlined above, the Army endeavored to create a performance-based test applicable to all service members, regardless of gender. Critics had previously challenged the Army Physical Fitness Test (APFT)—which included push-ups, sit-ups, and a two-mile run—for failing to adequately measure the physical demands of combat roles and for its reduced effectiveness in predicting job performance.⁵² The Army implemented the Army Combat Fitness Test (ACFT) to address these shortcomings. They incorporated a broader range of exercises that are intended to reflect combat tasks, such as deadlifts, power throws, and sprint-drag-carry events. This transition aimed to provide a more accurate assessment of a soldier's physical readiness for combat and to improve overall fitness levels across the Army. This section delves into the specific components of the ACFT, the rationale behind their selection, and the initial rollout of the test. It also examines the transition to gender-

⁵² Maj. Rick Montcalm, "The Good and the Bad of the Army's New Physical Fitness Test," *Modern War Institute at West Point*, May 17, 2018, <https://mwi.westpoint.edu/good-bad-armys-new-physical-fitness-test/>.

and age specific scoring standards, event alterations, and the impact of these changes on test outcomes for male and female soldiers.

ACFT Evolution

The Army initially picked six events for the Army Combat Fitness Test (ACFT): the deadlift, standing power throw, hand-release push-up, sprint-drag-carry, leg tuck, and two-mile run. They chose these events to better simulate the physical tasks soldiers face in combat, emphasizing functional fitness over general endurance. Each event was intended to measure different aspects of fitness: the deadlift (140-340 pounds for 3 repetitions) tests lower body strength, the power throw (10-pound medicine ball) assesses explosive power, the hand-release push-up measures upper body endurance, the sprint-drag-carry involves dragging a 90-pound sled and carrying two 40-pound kettlebells to purportedly gauge agility and cardiovascular fitness, the leg tuck was allegedly intended to test core strength, and the two-mile run evaluates aerobic endurance.⁵³ The initial scoring system was gender-neutral, with performance standards based on the demands of combat roles.⁵⁴ Since its initial rollout, the ACFT has undergone several transformations.

In April 2022, the Army replaced the leg tuck with the plank after feedback highlighted its limited relevance to combat fitness and its focus on upper body strength rather than primarily measuring core strength. The leg tuck, which required significant upper body and grip strength

⁵³ Maj. Rick Montcalm, "The Good and the Bad of the Army's New Physical Fitness Test," *Modern War Institute at West Point*, May 17, 2018, <https://mwi.westpoint.edu/good-bad-armys-new-physical-fitness-test/>.

⁵⁴ U.S. Department of the Army. *Holistic Health and Fitness Testing*. ATP 7-22.01. Washington, DC: Department of the Army, October 2020. https://medcoeckapwstorprd01.blob.core.usgovcloudapi.net/pfw-images/dbimages/ATP_7-22.01%20Holistic%20Health%20and%20Fitness%20Testing.pdf.

similar to a pull-up, disproportionately challenged female soldiers, resulting in higher failure rates. The plank was introduced to provide a more accurate measure of core strength while maintaining rigorous fitness standards.⁵⁵ However, the Army replaced the leg tuck with the plank, disregarding RAND's assessment that neither exercise effectively predicts combat task performance or prevents injuries.⁵⁶ Additionally, in April 2022, the scoring system shifted from a single standard to age- and gender-normed scales to ensure fairness and better reflect the diverse capabilities of soldiers across different demographics. This change followed a congressional mandate from the NDAA for Fiscal Year 2021, which required the Army to consider the impact of the test on recruitment and retention, particularly for women.⁵⁷

Statistical Issues in 2024 ACFT Data

In June 2024, Military.com published an article citing the most recent pass rates on the ACFT test.⁵⁸ However, several critics highlighted statistical errors in this reporting,⁵⁹ making the published data seem unreliable and raising questions about whether the Army is curating data to avoid further scrutiny from Congress. The Army's release of ACFT data detailed the performance and pass rates among different soldier categories. A closer examination reveals several statistical issues that cast doubt on the accuracy and consistency of the reported figures. To pass the Army

⁵⁵Haley Britzky, "The Army's Revamped Combat Fitness Test Would Create 'Gender-Specific' Promotion Evaluation Categories," *Task & Purpose*, March 22, 2022, <https://taskandpurpose.com/news/army-combat-fitness-test-rand-study/>.

⁵⁶Chaitra M. Hardison et al., *Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations* (Santa Monica, CA: RAND Corporation, 2022), vi.

⁵⁷U.S. Congress. National Defense Authorization Act for Fiscal Year 2021. Public Law 116-283. U.S. Statutes at Large 134 (2021): 3388-3391. <https://www.congress.gov/116/plaws/publ283/PLAW-116publ283.pdf>.

⁵⁸Steve Beynon, "How Do You Measure Up? Here's How Soldiers Are Scoring on the Army Combat Fitness Test," Military.com, accessed August 1, 2024, <https://www.military.com/daily-news/how-do-you-measure-heres-how-soldiers-are-scoring-army-combat-fitness-test.html>.

⁵⁹MOPs and MOEs, Instagram post, March 28, 2022, https://www.instagram.com/p/C8XB9tjuvKs/?utm_source=ig_web_copy_link.

Combat Fitness Test (ACFT), soldiers need to score at least 360 points out of a possible 600, with a minimum of 60 points required in each of the six events. Scoring above 540 currently places a soldier in the "highly fit" category, indicating superior physical performance across all test components.

One of the most glaring inconsistencies appears in the data for Reserve women. The Army reports that 90% of Reserve women pass the ACFT, yet their average score for the two-mile run is 61 points. This low average suggests that many women are barely passing this event. Given that a passing score on the two-mile run is 60 points, it is statistically improbable for the pass rate to be as high as 90% if the average score is only slightly above the minimum. This discrepancy suggests either errors in data reporting or potential issues in how the scores are calculated or averaged. Further discrepancies arise when examining overall scores. For instance, the sum of average event scores for active-duty men ($86+81+85+85+82+78$) is 497, yet the reported overall score is 498. Similarly, for Reserve women, the sum of average event scores ($73+75+76+75+69+61$) is 429, yet the reported overall score is 434. These discrepancies are minor but suggest errors in the calculation or reporting of overall scores.

Additionally, the comparison between active-duty soldiers and those in the Reserve and National Guard reveals inconsistencies in the percentage of soldiers scoring 540 and above. For instance, 29% of active-duty men score 540 and above, despite an average overall score of 498, indicating a skewed distribution where a small group achieves extremely high scores, suggesting higher variance should be present. In contrast, only 6% of Reserve women and 7% of National Guard women score 540 and above, with much lower average scores of 434 and 439, respectively. These low percentages and averages indicate potential issues with data grouping or reporting, raising questions about the accuracy and consistency of the reported figures.

This data also reveals that events requiring no equipment—such as the two-mile run, plank, and hand-release push-ups—consistently result in the lowest scores across all categories. For instance, active-duty women average 76 on the plank and 70 on the two-mile run. In contrast, National Guard women average 69 on the plank and 65 on the two-mile run, while Reserve women average 69 on the plank and only 61 on the two-mile run. These lower scores indicate that familiarity with test equipment is not the primary factor influencing performance, challenging the notion that active-duty personnel should score higher simply due to better access to equipment, as noted in the Military.com article.⁶⁰ The RAND Corporation supports this view, emphasizing that while training and access to equipment are important, they are not the sole determinants of ACFT performance.⁶¹ Their report suggests that other factors, such as the quality of training and the physical demands of different events, significantly impact soldiers' performance outcomes.

