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The number of nondeployable Soldiers within the Army force is at an all-time high and steadily increasing. As of 2018, the Army accounts for the highest percentage of overweight troops, with more than 100,000 soldiers in a nondeployable status due to their inability to perform physically, thus severely degrading force readiness. This paper revealed poor nutrition as the primary contributor to this growing epidemic of an increasingly unfit Army culture by analyzing several contributing factors and conducting a historical overview of various attempts the Army has made to address this problem. This paper

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MASTER OF MILITARY STUDIES

TITLE: Setting the Conditions for Effective Nutrition Strategy Implementation in an Increasingly Unfit Army Culture

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Executive Summary

Title: Setting the Conditions for Effective Nutrition Strategy Implementation in an Increasingly Unfit Army Culture

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Thesis: Research suggests that Army culture is becoming increasingly "unfit", in terms of force readiness. This is due to a variety of factors, to include increased technology, a generational entitlement of instant gratification, a lack of adequate and formal exercise, and poor nutrition among others.

Discussion: The number of nondeployable Soldiers within the Army force is at an all-time high and steadily increasing. As of 2018, the Army accounts for the highest percentage of overweight troops, with more than 100,000 soldiers in a nondeployable status due to their inability to perform physically, thus severely degrading force readiness. Analysis of the contributing factors to the increasing rise of an unfit Army culture reveal that technological advancements fosters a culture of impatience, contributing to a generational requirement of instant gratification. This generational requirement of instant gratification and need to avoid delayed gratification fosters an American cultural pattern that leads to a lack of adequate exercise and enables poor nutrition choices. This paper will argue that poor nutrition is the primary contributor to the increasingly unfit Army culture by examining an array of factors to this problem and providing a historical overview of the various attempts the Army has made to address this growing epidemic.

Conclusion: This paper recommends that the Army institute policies and procedures that foster a culture that prioritizes nutrition as the most vital component to achieving peak performance on and off the battlefield. Instituting an effective nutrition strategy that is complementary of the Army's current physical fitness training initiatives will enable the Army's ability to develop Soldier Athletes across its ranks, increasing the overall lethality and readiness of the total Army force.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Introduction

The number of nondeployable Soldiers within the Army force is at an all-time high and steadily increasing. At the time of this writing, there are more than 100,000 soldiers in a nondeployable status due to their inability to perform physically, thus severely degrading force readiness.[1] Carl von Clausewitz emphasizes that the armed forces do not exist only for their own sake, but rather they are political instruments.[2] Army General, Martin E. Dempsey, compliments Clausewitz's theory, emphasizing that the Army is a profession of arms that not only exists to act in self-defense of the Nation, but also to defend the collective rights of the American people regarding political autonomy and basic human rights.[3] Applying the theories of both Clausewitz and General Dempsey to today's increasingly complex environment, defined by challenges from adversaries operating in every domain, the Army must stand ready to contribute to the Joint Force and act not only as a defender of this Nation but also as a political instrument to achieve US political objectives in support of US national security.

The 2018 National Defense Strategy (NDS) prioritizes building a more lethal joint force to expand the competitive space in support of national security.[4] Specifically, the 2018 NDS emphasizes that a more lethal force, American technological innovation, and a culture of performance will generate decisive and sustained US military advantages.[5] Former US President, John F. Kennedy states "Fitness is not only one of the most important keys to a healthy body, it is the basis of dynamic and creative intellectual activity."[6] Dynamic and creative intellectual activity are needed to achieve two of the 2018 NDS objectives: 1) creating a culture of performance and, 2) expanding the competitive space in support of national security. With the steady increase of non-deployable Soldiers within its organization, how can the US Army unreservedly contribute not only to the lethality and readiness of the joint force, but also

maintain its stance in the profession of arms as an effective political instrument in support of US national security?