Lower Fitness Standards for Men

Historically, both male and female soldiers achieved pass rates of 90% or higher on the APFT.⁶² APFT data from a study in the National Technical Reports Library titled Army Physical Fitness Test (APFT): Normative Data on 6022 Soldiers allowed for comprehensive analysis of historical APFT trends. The fact that men continue to pass the ACFT at the same rate as they did the APFT, despite the ACFT being hailed as a more challenging test, indicates that the standards

⁶⁰Steve Beynon, "How Do You Measure Up? Here's How Soldiers Are Scoring on the Army Combat Fitness Test," Military.com, accessed August 1, 2024, <https://www.military.com/daily-news/how-do-you-measure-heres-how-soldiers-are-scoring-army-combat-fitness-test.html>.

⁶¹RAND Corporation, "Independent Review of the Army Combat Fitness Test: Summary of Key Findings and Recommendations," RAND_RRA1825-1, 2022, p. 32.

⁶²Joseph Knapik et al., *Army Physical Fitness Test (APFT): Normative Data on 6022 Soldiers* (Natick, MA: U.S. Army Research Institute of Environmental Medicine, 1994), accessed August 1, 2024, <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/ADA274547.xhtml>.

may have been lowered to accommodate male physiology.⁶³ However, the substantial increase in men achieving this highly physically fit category on the ACFT confirms that the ACFT is an easier test for male physiology.

Men tripled their achievement in the highly physically fit category on the ACFT, increasing from 10.01% on the APFT to 29% on the ACFT. Females reaching the 270 and above on the APFT were at approximately 14%.⁶⁴ The high scores males achieve on the ACFT create a false sense of fitness and disadvantage them by failing to adequately challenge their physiology.⁶⁵ This not only raises concerns about the effectiveness of the ACFT test but also highlights broader issues in how physical readiness is measured. Studies indicate that, with proper training, many sex differences for combat centric physical performance can be reduced.⁶⁶ However, the ACFT's current structure does not fully accommodate these nuances, leading to skewed results that disproportionately challenge women. These discrepancies underscore the need for further investigation and adjustments to better assess the physical capabilities of all soldiers.

Issues with Localized Data and Reporting Accuracy

The statistically improbable figures released by the Army in June 2024 suggest that underlying biases may exist in data reporting. Differences in how scores are recorded across

⁶³Amy Forza, "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness," *Army Times*, July 25, 2024, <https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/>.

⁶⁴Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Analysis of APFT Scores from the National Technical Reports Library,' Jupyter Notebook, accessed August 20, 2024.

⁶⁵Amy Forza, "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness," *Army Times*, July 25, 2024, <https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/>.

⁶⁶Bradley C. Nindl et al., "Operational Physical Performance and Fitness in Military Women: Physiological, Musculoskeletal Injury, and Optimized Physical Training Considerations for Successfully Integrating Women Into Combat-Centric Military Occupations," *Military Medicine* 181, no. 1 (January 2016): 50-60.

different units or a desire to present a more favorable picture of overall performance could cause these biases. Army units typically keep physical fitness scores at the local level rather than automatically sending them to higher headquarters. This practice results in significant variations in how representative the reported data is across the entire force. If someone needs to pull these scores for review, they must do so selectively, as the data is not centrally collected or routinely assessed by higher commands.

To accurately assess the effectiveness of the ACFT, the Army must ensure that units send physical fitness scores to higher headquarters, rather than keeping them locally. This approach eliminates the current inconsistencies and ensures that the data reflects the entire force, not just the most physically fit units. Any investigation into the ACFT's effectiveness would need to pull data that includes both scores and unit information. This data allows for a comparison of fitness levels across different types of units, such as combat arms versus medical units, and helps to identify significant variations. Without access to this comprehensive data, it would be challenging to assess the test's overall impact and fairness across the force. Without detailed event-by-event breakdowns tied to specific units, the Army obscures potential patterns, making it difficult to pinpoint where soldiers consistently underperform. This lack of comprehensive reporting limits the ability to target training and support, hindering efforts to address specific weaknesses within the force.

Analysis of Survey Data

In this dissertation, I initially intended to analyze ACFT and APFT data provided by the U.S. Army by conducting a study to gather fitness test scores. To obtain this information, I

requested this information by emailing the FOIA office at usarmy.belvoir.hqda-esa.mbx.rmda-foia@army.mil and by submitting requests through the U.S. Army Training and Doctrine Command (TRADOC) FOIA office's online system. The Belvoir office took 43 days to respond, while the TRADOC office never responded at all. Despite my multiple efforts to meet their specific requirements, the Belvoir office eventually stopped responding, effectively blocking my access to the necessary data. As a result, I endeavored to collect data directly from Army personnel by distributing a Microsoft Forms link through military social media pages and personal networks. This approach allowed me to gather personally reported data, ensuring that all participation was anonymous and voluntary.

This survey reached 424 participants, consisting of 163 females and 261 males. I then analyzed the Army Physical Fitness Test (APFT) and Army Combat Fitness Test (ACFT) scores across different events and genders. By identifying outliers and summarizing the data, I drew meaningful insights from the analysis, contributing to a more detailed understanding of current fitness scores among Army personnel. My sample size of 424 participants is statistically reliable for a population of around one million, offering a margin of error of about 5% at a 95% confidence level, which is acceptable in social sciences. However, larger samples are always preferable for increased precision.

Data entry errors and outliers were identified and removed to ensure a more accurate assessment of participants' performance. My approach uses central tendencies and reduces the impact of extreme values on the overall evaluation. To align the individual event means with the overall ACFT mean scores, I weighed the mean scores for each event by the number of participants in each age and gender group. Consequently, slight variations in individual event means might occur due to specific outliers and dataset variations. I addressed data entry errors by

removing scores exceeding the maximum allowable points per event (100 points) and maximum overall scores above 300 for the APFT or 600 for the ACFT. Additionally, the code identifies and removes further likely data entry errors, ensuring the accuracy and reliability of the analysis.⁶⁷ This approach reveals the most efficient insights into performance trends across different age and gender groups.

Performance Trends

In comparing the performance trends between the APFT and ACFT, particularly focusing on the two-mile run, push-up event, and core endurance tests, as well as new ACFT events like the sprint-drag-carry, deadlift, and standing power throw, I observed several key insights. It is important to note that the ACFT scores collected and analyzed are based on the revised age and gender norming, meaning that scores are assessed according to the current scoring system for males and females, regardless of task times or weight differences. When analyzing the two-mile run scores between the APFT and ACFT, I found that while the distributions were generally similar, indicating consistent performance across both tests, there are important nuances to consider.⁶⁸

Two-mile Run

In the APFT, the two-mile run occurs in a relatively fresh state, allowing for a clearer measure of pure endurance. However, in the ACFT, the two-mile run follows a series of demanding strength-based tasks, such as the deadlift and sprint-drag-carry. These tasks specifically impact women more due to differences in muscle mass and strength recovery, which

⁶⁷Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'ACFT Scores by Event and Gender,' under the subheading 'Removal of Outliers,' Jupyter Notebook.

⁶⁸Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Performance Comparison for APFT and ACFT Scores by Gender,' Jupyter Notebook.

would logically lead to a more pronounced decline in their two-mile run performance compared to men.⁶⁹ Research supports this, indicating that while women may exhibit greater endurance at lower intensities, they are likely to experience increased muscle fatigue when performing the same absolute strength tasks as men due to operating closer to their maximum strength capacity and the associated metabolic and blood flow factors.⁷⁰

However, the survey data shows that women maintain consistent two-mile run scores between the APFT and ACFT, despite the added fatigue. This suggests that women are displaying higher levels of endurance than men in these scenarios. Their ability to sustain performance under the disproportionate physical stress of the ACFT's preceding strength tasks highlights a significant capacity for endurance, which is particularly impressive given the challenging conditions they face. This resilience and sustained endurance in the face of greater levels of fatigue reflect a strong adaptive capacity that is a key asset in their overall fitness profile, aligning with broader medical findings that women excel in endurance-based events.⁷¹

Push-up Events

In the push-up event, a noticeable difference emerged when comparing the traditional push-up scores from the APFT with the hand-release push-up scores from the ACFT. The ACFT's hand-release push-up is more challenging, likely due to its different technique and greater emphasis on upper body strength and control. Both genders experienced a dip in

⁶⁹Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Performance Comparison for APFT and ACFT Scores by Gender,' Jupyter Notebook.

⁷⁰A. E. J. Miller, J. D. MacDougall, M. A. Tarnopolsky, and D. G. Sale, 'Gender Differences in Strength and Muscle Fiber Characteristics,' *European Journal of Applied Physiology* 66, no. 3 (1993): 254-262.

⁷¹Sandra K. Hunter, "The Relevance of Sex Differences in Performance Fatigability," *Medicine & Science in Sports & Exercise* 48, no. 11 (November 2016): 1-5, <https://doi.org/10.1249/MSS.0000000000000928>.

performance with the hand-release push-up, but this decline was more pronounced in females.⁷² Additionally, the hand-release push-up requires participants to slam their chests into the ground repeatedly, which is not ideal for breast tissue and could contribute to further discomfort or performance issues for women.⁷³ This suggests that the increased upper body strength required for the hand-release variation, combined with the physical impact on breast tissue, makes this event more challenging for females and reflects a complete disregard for female physiology and wellbeing.

Core Strength Events

The transition from sit-ups in the APFT to planks in the ACFT revealed distinct differences in performance. Plank scores tend to be lower and more varied, indicating that the plank is a more challenging test for all participants. On average, females found the plank more difficult than males, as evidenced by the wider distribution of scores in the lower percentile ranges.⁷⁴ This demonstrates that the plank presents a greater challenge for females compared to the sit-up event in the APFT, likely due to differences in upper body strength. The plank exercise, which demands sustained upper body strength and shoulder stability, is particularly challenging because it requires coordinated muscle activation and stability, as discussed in the article on shoulder mechanics by UW Orthopaedic Surgery and Sports Medicine.⁷⁵

⁷²Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Performance Comparison for APFT and ACFT Scores by Gender,' Jupyter Notebook.

⁷³Brooke R. Brisbane, Julie R. Steele, Elissa J. Phillips, and Deirdre E. McGhee, "The Occurrence, Causes and Perceived Performance Effects of Breast Injuries in Female Athletes," *Journal of Sports Science & Medicine* 18, no. 4 (2019): 569-577, accessed August 19, 2024, <https://jssm.org/jssm-18-569.xml%3EFulltext>.

⁷⁴Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Performance Comparison for APFT and ACFT Scores by Gender,' Jupyter Notebook.

⁷⁵Mechanics of Shoulder Strength, *UW Orthopaedic Surgery and Sports Medicine*, accessed August 8, 2024, <https://orthop.washington.edu/patient-care/articles/shoulder/mechanics-of-shoulder-strength.html>.

The sit-up allows women to use their hips and lower body as a base for movement, leveraging their typically stronger lower body muscles, which makes it a less demanding exercise for female physiology in comparison to the plank.⁷⁶ This difference in muscle engagement patterns means that men and women achieve similar sit-up repetition scores on the Army APFT, reflecting their comparable performance.⁷⁷ The unique physiological characteristics of women contribute to this parity in scoring. Men also need to maintain proper alignment during a plank, which is not necessary with the sit-up event, but their higher center of gravity due to greater upper body mass makes it easier for them to keep a straight line from shoulders to heels.⁷⁸ This biomechanical advantage, combined with stronger upper bodies, makes the plank less challenging for men than for women.

APFT versus Heavy Lifting and Power Throw Events

In comparing the overall performance between the overall APFT scores and the ACFT deadlift, sprint-drag-carry, and standing power throw events, clear distribution differences emerge between male and female soldiers. For male soldiers, the score distribution is broader, with many achieving high scores in these strength-based tasks. This greater absolute strength in men contributes to higher performance levels before fatigue sets in.⁷⁹ This pattern is consistent with the prevailing medical consensus that males generally perform better in these areas due to greater muscle mass and strength. The observed concentration of scores at the higher end

⁷⁶Paul J. Cordo et al., "Scaling and Non-Scaling of Muscle Activity, Kinematics, and Dynamics in Sit-Ups with Different Degrees of Difficulty," *Journal of Electromyography and Kinesiology* 16, no. 3 (June 2006): 518-520, accessed August 19, 2024, <https://www.sciencedirect.com/science/article/pii/S1050641105001276>.

⁷⁷ APFT Scoring Chart, "Army Portal," accessed August 10, 2024, <https://www.army-portal.com/pdf/apft.pdf>.

⁷⁸Darren G. Candow and Philip D. Chilibeck, "Differences in Size, Strength, and Power of Upper and Lower Body Muscle Groups in Young and Older Men," *The Journals of Gerontology: Series A* 60, no. 2 (2005): 148-156, <https://academic.oup.com/biomedgerontology/article/60/2/148/563279?login=false>.

⁷⁹WJ Albert et al., "Sex Differences in the Rate of Fatigue Development and Recovery," *Dynamic Medicine* 5, no. 2 (2006): 5-7, <https://doi.org/10.1186/1476-5918-5-2>.

indicates that the strength-based events of the ACFT align closely with the physical capabilities typically associated with male physiology.⁸⁰

In contrast, the distribution for female soldiers is narrower, with fewer achieving the highest scores. Many female soldiers' scores cluster around the lower to mid-range for the deadlift, sprint-drag-carry, and standing power throw events.⁸¹ The observed differences in performance highlight the physiological disparities between genders and suggest that the scoring system of the ACFT is not adequately equalized for female soldiers. This raises significant concerns about the fairness of the test, as it continues to disadvantage female soldiers by not fully accounting for inherent gender differences in physical capabilities.

Addressing Missing Metrics

When comparing the APFT and ACFT, I found that the ACFT's design imposes unnecessary challenges on women compared to men. The ACFT replaces events that better align with women's physiology, such as the sit-up, traditional push-up, and a two-mile run not preceded by heavy lifting tasks, with exercises that primarily emphasize upper body strength. Despite the removal of the leg tuck, the remaining events do not align with the typical strengths women display. For instance, the ACFT lacks tests of flexibility or pure endurance tasks that aren't compromised by disproportionate muscle fatigue. Including flexibility measures in fitness tests ensures soldiers focus on this metric, reducing injury risks.⁸² A further issue arises with the ACFT's purported assessment of agility.

⁸⁰Amy Forza, *ACFT and APFT Survey Analysis*, Google Colab, 2024, subtitle 'Performance Comparison for APFT and ACFT Scores by Gender,' Jupyter Notebook.

⁸¹Sandra K. Hunter, "The Relevance of Sex Differences in Performance Fatigability," *Medicine & Science in Sports & Exercise* 48, no. 11 (November 2016): 3-4, 10-13, 2247-2256, <https://doi.org/10.1249/MSS.0000000000000928>.

⁸²Improving Flexibility," *Veterans Affairs Whole Health Library*, accessed August 3, 2024, <https://www.va.gov/WHOLEHEALTHLIBRARY/tools/improving-flexibility.asp>.

Traditional metrics for agility involve tests that require rapid direction changes, quick acceleration, deceleration, and precise coordination. These metrics often include activities like shuttle runs, cone drills, or zigzag courses, where the ability to swiftly change direction and maintain balance is key.⁸³ In contrast, the Sprint-Drag-Carry event, where a soldier runs back and forth just one time, does not strongly assess agility. Instead, it focuses more on brute strength and power, particularly in tasks like dragging a heavy sled or carrying kettlebells. While the event includes a sprint that involves a single change of direction, this brief element does not provide a comprehensive measure of agility, as it does not challenge the rapid, multidirectional movement skills that are central to traditional agility tests.