Baron Von Steuben, the Drillmaster of Valley Forge (1777-1778), theorizes that physical conditioning and health directly links to individual and unit discipline, courage in the fight, and victory on the battlefield.[7] Baron Von Steuben's concept remains true in today's Army, as research studies continuously reveal that levels of conditioning and physical performance of Soldiers is directly proportional to success or failure on the battlefield.[8] This correlation between physical performance and success on the battlefield implies that a "fit" Army is a capable Army. Research suggests that Army culture is becoming increasingly "unfit", in terms of force readiness, due in large part to rising obesity rates.[9] A variety of factors contribute to this rise in obesity rates within the Army, to include increased technology, a generational entitlement of instant gratification, a lack of adequate and formal exercise, and poor nutrition among others.[10] This increase in technology as well as a generational entitlement of instant gratification over the past two decades has served a multitude of positive effects that has enabled the rise of the US as the global leader in science and technology as of 2018.[11] However, research also reveals that the increase in technology and a generational entitlement of instant gratification has contributed to an increasingly obese American culture that lacks adequate and formal exercise and makes poor nutrition choices.[12] Nutrition is 80 percent of the weight management process, with physical exercise being the remainder 20 percent.[13] Therefore, this paper will argue that poor nutrition is the primary contributor to the increasingly unfit Army culture by examining an array of factors to this problem, providing a historical overview of the various attempts the Army has made to address this problem, and providing recommendations for Army Leadership based on Special

Operations Forces (SOF) best practices and empirically-based research. Accordingly, the remainder of the paper will address the following questions:

1. What evidence is there to suggest that Army culture is becoming increasingly unfit?
2. What kinds of factors have led to this problem?
3. What efforts has the Army made to address this problem?
4. What is the primary contributor to this problem?
5. What efforts should Army leadership implement moving forward to mitigate the identified primary contributor to this problem?

Methodology

The research methodology used to identify the cause of an increasingly unfit Army culture was predominately qualitative in nature. A qualitative analysis of literature allowed for a systematic method in which to analyze literature that relates to the culture, values, opinions, behaviors, and social contexts of Army servicemembers in relation to the rise of an increasingly unfit Army culture. The qualitative method applied in this research enabled this study to identify findings, not predetermined in advance, and allowed for the identification of information about the "human" aspect that contributes to the rise of an unfit Army culture, such as contradictory behaviors, beliefs, and emotions. Finally, the qualitative method applied assisted in identifying intangible factors that may or may not have contributed to the rise of an unfit Army culture, such as social norms, socioeconomic status, ethnicity, gender roles, etc.

The Problem: An Unfit Army

The military categorizes Soldiers as non-deployable for either administrative, legal, and/or medical conditions. From 2007 - 2018, the number of non-deployables within the military rose from 4% to roughly about 13 - 4 percent.[14] This 13 - 14 percent equates to

approximately 286,000 troops of the 2.1 million personnel in a nondeployable status serving across all branches of the military – active duty, reserves, and National Guard.[15] Of those 286,000 troops, roughly 100,000 of those troops were in a nondeployable status due to their inability to perform physically.[16] As of 2016 more than 10 percent of the military was overweight, deeming 10 percent of the military unfit to deploy.[17] Delving deeper into this growing epidemic, a 2018 RAND report on health promotion and disease prevention revealed that almost 66 percent of service members are considered to be either overweight or obese, based on the military's use of body mass index (BMI) as a measuring standard.[18] Adding more to this concern is the fact that the 2018 report lists the Army as the branch accounting for the highest percentage of overweight troops, with 69.4 percent of soldiers falling under this category.[19] The 2017 National Defense Authorization Act (NDAA) increased the end strength of the active-duty Army to 476,000 personnel, while increasing other military services such as the Air Force active duty end strength to 321,000 and the Marine Corps end strength to 18,500.[20] These targeted end strength numbers granted by the NDAA, reveal that the Department of Defense (DoD) relies most heavily on the Army to contribute to the total force and win this Nation's wars. Army's lead in obesity in comparison to other US military services is problematic because the Army makes up the vast majority of the total military force.

Further acknowledging the growing epidemic of non-deployables in the military due in large part to an increasingly "unfit" Army, on 30 July 2018 the DoD issued DoD Instruction 1332.45, *Retention Determinations for Non-Deployable Service Members*.[21] This instruction centers around the military's ability to maximize the lethality and readiness of the joint force and emphasizes the necessity that every Service member be physically and mentally fit to deploy at any time and any place. The Army requires Service members who join the force to fight in

increasingly complex and demanding conflicts, and Soldiers must be mentally and physically prepared to meet the demands of fighting and winning this nation's wars. The high non-deployable number within the Army negatively impacts the Army's ability to contribute to the lethality and readiness of the joint force and decreases the likelihood of fulfilling its mission to win this nation's wars.