Gender Bias by Design

While most of the events in the ACFT are adaptations of pre-existing exercises, the Army specifically developed two new exercises—the Hand-Release Push-Up (HRPU) and Leg Tuck (LTK)—that clearly disregard female physiology in their design. These exercises not only disregard female physiology but also seem intentionally crafted to disadvantage women. The now-discontinued Leg Tuck, misleadingly promoted as a core strength exercise, primarily tested grip⁸⁴ and upper body strength—areas where women generally face more challenges. The HRPU, requiring repeated impact on the chest, adds insult to injury.

These exercises appear deliberately chosen to limit women's ability to perform to standards deemed necessary for combat roles under the guise of assessing "combat fitness,"

⁸³Agility Tests," *Topend Sports*, accessed August 3, 2024, https://www.topendsports.com/testing/agility.htm#google_vignette.

⁸⁴M. Tsekoura, S. Bakirtzi, S. Papadimitropoulou, E. Billis, K. Fousekis, A. Kastrinis, and E. Tsepis, "Relationship of Hand Grip Strength, Physical Activity, and Anthropometric Characteristics in a Sample of Male and Female Physiotherapy Students," in *GeNeDis 2022*, ed. by Springer, Lecture Notes in Computer Science (Cham: Springer, 2023), 497, https://doi.org/10.1007/978-3-031-31986-0_48.

ignoring the plethora of more equitable alternatives. The conclusion that men are simply stronger than women overlooks the flaws in the ACFT's design, which includes unnecessary components that do not adequately reflect combat readiness and disproportionately disadvantage female soldiers. The test's idolatry of upper body strength, rather than a balanced assessment of overall fitness, suggests that the design choices selectively target areas where women are typically less competitive, rather than genuinely measuring the skills needed for combat.

ACFT Score Analysis

Survey data from the ACFT revealed that females in the 22-26 and 42-46 age brackets demonstrated unexpectedly strong performance across multiple events, including the deadlift, standing power throw, hand release push-up, sprint-drag-carry, plank, and two-mile run, often surpassing males in these categories. Despite these impressive results, men still outperformed women across the board in the overall scoring, particularly in the middle age groups where their greater muscle mass and strength provided a clear advantage in strength-based tasks. This overall high scores for men, coupled with the specific instances of female outperformance, suggests that the surveyed sample included an unusually fit group of women in these age brackets, who were able to excel in certain areas despite the broader trend of male advantages in strength and power events. This discrepancy indicates that the survey may not fully represent the general population but rather reflects the capabilities of a particularly elite subset of female soldiers.

Scoring Discrepancies

The scoring issues described in the article "The Metabolic 'Pink Taxing' of Fitness Standards for Female Service Members" reinforces the insights from the APFT/ACFT data and

highlights inherent disadvantages faced by female soldiers in the scoring system.⁸⁵ This pink tax asserts that women must exert more energy and operate closer to their physical limits to achieve the same scores as men despite the most recent inclusion of gender and age norming. As a result, the data showing women outperforming men in certain areas in my survey becomes even more significant, as these women demonstrated higher fitness levels despite a scoring system that inherently disadvantages them. Their ability to achieve these scores highlights their exceptional fitness, but it also underscores the difficulty of accurately assessing and comparing the true fitness levels of male and female participants with the current ACFT scoring system.

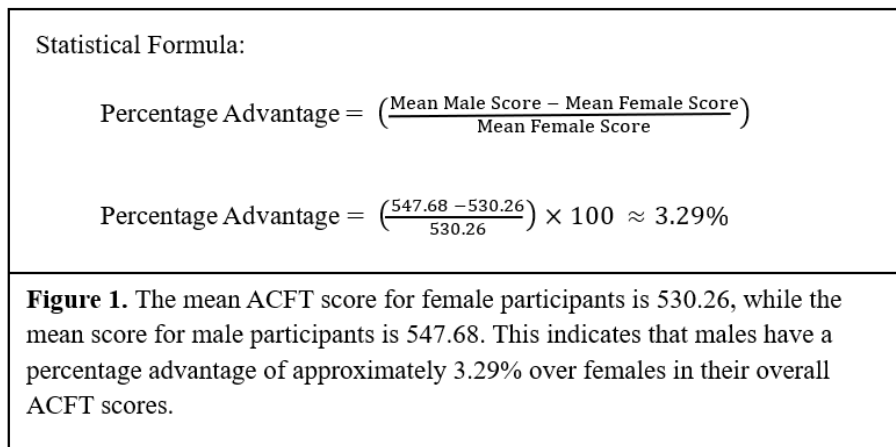
Conclusion

Overall, female participants average a ACFT mean score of 530.26, while male participants average 547.68, giving males a 3.29% advantage in overall ACFT scores. The results show that even though the survey data consistently indicates a disproportionately high number of exceptionally fit women participated—likely those at the top level of physical conditioning—men still achieved higher scores. The 3.29% advantage yielded a t-statistic of 2.75, confirming the difference in scores is statistically significant and not due to chance. These results strongly indicate significant inequality in the current ACFT, as the test favors physiological traits more common in males and disadvantages even exceptionally fit women.⁸⁶ The ACFT's structure emphasizes traits that males are more likely to possess, creating a bias that doesn't fully account

⁸⁵Allison Brager and Valerie Starratt, "The Metabolic 'Pink Taxing' of Fitness Standards for Female Service Members," *NSCA TSAC Report* 72 (2024): 4-9.

⁸⁶Amy Forza, ACFT and APFT Survey Analysis, Google Colab, 2024, "ACFT Scores by Event and Gender," under "T-test to Determine if the Difference Between Male and Female ACFT Scores Is Statistically Significant," Jupyter Notebook, accessed August 20, 2024.

for the different ways women can demonstrate physical readiness.^{87,88} This raises questions about the efficiency of the ACFT and its effectiveness in accurately assessing combat readiness for both genders.



Text Analysis of Army Combat Manuals

In this section, I employ text analysis methods on U.S. Army combat manuals to uncover main concepts and gather insights into the competencies essential for executing military operations effectively. I use advanced text analysis methods, including word sketch and concordance analysis with Sketch Engine, to identify dominant themes. My analysis challenges the current emphasis on brute strength tasks as a critical component of combat readiness, as emphasized in the Army Combat Fitness Test (ACFT). In this analysis I explore how the ACFT impacts cultural norms and institutionalizes gender biases. The findings reveal a significant

⁸⁷A. E. J. Miller et al., "Gender Differences in Strength and Muscle Fiber Characteristics," *European Journal of Applied Physiology and Occupational Physiology* 66, no. 3 (1993): 254-262, 257-259.

⁸⁸Bradley C. Nindl et al., "Operational Physical Performance and Fitness in Military Women: Physiological, Musculoskeletal Injury, and Optimized Physical Training Considerations for Successfully Integrating Women Into Combat-Centric Military Occupations," *Military Medicine* 181, no. 1 (January 2016): 50-60.

misalignment between the ACFT's focus on brute strength and the broader, historically valued military competencies such as endurance, mental resilience, and tactical agility.