Contributing Factors to the Problem

The growing epidemic of an unfit culture is reflective of the increasingly unfit American culture. In today's America, just under 30 percent of Americans ages 17 to 24 – the prime age to join the Army- are not eligible to join the Army.[22] Moreover, obesity disqualifies almost a third of individuals who speak with a recruiter to take the initial steps to join the Army.[23] Major General, Frank Muth, head of Army Recruiting Command, stated "out of all the reasons that we have future soldiers disqualify, the largest – 31 percent – is obesity."[24] This section will argue that the Army culture is becoming increasingly "unfit," due to a variety of factors, to include technological advancements, a generational requirement of instant gratification, a lack of adequate and formal exercise, and poor nutrition.

Technological advancements over the past few decades are a contributing factor to the increasingly unfit Army culture, by fostering a culture of increased impatience. A University of Massachusetts Amherst professor, Ramesh Sitaranmann, examined the viewing habits of 6.7 million internet users in a study and found that subjects were willing to be patient up to two seconds when waiting for a video to load.[25] After the two second mark, the users started to abandon the video.[26] After five seconds, the abandonment rate increased to 25 percent and by ten seconds, half of the users were gone.[27] The results of this study revealed that as internet speeds increase, people are less willing to wait. In response to Sitaranmann's research study,

Narayan Janakiraman, an assistant marketing professor at the University of Texas, Arlington, explained that though the need for instant gratification in today's culture is not new, the expectation of 'instant' has become faster, and as a result, patience is thinner.[28] In another research study, assistant professor of psychology at Texas A&M University, Darrell Worthy, found evidence that people were becoming more focused on quick fun – choosing games as Angry Birds on the iPhone versus reading books or magazines.[29] His study revealed that immediate gratification was increasingly becoming the default response. These studies reveal how technological advancements foster a culture of impatience, further exasperating the culture's need for instant gratification.

Due in large part to technological advancements, a generational entitlement of instant gratification is another factor contributing to the increasingly "unfit" Army culture. Generation X who grew up with everything fast – fast food and even faster entertainment, followed by Generation Z who grew up with everything instant – instant information, instant communication, and above all instant gratification, pave the way for American culture shifts.[30] Generation Z, represents the massive generation born between 1995 and 2010 that comprises a quarter of the US population, outnumbering both Millennials and Baby Boomers.[31] Jean Twenge, an American psychologist who researches generational differences, refers to Generation Z as iGen, which encompasses members of Generation Z that grow up with smartphones and cannot perceive a time before the internet.[32] Twenge explains how even though Millennials also grew up with the internet, it was not ever-present in their lives, at hand at all times, day and night as it is for iGen (Generation Z) in today's technologically savvy environment.[33] In fact, a 2017 survey of more than 5,000 American teens revealed that three out of four teens owned an iPhone.[34] Given today's American culture that emphasizes time efficiency and instant gratification, a large

portion of the Army, which recruits from its American society, will naturally reflect these same values.

Instant gratification is the desire to experience pleasure or fulfillment without delay or deferment. [35] Instant gratification is innate to basic human desire to have what we want when we want it without any delay. In Sigmund Freud's psychoanalytic theory of personality, he presents the idea of the id, the most basic and animalistic part of personality and one of the strongest motivating forces present from birth.[36] Freud's theorizes the concept of the pleasure principle as the driving force of the id which seeks immediate gratification of all needs, wants, and urges.[37] The pleasure principle seeks to fulfill human basic and primitive urges, to include hunger, thirst, and even sex and proposes when these urges go unmet, the result is a state of anxiety or tension.[38] Thus, to avoid the discomfort of anxiety or tension, the pleasure principle helps make sense of human behavior and the desire for instant gratification.

Although instant gratification has its advantages, relieving anxiety and tension, research reveals that delayed gratification has advantages specifically when it comes to physical fitness. In the 1960's, Stanford University Professor, Walter Mischel, conducted a popular study known as the Marshmallow Experiment.[39] The study tested hundreds of children, mostly of the ages of 4- and 5-years of age. The children sat in a room individually with one marshmallow in front of them. Per the study rules, the child could eat their single marshmallow instantly but that would be the only marshmallow they received, or the child could refrain from eating the marshmallow until the researcher returned and, in return, would the researcher would award a second marshmallow. Researchers categorized the few children who abstained the entire 15 minutes from eating the marshmallow as high-disciplined and the remainder of the children who ate the marshmallow as low-disciplined and tracked each group of children for the next four decades.

Forty years later, researchers found that the high-disciplined delayers had higher SAT scores, lower levels of substance abuse, lower likelihood of obesity, better responses to stress, and generally better scores in a range of other life measures. This research reveals a correlation between delayed gratification and decreased likelihood of obesity.[40]

Lack of adequate and formal physical exercise is another contributing factor to the increasingly "unfit" Army culture. America's generational requirement for immediate gratification and desire to avoid delayed gratification are major components leading to lack of adequate and formal physical exercise. An American Cancer Society research study revealed that impatient time preferences lead to decision-making based on immediate gratification.[41] Specifically, the study found that when given the choice, subjects in the study would choose to watch television which provides instant gratification, instead of exercising which would benefit one's future welfare.[42] Shane Trotter, Strength and Conditioning coach, states that "delayed gratification and toughness are at the root of every effort toward healthy change."[43] He further elaborates, by emphasizing that long-term weight loss requires delayed gratification repeatedly, as it requires a vision, a plan, and to a degree, raw discipline.[44]

Poor nutrition is another contributing factor to the increasingly unfit Army culture, which directly correlates to America's generational requirement for instant gratification. Research reveals that instant gratification enables poor nutrition choices and that the ability to delay immediate gratification correlates with less frequent consumption of fast food.[45] Fast food has become a major part of the American diet. The US Centers for Disease Control and Prevention revealed that between 2013 and 2016, about 37% or approximately 84.8 million US adults consumed fast food on any given day.[46] Moreover, the data also revealed that fast food consumption varied by age, income level, race and sex. In particular, the study found that 44.9%

of adults ages 20 to 39 consumed fast food on any given day, compared with 37.7% of adults 40 to 59, and 24.1% of adults 60 and older.[47] Moreover, the study revealed that 48.3% of men consumed fast food during lunch versus 39.1% of women.[48] These statistics are critical as they represent a majority demographic of the Army – males between the ages of 20 to 39.

An American Cancer Society research indicated that fast food consumption, which often consists of energy-dense nutrient-poor food, contributes to obesity and other chronic conditions in the US.[49] As a result, cross-sectional studies reveal a positive association between the density of fast-food restaurants and obesity and longitudinal studies reveal a correlation between frequent fast-food consumption and weight gain.[50] Despite the increased awareness of the health hazards of fast food, consumption of fast food continues to increase in American culture. Fast food enables people to curve their appetites as quickly and cheaply as possible and move on to the other several things they need to accomplish in any given day. Overall, research reveals that American cultural preference for fast food represents a culture that emphasizes time efficiency and immediate gratification.

Army Efforts to Address the Problem

To best identify the primary contributor to the increasingly rising unfit Army culture, this research paper will conduct a historical review and analysis of the Army's Physical Readiness Training (PRT) over the past three decades. By understanding previous initiatives, this historical analysis will also help drive recommendations for Army Leadership to address this epidemic. The most constraining factor for Army PRT during the past three decades is the decline in youth fitness and increase in childhood obesity within the US.[51] As a result, unfit and overweight recruits caused significant PRT issues in Basic Combat Training (BCT) as injury and attrition rates increased and graduation rates declined.[52] By 2000, the Army still lacked a resolution to

address the growing epidemic of fitness and obesity issues and initiated a decade of research and discussion on physical fitness assessment, injury reduction, and attrition mitigation.[53] To address this issue, over the past three decades the Army has made countless initiatives to address the increasingly rising "unfit" Army culture, primarily centered around the Army Physical Fitness Test (APFT).

Army PRT doctrine underwent several changes throughout the 1990's. During this time, Army leaders primarily focused on age and gender equity in APFT standards and rising body fat concerns.[54] As a result, the Army revised FM 21-20 *APFT Standards,* in 1992 and again in 1998, maintaining the same 3-event APFT which consists of 2 minute push-ups, 2 minute sit-ups, and a 2-mile run, but changing the APFT scoring, adding scores up to the age of 52.[55] In 2003 the Army made attempts to revise the APFT, including such events as a standing long jump, 1-minute "power squat", 1-minute heel-hook, 12 x 25 yard shuttle run, 1-minute push-up and 1-mile run.[56] However, the Army did not implement this 2003 proposal in large part to concerns about safety and the proper administering of certain events.[57] In another attempt to address this issue, in 2010 the Army proposed the test of physical capacity (Army Physical Readiness Test – PRT) and functional capacity (Army Combat Readiness Test – CRT) to replace the APFT.[58] The Army PRT events would include a standing long jump, 1-minute rower, 60-yard shuttle, 1-minute push-up and 1-mile run.[59] The Army CRT would be a timed test, including a 400-meter run with weapon; an obstacle course with low hurdles, high crawls and over-under obstacles; a 40-yard casualty drag; a 40-yard run with ammo cans atop a balance beam; point, aim, and move drills; a 100-yard ammo can shuttle sprint; and a 100-yard agility sprint.[60] Much like the 2003 proposal, the Army did not implement the 2010 proposal due to the

high cost of materials and concerns about the scientific basis for the tests and, as such, the Army placed the plans to implement both the Army PRT and CRT on hold in 2012.[61]