Selection Criteria for Combat Manuals

I selected combat manuals that thoroughly cover the essential skills and tactical expertise required for modern combat operations. Together, these manuals provide a comprehensive overview of these critical competencies. The Soldier's Manual of Common Tasks details the core skills required by all soldiers, ensuring the analysis incorporates the fundamental competencies expected throughout the Army.⁸⁹ Including FM 3-90, Tactics is critical for understanding the broader tactical frameworks guiding operational maneuvers in varied combat scenarios, ensuring tactical depth in the source material.⁹⁰

The Infantry Rifle Company, FM 3-21.10 provides insights into the leadership and operational dynamics of a rifle company, a key combat unit in the infantry.⁹¹ This is complemented by FM 3-21.8, which covers tactics, leadership, and structure at the platoon and squad level, offering a granular view of small unit operations and decentralized command dynamics.⁹² Additionally, FM 3-21.75, The Warrior Ethos and Combat Skills highlights the psychological resilience and survival skills necessary for combat, detailing requirements for effectiveness in combat.⁹³ Together, these manuals cover a broad spectrum of small unit tactical

⁸⁹U.S. Department of the Army, Soldier's Manual of Common Tasks (Washington, DC: Department of the Army, 2017).

⁹⁰U.S. Department of the Army, FM 3-90 Tactics (Washington, DC: Department of the Army, 2013).

⁹¹U.S. Department of the Army, FM 3-21.10 The Infantry Rifle Company (Washington, DC: Department of the Army, 2006).

⁹²U.S. Department of the Army, FM 3-21.8 The Infantry Rifle Platoon and Squad (Washington, DC: Department of the Army, 2007).

⁹³U.S. Department of the Army, 3-21.75 The Warrior Ethos and Combat Skills (Washington, DC: Department of the Army, 2008).

tasks and effectively reflect the current focus of land warfare, ensuring a thorough compilation of modern combat training and doctrine.

Key Themes Identified

The core themes in combat training manuals consistently center around tactical proficiency, strategic acumen, and adaptability. These manuals emphasize proficiency in maneuvering, command efficiency, and the strategic application of military force. For example, terms like "force," "unit," and "fire" highlight the importance of strategic planning, effective command, and versatile use of combat resources. The themes of "enemy" and "position" focus on understanding and responding to adversaries, showcasing the importance of intelligence and situational awareness in military training. Additionally, frequent mentions of "area" and "use" underscore the significance of geographical strategies and the application of technology and tactics in diverse scenarios.

SINGLE-WORDS ✓ MULTI-WORD TERMS ✓

reference corpus: English Web 2021 (enTenTen21) (Items: 78,929)

Term	Frequency	Frequency per million	Relative DOCF
1 enemy force	1,869	2,849.35	100.00 % ...
2 friendly force	446	679.94	100.00 % ...
3 platoon leader	385	586.94	60.00 % ...
4 combat power	341	519.86	80.00 % ...
5 fire support	366	557.88	60.00 % ...
6 direct fire	327	498.52	100.00 % ...
7 indirect fire	311	474.13	100.00 % ...
8 fighting position	298	454.31	80.00 % ...
9 assigned area	303	461.93	40.00 % ...
10 control measure	484	737.87	80.00 % ...
11 main body	508	774.46	80.00 % ...
12 avenue of approach	205	312.53	80.00 % ...
13 tactical mission	201	306.43	60.00 % ...
14 performance step	195	297.28	20.00 % ...
15 mission task	195	297.28	60.00 % ...
16 tactical mission task	190	289.66	40.00 % ...
17 passage of lines	189	288.14	60.00 % ...
18 engagement area	185	282.04	80.00 % ...
19 sector of fire	158	240.88	100.00 % ...
20 subordinate unit	162	246.97	60.00 % ...
21 area defense	154	234.78	60.00 % ...
22 main effort	163	248.50	40.00 % ...
23 patrol leader	152	231.73	20.00 % ...
24 mission variable	142	216.48	60.00 % ...
25 observation post	163	248.50	80.00 % ...
26 performance measure	241	367.41	40.00 % ...
27 striking force	134	204.29	40.00 % ...
28 assault force	130	198.19	60.00 % ...
29 assembly area	140	213.43	80.00 % ...
30 defending force	124	189.04	40.00 % ...
31 offensive operation	141	214.96	60.00 % ...
32 training product	126	192.09	20.00 % ...
33 tactical deception	119	181.42	40.00 % ...
34 security area	128	195.14	60.00 % ...
35 infantry rifle	117	178.37	40.00 % ...
36 security operation	157	239.35	60.00 % ...
37 attacking force	125	190.57	40.00 % ...
38 information collection	132	201.24	60.00 % ...
39 covering force	112	170.75	40.00 % ...
40 mobile defense	109	166.17	60.00 % ...
41 organization of forces	108	164.65	60.00 % ...
42 defensive operation	110	167.70	60.00 % ...
43 defending unit	107	163.12	40.00 % ...
44 security element	110	167.70	60.00 % ...
45 movement formation	103	157.03	80.00 % ...
46 defensive position	147	224.11	60.00 % ...
47 movement technique	105	160.08	100.00 % ...
48 battle drill	100	152.45	80.00 % ...
49 rally point	101	153.98	60.00 % ...
50 squad leader	112	170.75	40.00 % ...

Rows per page: 50 1-50 of 1,000 1/20

Figure 2. Keyword Analysis from Sketch Engine: The First 50 Terms. This screenshot displays the frequency and relative distribution of combat-related terms within the corpus.

Word Sketch and Concordance Analysis

I used Sketch Engine to analyze how terms like “strength,” “carry,” “lift,” “throw,” and “drag” are used in combat training manuals, examining their frequency, context, and different applications. This analysis revealed the multifaceted ways these terms are applied. These terms extend beyond physical prowess to encompass mental resilience and operational capabilities. The word sketches for "drag," "carry," and "lift" suggest actions involving coordinated movement, implying the involvement of multiple soldiers working together. Each segment represents a different term and its related lexical field, highlighting the multifaceted concept of strength in the analyzed texts.

These terms emphasize the need for soldiers to work together in moving equipment or assisting others, highlighting teamwork over individual strength in meeting physical demands in the field. Combat manuals do not realistically expect the smallest soldier in a unit to drag the biggest out of a burning vehicle. Such a scenario is not only improbable but also not described as a realistic expectation in military doctrine. Instead, the expectation clearly indicates that soldiers will work together as a team, focusing on collective action rather than isolated feats of strength. This underscores the importance of unit cohesion and collaborative efforts in successfully accomplishing missions.

A concordance analysis of the term "physical fitness" in the Warrior Ethos and Combat Skills Manual presents a comprehensive approach to fitness. Physical fitness includes health, endurance, mental resilience, and the ability to perform under stress, emphasizing a holistic approach. Regular exercise and rest are portrayed as essential for keeping soldiers prepared and mitigating the risk of errors and illness, indicating that military physical fitness focuses on overall readiness and resilience, not just physical strength.

The U.S. Army has always prioritized enduring prolonged exertions, maneuvering under fire, and maintaining cognitive abilities in high-stress situations. These essential capabilities ensure effective combat readiness and define it holistically. Combat manuals consistently advocate for a balanced approach to physical fitness, emphasizing endurance, mental resilience, and tactical agility. Opening combat arms to women has prompted more than just a reassessment of physical fitness standards; it has led to a comprehensive redefinition of what constitutes competence in combat. This shift towards strength-centric assessments, seen in the ACFT's focus on raw physical power, redefines combat readiness and overlooks historically valued competencies. This realignment discriminates by implying that including women necessitates a new focus on brute strength, which does not fully reflect the comprehensive capabilities needed for combat effectiveness.

By emphasizing physical strength, the ACFT diminishes the importance of endurance, mental resilience, and tactical agility—qualities that are crucial for all soldiers. This narrow focus on brute strength sends a misleading message that undermines the diverse skill sets required in modern combat. As a result, the Army risks devaluing essential attributes that have long been integral to combat readiness. The inclusion of women in combat roles should lead to an inclusive reevaluation of standards that reflect all necessary competencies, rather than a restrictive emphasis on physical power.⁹⁴ This holistic approach would ensure that all soldiers, regardless of gender, meet the comprehensive demands of combat effectiveness.