Continuing its focus on age and gender equity in APFT standards and rising body fat concerns, in July of 2018 Army officials unveiled a new gender and age neutral Army CFT to take effect by late 2020, which will replace the run/sit-ups/push-ups protocol on the current Army PFT.[62] The CFT six-event test that will consist of deadlifts, standing power throw, hand-release push-ups, sprint-drag-carry, leg tucks, and a two-mile run.[63] Major General Malcom Frost states that the new Army CFT represents "a generational, cultural change in fitness for the United States Army, and will be a cornerstone of individual soldier combat fitness."[64] General Frost also asserts that the CFT predicts with 80 percent accuracy whether a soldier will be effective in combat, compared with 40 percent for the Army PFT.[65] Analysis of the Army's physical fitness training initiatives from 1980 to present reveal the Army's focused efforts to address rising body fat concerns and transition to an age and gender equitable approach to physical fitness standards.

Primary Contributor to the Problem

Analysis of the contributing factors to the increasing rise of an unfit Army culture reveal that technological advancements fosters a culture of impatience, contributing to a generational requirement of instant gratification. This generational requirement of instant gratification and need to avoid delayed gratification fosters an American cultural pattern that leads to a lack of adequate exercise and enables poor nutrition choices. Understanding that the Army is a subset of the American culture, the Army has proposed several initiatives focused primarily on adequate and formal exercise. These initiatives focus primarily on combatting rising body fat concerns in the Army. The 2018 Army CFT proposal, presents greater intensity and increased physical

fitness standards when compared to the current APFT. However, the Army has changed the PT standards six times since the APFT roll out in 1980. Despite multiple initiatives to change the APFT, the Army continues to grow increasingly unfit, suggesting the problem does not primarily reside with adequate and formal exercise, but rather with the other vital component of the fitness solution – nutrition.

Just as a car requires the right grade of gasoline to run effectively, one's body requires the right fuel to work effectively. Research proves that nutrition is 80 percent of the weight management process, revealing that physical fitness is only 20 percent of the equation.[66] In fact, an individual can transform their body composition through the proper diet alone with little to no exercise.[67] This is because the extra calories an individual burns during an exercise only accounts for a small portion of their total exergy expenditure.[68] Therefore, without an effective nutritional strategy to pair with the physical fitness activity, exercise is a waisted activity, much like a person choosing to swim upstream. Obesity researcher, Alexxai Kravitz, explains that there are three main components to energy expenditure: 1) basal metabolic rate, or the energy used for basic functioning when the body is at rest; 2) the energy used to break down food; and 3) the energy used in physical activity.[69] Kravitz explains that people have very little control over their basal metabolic rate, which accounts for 60 to 80 percent of total energy expenditure.[70] This leaves 10 percent for digesting food and only about 10 to 30 percent for physical activity.[71] The overall implication to Kravitz' point is that while one's food intake accounts for 100 percent of the energy that goes into one's body, exercise only burns off less than 10 to 30 percent of it. Kravitz research reveals that it is difficult to create a significant calorie deficit through exercise alone and emphasizes a greater focus on nutrition to maximize energy expenditure.

Nutrition is an integral component of Army readiness. Research reveals that a lack of nutrition has a negative effect on military performance.[72] Poor nutrition can result in unintentional weight loss and weight gain, decreased muscle mass, decreased strength, and decreased immune function.[73] Research also reveals that nutrition is vital to athletic performance.[74] The National Center of Biotechnology Information (NCBI) studies identifies the nutritional intake of elite athletes as a critical determinant of their athletic performance and ability to compete both physically and mentally.[75] Most Soldiers perform at the level of an athlete and must maintain peak performance both mentally and physically and, as such, just as nutrition is significant to an athlete it is also significant in military performance. The diet of Soldiers must become a focal point as it has a direct relationship to weight status and physical performance.[76]

Although it is evident that adequate nutrition is a vital component to weight management and maximizing peak performance, the current Army culture is not conducive to fostering the necessary conditions for the successful implementation of an effective nutrition strategy. In March 2010 the Army introduced the Soldier Athlete Initiative in response to the decrease of overall fitness of Soldiers entering initial training.[77] The initiative aimed to counter societal changes by focusing on training Soldiers in a physically holistic manner; emphasizing physical readiness, performance nutrition, and injury prevention to better prepare Soldiers for strenuous training and battlefield challenges.[78] This initiative emphasized the need for a Soldier to train for conflict just as an athlete trains for a competition, acknowledging the need for not only physical fitness training, but for proper and adequate nutrition to fuel a Soldier's body and ensure his or her preparedness to face challenges of full-spectrum operations.[79] As a result of this initiative, the Initial Military Training (IMT) and the Army Physical Fitness School revised physical

readiness training, replacing Field Manual 21-20, *APFT Standards*, with Training Circular 3-22.20, *Army Physical Readiness Training*.[80] Out of the 432 pages that this TC manual offers, it only mentions the word "nutrition" seven times. Additionally, the manual provides a single paragraph in the entirety of its 432-page content, dedicated to hydration and nutrition, emphasizing that Soldier's should ensure to restore adequate hydration and energy through proper nutrition.[81] Although TC 3-22.20 briefly mentions the importance of adequate and proper nutrition, the manual presents the concept of nutrition as an afterthought, secondary to physical training. Moreover, the manual provides little detail and education on what proper nutrition is and the methods in which Soldiers should consume nutrition to increase the effectiveness of proper fueling to achieve peak performance during physical fitness training.

To further drive the Army's nutrition strategy, the Soldier Athlete initiative also required dietitians, food program managers, and Soldiers to work together at the Joint Culinary Center of Excellence in Fort Lee, Virginia to set standardized menu options for dining facilities.[82] The primary focus was to ensure new Soldiers received a variety of nutrient dense foods and beverages to optimize their performance.[83] Though this initiative was well intended, it rests on the faulty assumption that during basic training Soldiers have the luxury and the ample time required to selectively choose a variety of nutrient dense foods for consumption. The Army basic training process is highly stressful with emphasis on physical and mental toughness and often, eating becomes yet another stressful and rushed event a Soldier must endure. In fact, due to the high levels of stress and lack of time given to eat, Soldiers tend to lose weight during the basic training process at the expense of necessary dense muscle needed for strength, endurance, and fat burning. Despite nutrition strategy initiatives as the Soldier Athlete initiative, the current

Army culture and mindset of nutrition as a secondary priority to physical fitness training, fosters an ineffective environment in which a nutrition strategy can thrive.

Mitigating the Problem: Recommendations for Army Leadership

To mitigate this growing epidemic of an unfit Army culture, this paper recommends the Army institute policies and procedures that foster a culture that prioritizes nutrition as the most vital component to achieving peak performance on and off the battlefield. As of 2018, the Army leads the way as the most obese branch in the military, accounting for the highest percentage of overweight troops.[84] The rise of an "unfit" Army culture is reflective of the increasingly "unfit" American culture. Obesity rates continue to rise in the US, and as the Army recruits from its US populace, the Army stands vulnerable to this growing epidemic. Despite the several initiatives to change the APFT to combat this epidemic, obesity continues to be a problem within the Army culture. Research proves that nutrition is 80 percent of the weight management process, revealing that physical fitness is only 20 percent of the equation.[85] By transforming the Army mindset on the prioritization and value of nutrition, Army Leadership will have higher success with implementing an effective nutrition strategy that is complimentary of the current physical fitness training initiatives, increasing the lethality and readiness of the total Army force.

To initiate the culture transformation needed in which an effective nutrition strategy can thrive, this paper recommends Army Leadership develop a detailed nutrition guide comparative to the *Special Operations Forces Nutrition Guide*. Special Operations Forces (SOF) represents the elite force that performs the most difficult and dangerous missions known to the US Military. SOF considers every member of its community as a "Warrior Athlete" and as such fosters a culture that prioritizes appropriate nutritional habits and interventions as a critical component to achieving peak mental and physical performance.[86] Rear Admiral Kernan emphasizes SOF