Army General Officer Survey Responses

The findings from the text analysis of army combat manuals align with interviews conducted with three separate general officers. As one four-star general commented, "The biggest quality needed in a leader is good judgment, which is typically derived from sheer brains/intellect; beyond that, professional competence in the skills associated with the specific level and branch/MOS of the leader."⁹⁵ He emphasized that while physical fitness is crucial, it should not overshadow the importance of strategic thinking and emotional stability in combat situations. Another three-star general highlighted the multifaceted nature of combat readiness by stating, "Personal fitness, calm under pressure, clear understanding of commander's intent & guidance, application of mission command principles."⁹⁶ He stressed that a soldier's ability to make quick, informed decisions in high-pressure environments is as critical as their physical capabilities. A two-star general underscored the necessity of overall fitness, noting, "Mental--

⁹⁴Amy Forza, "ACFT and National Security: Assessing the Impact on Readiness," *The Defense Post*, May 15, 2024, <https://www.thedefensepost.com/2024/05/15/acft-national-security/>.

⁹⁵General David Howell Petraeus, questionnaire response, July 2024.

⁹⁶Lieutenant General John Evans, questionnaire response, July 2024.

Strong persistence to win. Clear understanding of the objective. Courage and GRIT to complete the mission regardless of the environment. Physical---When the body fails, courage fails."⁹⁷ He pointed out that comprehensive fitness includes not just muscular power but also the stamina and flexibility required to sustain long-term physical exertion.

Their collective insights reinforce the need for a balanced approach to fitness, consistent with the comprehensive competencies historically valued in military training. The emphasis on a more holistic view of combat readiness—incorporating physical, mental, and emotional strength—mirrors the competencies outlined in traditional combat manuals. These manuals advocate for a broader array of skills, including strategic planning, effective command, and situational awareness, which are crucial for combat readiness. This alignment between the generals' perspectives on combat effectiveness and the doctrinal focus of combat training manuals suggests that the strength-centric focus of the ACFT has redefined, rather than reflected, the comprehensive capabilities needed for effective military operations.

Key Insights

Opening combat arms to women seems to have sparked a cultural shift within the U.S. Army, prompting the transition from the Army Physical Fitness Test (APFT) to the Army Combat Fitness Test (ACFT). Historically, combat manuals have emphasized essential competencies for combat scenarios, such as endurance, mental resilience, and tactical agility, rather than brute strength. The ACFT's focus on strength-related metrics, such as deadlifts and sprint-drag-carry, marks a significant departure from the balanced approach advocated in combat training manuals. Analyzing U.S. Army combat manuals reveals that a broader array of skills,

⁹⁷Major General John Macdonald, questionnaire response, July 2024.

including strategic planning, effective command, and situational awareness, are crucial for combat readiness. This holistic approach to physical fitness aligns more closely with the competencies outlined in the combat manuals and the general understanding of combat effectiveness among military leaders. Content pulled from combat doctrine and expertise provided by general officers demonstrate that this strength-centric focus does not fully capture the comprehensive capabilities needed for true combat readiness. The current emphasis on strength-based tasks raises questions about why these were chosen to define combat effectiveness.

Conclusion and Proposed Reforms

The U.S. Army's transition from the APFT to the ACFT has faced valid criticisms due to its flawed implementation, increased risk of injuries, high failure rates among female soldiers, and concerns about its effectiveness for men.⁹⁸ This dissertation reveals that the ACFT's strength-centric focus diverges from the holistic competencies historically valued in military training, which emphasize endurance, mental resilience, and tactical agility. Opening combat roles to women marked a vast cultural shift within the Army. This shift prompted not just a reassessment of physical fitness standards but an entire realignment of what defines combat competence. The ACFT's emphasis on raw physical power disproportionately disadvantages women, raising serious concerns about why the Army implemented a test despite knowing it would lead to extremely high failure rates among female soldiers.

⁹⁸ Amy Forza, "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness," *Army Times*, July 25, 2024, <https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/>.

The idea that "the enemy doesn't consider age and gender" to justify the ACFT is a false equivalent. Women are just as capable as men in combat without needing to match them in size or strength. Combat readiness relies on a combination of skills, tactics, intelligence, and conditioning, rather than physical strength alone. This idea mistakenly assumes that strength is the sole measure of combat effectiveness, ignoring that soldiers of different genders, sizes, and ages can be equally lethal and effective. The ACFT's design favors tasks that benefit younger, larger men, failing to account for the diverse attributes that contribute to a soldier's true combat readiness.

To create a more effective fitness assessment, the Army should consider several reforms. First, develop a comprehensive fitness test that includes measures of endurance, agility, and flexibility alongside strength.⁹⁹ This approach would better reflect the diverse competencies required for combat readiness and address the distinct physical capabilities of female soldiers. Additionally, assess branch specific combat tasks separately from physical fitness to ensure each area receives appropriate focus. Multiple studies reveal concerns that the ACFT may increase the risk of injuries for women, contradicting the test's stated goal of reducing injuries. This underscores the need to change the test to incorporate gender-specific physical fitness test standards that account for physiological differences while maintaining rigorous combat readiness evaluations.¹⁰⁰

Physical fitness evaluations should also incorporate gender and age norms to ensure accurate measurements of soldier's individual fitness levels. Tests involving heavy lifting need to

⁹⁹ Amy Forza, "Rethinking Combat Fitness: Is the ACFT Aligned With Modern Warfare Needs?" *The Defense Post*, May 15, 2024, <https://www.thedefensepost.com/2024/05/15/acft-national-security/>.

¹⁰⁰ Amy Forza, "Army Combat Fitness Test Threatens to Undermine Combat Effectiveness," *Army Times*, July 25, 2024, https://www.armytimes.com/opinion/commentary/2024/07/25/army-combat-fitness-test-threatens-to-undermine-combat-effectiveness/?utm_campaign=fb_at&utm_source=facebook&utm_medium=social.

consider height and weight to prevent disadvantages for smaller soldiers regardless of gender. Implementing such norming addresses biases in current assessments and ensures accurate and equitable evaluation of all soldiers. To reduce injury risks associated with tasks like the deadlift or sprint-drag-carry, the Army should consider alternatives that minimize reliance on brute strength. These tasks often place significant strain on muscles and joints, particularly for soldiers with different physiological builds.

Proposed ACFT Task Modifications

Based on the findings from the article "Operational Physical Performance and Fitness in Military Women: Physiological, Musculoskeletal Injury, and Optimized Physical Training Considerations" by Bradley C. Nindl, PhD, and colleagues, the ACFT should incorporate a gender-specific strength test that capitalizes on women's strengths in sustained efforts and endurance.¹⁰¹ An example of this could be an Endurance-Based Load Carry Task designed to evaluate soldiers' ability to carry a moderate load over an extended period. This task would prioritize endurance over sheer strength and avoid unrealistic load requirements that do not reflect real-world scenarios. Soldiers could be required to carry a weight equivalent to a percentage of their body weight (e.g., 30%) over a distance of 2-3 miles. This moderate weight would simulate scenarios where soldiers must move equipment or supplies over longer distances, emphasizing sustained effort rather than short bursts of maximal strength.

Additionally, the traditional push-up focuses on endurance rather than maximum strength and can lower injury risk while still effectively measuring upper body strength. Incorporating a

¹⁰¹Bradley C. Nindl et al., "Operational Physical Performance and Fitness in Military Women: Physiological, Musculoskeletal Injury, and Optimized Physical Training Considerations," *Military Medicine* 181, no. 1 (2016): 57-60. <https://doi.org/10.7205/MILMED-D-15-00388>.

task that tests flexibility and balance, such as the single-leg balance test,¹⁰² standing reach test,¹⁰³ Y-balance test,¹⁰⁴ and tactical crouch run,¹⁰⁵ can be incorporated and are crucial for combat effectiveness. Focus on training for these tasks not only reduces the likelihood of injury but also enhances a soldier's agility, coordination, and stability, which are essential for effective performance in combat situations. Balance and flexibility are crucial in combat because they enable soldiers to maneuver quickly in unpredictable environments, maintain control under physical stress, and adapt to rapidly changing situations, such as navigating obstacles, evading attacks, and recovering from sudden movements.