prioritization of nutrition, stating that "the sustenance and nutritional well-being of our warriors on the battlefield is every bit as important as their operational kit, weaponry, and training."[87] He expounds on his statement, explaining that SOF members must learn and practice proper nutritional patterns and eating habits long before they deploy.[88] Realizing the importance of appropriate nutrition, SOF provides its community with a 225- page nutrition manual, *The Special Operations Forces Nutrition Guide*, that serves as a resource for all SOF members, ranging from short summaries to detailed information, with worksheets, links, and important tips for nutrition at home and when in theater.[89] The manual serves as a detailed guide to establishing appropriate nutrition strategies for various missions and how to optimize nutritional intake to combat challenging environmental and physiological conditions.[90] The backbone of the manual is its detailed breakdown on energy expenditure, source of energy, essential nutrients, and nutrition concepts that enable an individual to develop a nutrition strategy tailored to their individual needs.[91] The manual also provides SOF members with a guide on how to eat on the local economy when deployed.[92] Finally, the manual provides nutritional strategies to regain pre-deployment health and fitness after returning home from extended deployment, enabling a Servicemember's ability to maintain operational readiness and good health years after enduring the physical and mental strains of deployments.[93]

Although the Army currently has nutrition guides such as the U.S. Army Public Health Center (APHC) Technical Guide (TG) 358, *Army Weight Management Guide*, this guide offers several unintended negative connotations. The name in itself "Weight Management" implies that the person referencing the guide is struggling with managing their weight. Moreover, Army leadership often references this guide only to Soldiers who have failed to meet the physical fitness standards. Furthermore, manuals such as the TC 3-22-20, *Army Physical Readiness*

Training, serve as a solid guide to physical fitness training, but offer minute detail on how to align an appropriate nutrition strategy with the Soldier's physical fitness training regimen. A detailed nutrition guide enables the Army's ability to ensure Soldier's maintain operational readiness and health in any given situation. By creating a stand-alone Army nutrition guide comparative to the SOF nutrition guide, Army leadership has a renewed opportunity to prioritize appropriate nutrition in a positive light, presenting the guide as one intended for all "Soldier Athletes" to maintain operational readiness and good health.

Capitalizing on the institution of an updated and detailed Army nutrition guide, this paper recommends Army leadership implement an effective portion-control nutrition strategy. Research reveals that portion size is one of the greatest environmental factors that contribute to weight gain, suggesting that portion-control is critical to not only losing weight but preventing unwanted weight gain as well.[94] Moreover, studies show a direct correlation between increased food portion sizes and increased energy intake levels.[95] Understanding the research revealed on adequate portion-control, the SOF Nutrition Guide emphasizes portion-control based on three healthy meals and a snack between each meal as a critical component to losing and maintaining the desired body weight.[96] Moreover, the SOF Nutrition Guide provides basic information about macronutrients and alcohol, acknowledging that alcohol too may be a dominant source of energy among SOF.[97] Like the SOF Nutrition Guide, this paper recommends Army leadership provide a detailed breakdown of the proper macronutrients and micronutrients needed to properly fuel a Soldier's body. Army leadership should not negate the roll that alcohol plays in its portion-control strategy to best enable a Soldier's success in identifying and executing a realistic portion-control strategy that considers a Soldier's extracurricular activities.

Just as it is important to consider a Soldier's extracurricular activities, it is imperative that Army leadership remain mindful that a standard "serving" or "portion" size is not a one size fits all remedy. To account for individual needs, the Army nutrition guide should provide a portion-control worksheet to assist Soldiers in identifying "what" nutrients and the "amount" of nutrients they should consume daily based on their individual weight management needs and goals. The portion-control worksheet will be based on SOF's scientifically proven results of three healthy meals a day and a snack between each meal. The worksheet will serve as a guide for Soldiers to calculate their calorie target for weight loss, weight management, or weight gain depending on their individual needs. Once Soldiers complete this worksheet, they will now have an identified portion-control plan that corresponds with their calorie target, empowering their ability to choose food portions that align with their individual needs and goals. In addition to empowering Soldiers, a portion-control plan also provides Soldiers with the freedom to create a meal plan that is simple, stress-free, and customized to what they want to eat each day.