The medicine ball throw, which emphasizes explosive power and overall body coordination, avoids the heavy strain of exercises like the deadlift. A lighter kettlebell carry could serve as a measure of functional strength, emphasizing stability and endurance over pure lifting power. By incorporating exercises that reflect real-world functional strength and endurance, rather than maximal lifting capacity, the Army could provide a more balanced fitness assessment across genders. While these alternatives will likely reduce injury risks and improve performance, rigorous testing is essential to ensure they effectively predict combat readiness and maintain the standards required for operational effectiveness.

Gender Neutral Combat Task Assessments

The U.S. Army has traditionally emphasized the ability to endure prolonged exertion, conduct maneuvers under fire, and maintain cognitive abilities in high-stress situations. Combat

¹⁰² Pål Berg-Hansen et al., "The Instrumented Single Leg Stance Test Detects Early Balance Impairment in People with Multiple Sclerosis," *Frontiers in Neurology* 14 (2023): 1227374, <https://doi.org/10.3389/fneur.2023.1227374>.

¹⁰³ "Stand and Reach Flexibility Test," Topend Sports, accessed August 22, 2024, <https://www.topendsports.com/testing/tests/stand-and-reach.htm>.

¹⁰⁴ Y Balance Test," *Physio-pedia*, accessed August 22, 2024, https://www.physio-pedia.com/Y_Balance_Test.

¹⁰⁵ Crouch Run Exercise 2023," *Army PRT*, accessed August 22, 2024, https://www.armyprt.com/endurance_and_mobility_activities/crouch-run.shtml.

manuals advocate for a balanced approach to physical fitness, focusing on endurance, mental resilience, and tactical agility. However, the ACFT's emphasis on raw physical power deviates significantly from these priorities and fails to capture the comprehensive capabilities essential for combat effectiveness. To better assess combat readiness, the Army should implement combat task tests per branch tailored to specific combat arms roles, recognizing that many physically demanding tasks, such as lifting heavy artillery shells or dragging a person out of a burning vehicle, are more likely to be accomplished through teamwork in real-life scenarios.

Combat manuals consistently emphasize the importance of unit cohesion and collective action, underscoring that these tasks are designed to be handled by multiple soldiers working together, rather than relying solely on individual strength. Furthermore, tasks like marches with heavy equipment should be scaled proportionally to a soldier's body weight. The amount of gear a soldier needs to carry is highly subjective and varies depending on the mission, meaning that standards should not be based solely on what an average male soldier can carry.

These assessments could be recalibrated around what an average female soldier can carry, recognizing that previous standards were developed with male averages in mind, not female. By acknowledging these factors, the Army can design tests that measure real-world combat capabilities more effectively, ensuring that all soldiers, regardless of gender, are evaluated accurately and prepared for the demands of their specific roles. The Army must ensure that physical fitness assessments accurately reflect the fitness levels of individual soldiers, rather than disproportionately favoring one gender. Implementing reforms that address these disparities will enable the Army to better support all soldiers, fostering a more resilient and effective fighting force.

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Appendix A

Introduction:

Hello General David Petreaus,

Thank you for taking the time to participate in this questionnaire. Your extensive experience and insights are crucial to my research on combat requirements and effectiveness in infantry units. With your permission, I would like to use your name and title in my dissertation.

Please answer the following questions based on your experience and perspective. Your input will help deepen the understanding of the critical physical and mental attributes for combat readiness, effective training programs, the balance between physical fitness and combat skills, leadership qualities, and the evolution of Army standards and practices.

Please answer the following questions based on your experience and perspective.

Consent:

By completing this questionnaire, you consent to the use of your name and responses in my dissertation. If you have any concerns or prefer certain responses to remain anonymous, please indicate this at the end of the questionnaire.

1. In your experience, which physical and mental attributes are most critical for combat readiness?

Physical and mental toughness, judgment (appropriate to the level of service -- e.g., tactical, operational or strategic), sheer brains/intellect/insight on situations, skill in common tasks and also individual professional tasks appropriate for the individual and his/her MOS/branch...

2. Can you describe any particular training programs or exercises that you found particularly effective in preparing soldiers for combat?

Tough physical fitness training (endurance, strength, agility, specific skills appropriate to the individual's MOS/branch), aggressive live fire exercises, combat marksmanship, ranger training (best leadership training in the Army), specific skills competence, teamwork, etc.

3. How do you view the balance between physical fitness and other combat skills (e.g., marksmanship, tactical maneuvering, first aid)?

All are important, though the importance to individuals depends somewhat on their MOS/branch.

4. What qualities make an effective leader in combat situations?

The biggest quality needed in a leader is good judgment, which is typically derived from sheer brains/intellect; beyond that, professional competence in the skills associated with the specific level and branch/MOS of the leader. Also the ability to lead from the front (physical and mental toughness), energy, enthusiasm, inspiration, brains, interpersonal skills, calm under pressure, etc.

5. The U.S. Army has a long history, dating back to 1775. Why do you think specific physical standards have never been outlined in Army combat manuals?

Specific physical standards have repeatedly been laid out, albeit they have evolved over time.

6. Are there any historical lessons that should inform current and future standards for combat readiness?

Yes, that soldiers need a mix of physical and mental toughness, as well as brains, adaptiveness, initiative, innovativeness, health, etc.

7. What are the biggest challenges facing infantry units in modern combat scenarios?

Innumerable challenges - physical ones from loads carried; strain on joints/back/legs, etc; enemies that are quite competent and ruthless; IEDs; the advent of enemy drones and other unmanned systems; ubiquitous surveillance; increasingly complex weapons systems and enablers; etc.

8. Based on your career, what changes or improvements would you recommend for the U.S. Army to enhance the combat readiness of combat arms units?

Tough physical fitness training, as well as comprehensive approach to overall fitness (smoking cessation; moderation in drinking; no illegal narcotics/drugs; decent nutrition; mental toughness) - that seeks to ensure that all can meet established minimum standards for all soldiers and also for specific branches/MOSs AND also strives to bring out the best in each individually -- so that the fast runners don't just plod along at the minimum, but are encouraged to stretch it out, etc.

9. How should the U.S. Army continue to evolve its fitness assessments to meet future combat demands?

Constantly assess the physical requirements for all soldiers and have hard and fast limits for ALL soldiers, regardless of age and gender. And also determine the minimal acceptable standards for specific tasks associated with specific MOSs/branches/occupations. So there would be two tests -- one for all soldiers, for which there would be minimum standards that all have to meet (admittedly some of these would be tougher for women than men) to be a soldier; and another specific to the branch/MOD/occupation.

10. Additional Comments:

Closing:

Thank you for your time and insights. Your responses will greatly contribute to a deeper understanding of the critical physical and mental attributes necessary for combat readiness. Additionally, your perspectives on leadership qualities, historical standards, modern combat challenges, and recommendations for future improvements will be invaluable. If you have any additional comments or suggestions, please feel free to include them.

Appendix B

Introduction:

Hello General Evans,

Thank you for taking the time to participate in this questionnaire. Your extensive experience and insights are crucial to my research on combat requirements and effectiveness in infantry units. With your permission, I would like to use your name and title in my dissertation.

Please answer the following questions based on your experience and perspective. Your input will help deepen the understanding of the critical physical and mental attributes for combat readiness, effective training programs, the balance between physical fitness and combat skills, leadership qualities, and the evolution of Army standards and practices.

Please answer the following questions based on your experience and perspective.

Consent:

By completing this questionnaire, you consent to the use of your name and responses in my dissertation. If you have any concerns or prefer certain responses to remain anonymous, please indicate this at the end of the questionnaire.

1. In your experience, which physical and mental attributes are most critical for combat readiness?

Overall physical stamina, upper body strength and core fitness.

Mental agility, grit, emotional resilience, self-control under pressure.

2. Can you describe any particular training programs or exercises that you found particularly effective in preparing soldiers for combat?

The basics are essential - daily physical training, mastery of your MOS skill set, lethal effectiveness with your assigned weapon.

Additional training - SERE-C, focused qualification courses and PME, skill badge producing schools (these teach a skill but foster teamwork under adversity - AASLT, ABN, Pathfinder, Ranger, etc.).

3. How do you view the balance between physical fitness and other combat skills (e.g., marksmanship, tactical maneuvering, first aid)?

The arbiter of victory in combat, all other things being equal, is your level of fitness - physical, emotional, spiritual, social.

4. What qualities make an effective leader in combat situations?

Personal fitness, calm under pressure, clear understanding of commander's intent & guidance, application of mission command principles.

5. The U.S. Army has a long history, dating back to 1775. Why do you think specific physical standards have never been outlined in Army combat manuals?

Personal fitness is referenced frequently in combat manuals. Specific standards are absent to allow leaders to decide where emphasis should be placed as warfare evolves.

6. Are there any historical lessons that should inform current and future standards for combat readiness?

Reviews of men (and women) who have faced extreme circumstances in combat situations (think Somalia, LZ X-Ray or the Normandy landings) continually underscore the importance of the basics - personal fitness, stamina, marksmanship, employment of joint fires.

7. What are the biggest challenges facing infantry units in modern combat scenarios?

The evolving asymmetric threats that are increasing ubiquitous (drones, cyber, R&S) and precision lethality (drones, long range precision fires, etc.) by our adversaries which used to be the exclusive domain of NATO-type forces.

8. Based on your career, what changes or improvements would you recommend for the U.S. Army to enhance the combat readiness of combat arms units?

Continue to advocate for gender neutral standards for "combat arms" specific jobs.

Focus on the basics and lethality at every opportunity.

Harden the emotional resilience of the force.

9. How should the U.S. Army continue to evolve its fitness assessments to meet future combat demands?

Experimentation, field trials, a rigorous annual PT assessment which has as its goal, not "passing" or "maxing" the assessment, but rather, continuing improvement year after year.

10. Additional Comments:

Thanks for the opportunity to opine.

Closing:

Thank you for your time and insights. Your responses will greatly contribute to a deeper understanding of the critical physical and mental attributes necessary for combat readiness. Additionally, your perspectives on leadership qualities, historical standards, modern combat challenges, and recommendations for future improvements will be invaluable. If you have any additional comments or suggestions, please feel free to include them.

Appendix C

Introduction:

Hello General Macdonald,

Thank you for taking the time to participate in this questionnaire. Your extensive experience and insights are crucial to my research on combat requirements and effectiveness in infantry units. With your permission, I would like to use your name and title in my dissertation.

Please answer the following questions based on your experience and perspective. Your input will help deepen the understanding of the critical physical and mental attributes for combat readiness, effective training programs, the balance between physical fitness and combat skills, leadership qualities, and the evolution of Army standards and practices.

Please answer the following questions based on your experience and perspective.

Consent:

By completing this questionnaire, you consent to the use of your name and responses in my dissertation. If you have any concerns or prefer certain responses to remain anonymous, please indicate this at the end of the questionnaire.

1. In your experience, which physical and mental attributes are most critical for combat readiness?

Mental--Strong persistence to win. Clear understanding of the objective. Courage and GRIT to complete the mission regardless of the environment.

Physical---When the body fails, courage fails. You have to have a strong cardio vascular system and enough shoulder and hip joint strength to survive without injury.

2. Can you describe any particular training programs or exercises that you found particularly effective in preparing soldiers for combat?

The Army physical fitness program and test creates a good physical base (2 mile run, push up sit up). For strength the dead lift is a great one. The Army combat fitness test does another level of fitness for combat soldiers. Lots to mention here.

3. How do you view the balance between physical fitness and other combat skills (e.g., marksmanship, tactical maneuvering, first aid)?

Without physical fitness you will never be an asset to a combat unit...matter of fact you will be a liability. There are too many heavy loads, long cardio vascular tasks and sheer grit issues that come with the difficult task of getting into physical shape. And remember, courage dissipates with physical exhaustion.

4. What qualities make an effective leader in combat situations?

Clear, decisive understanding of the mission. An understanding of risk and how to mitigate risk for friendly and increase catastrophic risk for enemy (very difficult and complex topic that takes years of experience to identify and create solutions). A tested and rehearsed individual and team ability to bring all combat power to bear on an enemy. Composure.

5. The U.S. Army has a long history, dating back to 1775. Why do you think specific physical standards have never been outlined in Army combat manuals?

Specific Physical Standards----a giant task the Army has just completed to identify tasks that make you qualified and eligible for certain jobs in the Army. The army then boiled ALL THOSE tasks down to five tasks that are scalable through out the Army(think testing time, equipment, training time) ---called the Army Combat Fitness test.

6. Are there any historical lessons that should inform current and future standards for combat readiness?

Combat Readiness is an all encompassing term. WWII, 99th Division was marched into the center of the battle of the Bulge (an area of estimated very low risk), still in their collared shirt and ties from the boat. They had no physical conditioning on the boat, no in country conditioning or marksmanship practice. They were DECIMATED by the German lead division. That Division was never to be recognized in the US Army again.

7. What are the biggest challenges facing infantry units in modern combat scenarios?

Data fusion. There is so much data coming into an infantry unit that we need data fusion engines to make very best estimates of ingested data. The possibility of reducing the fog of war looms near, yet we overwhelm with out digital solutions.

8. Based on your career, what changes or improvements would you recommend for the U.S. Army to enhance the combat readiness of combat arms units?

Emphasis on the 8 step training model. We lost that in 20 years of AFGHAN/Iraq. The system is quintessential to learning, knowing and growing the capabilities of a unit.

Get back into marksmanship and live fire scenarios on live ranges. Simulations are nice for procedure, but live fire tables teach realism and danger. The more real, the more combat ready.

9. How should the U.S. Army continue to evolve its fitness assessments to meet future combat demands?

I would love to see a physical test for every MOS, but that is impractical. This next step of standards for each job using the CFT is the best we are going to do for a while. The CFT is a GIANT step forward. We previously let small, not strong, young gamers of "Real Kombat" into the infantry when they could barely pass the Army Physical Fitness test (run, sit up, push up). They got physically destroyed in basic training, only to be medically discharged, cost the US Army and the Veterans administration millions of dollars for life as a disabled veteran. Now, you have to pass the CFT to a certain level to enlist in the infantry or armor or artillery or ammo handlers, or etc And if you can't

then you are put in a branch that needs less physicality, like admin or cooks or computers. Brilliant!! for everybody.

10. Additional Comments: Multi Line Text.

Don't mistake the very specific term "combat readiness" for "combat physical readiness". One is an important, but small, component of the other.

Macdonald with a small "D". thanks

Closing:

Thank you for your time and insights. Your responses will greatly contribute to a deeper understanding of the critical physical and mental attributes necessary for combat readiness. Additionally, your perspectives on leadership qualities, historical standards, modern combat challenges, and recommendations for future improvements will be invaluable. If you have any additional comments or suggestions, please feel free to include them.