Research reveals that the timing of "when" an individual consumes nutrients is just as important as "what" an individual consumes when it comes to achieving peak performance.[98] To complement the institution of a portion-control strategy, this paper recommends Army leadership nest a timed-base nutrition strategy with the portion-control nutrition strategy. The combining of a timed-base nutrition strategy with a portion-control strategy will enable a Soldier's ability to maximize his or her energy, healthy fat loss, muscle recovery, and muscle growth. Moreover, the *SOF Nutrition Guide* emphasizes the importance of nutrient delivery timing to sustain peak performance, revealing that a properly timed meal and snack plan will enhance a Soldier's preparedness, boost morale, and stimulate muscle protein synthesis while protecting against training injuries.[99] The SOF Nutrition Guide also reveals that the Refueling Interval (RFI),

which is the 45-minute interval after finishing a workout is the most critical time to eat as it will accelerate recovery and restore energy for the next day's physical exercise, further revealing the importance of timed-base nutrition. Given the benefits of timed-base nutrition, Army leadership can utilize the Army nutrition guide to provide a detailed methodology on timed-base nutrition. Specifically, the Army nutrition guide should provide a timed-base nutrition meal plan worksheet that pairs with the portion-control worksheet. This worksheet will serve to assist Soldiers in identifying their individual timed-base nutrition meal plan that corresponds with their daily physical exercise regimen. The worksheet should account for pre-workout and post-workout meals as well as an interval breakdown of when to consume meals and snacks daily. Soldiers should pair their identified portion-control plan with their timed-base nutrition plan to determine the best timing of when to consume their identified portions.

Previous nutrition strategy initiatives as revealed throughout this paper were well-intended; however, the Army culture was not conducive to allowing an effective nutrition strategy to thrive. To enable the effective institution of an Army Nutrition Guide and implementation of a portion-control and timed-base nutrition strategy, this paper recommends Army leadership embed nutritionists and sports trainers at the unit level. Nutritionists and sports trainers should serve as subject matter experts on the Army's nutrition strategy. As the subject matter experts, the nutritionist and sports trainer should work together to not only educate the unit on the Army's Nutrition Guide, but also to develop individualized nutrition plans for the Soldiers in their assigned unit. Together, the unit nutritionist and sports trainer will conduct and maintain individual body composition assessments and statistics of every Soldier within the unit. Moreover, they will also assist each Soldier in identifying their individualized portion-control and timed-base nutrition plans that aligns with the Soldier's weight-loss, weight-gain, or weight

management needs. To ensure continued focus on nutrition, unit nutritionists and sports trainers, should not only conduct an initial assessment of every Soldier assigned in the unit, but also conduct quarterly body composition assessments and check ins with each Soldier regardless of the Soldier's success or failure to meet Army weight and physical fitness standards. In turn, the unit nutritionist and sports trainer should work intimately with the command team and provide quarterly assessment updates to their unit's command team. Army leadership should ensure to acknowledge unit nutritionists and sports trainers as critical leadership components in the unit. The presence of nutritionists and sports trainers as critical leadership components in the unit will enable the Army's ability to foster a culture that prioritizes proper and adequate nutrition as a vital component to achieving peak performance.

In addition to embedding nutritionists and sports trainers at the unit level, this paper recommends Army leadership increase the presence of nutritionists and sports trainers during the basic training process. Basic Combat Training, also referred to as "boot camp", is where new Soldiers learn the traditions, tactics and methods of becoming a Soldier.[100] Past initiatives such as the Soldier Athlete initiative previously discussed throughout this paper, focused to ensure new Soldiers received adequate and proper nutrition during basic training; however, the operational tempo and culture of basic training is often not conducive for the successful implementation of an effective nutrition strategy. The presence of nutritionists and sports trainers during the basic training process will enable the Army's ability to foster a culture that prioritizes proper and adequate nutrition, which creates an environment in which an effective nutrition strategy can thrive. During basic training, new Soldiers learn a new way of life, from how to work as an effective member of a team to how to dress and talk and even march and sleep. Basic training is also a time in which the Army begins the initial stages of instilling ethos

in new Soldiers such as the Seven Army Core Values and the Soldier Creed. As such, Basic Combat Training presents Army leadership with a unique opportunity to acculturate a new Soldier into the Army culture.

Not only does Basic Combat Training provide Army leadership with an opportunity to acculturate a new Soldier, but it also provides a controlled environment in which Army leadership can instill healthy nutrition habits in new Soldiers. Doctor Maxwell Maltz claims in his behavior change book, entitled *Psycho-Cybernetics,* that it requires a minimum of 21 days to form a new habit. Basic Combat Training provides Army leadership with approximately 70 days to instill new Soldiers with healthy nutrition habits. As such, this paper recommends Army leadership utilize nutritionists and sports trainers embedded in Basic Combat Training units to begin the initial stages of educating and instilling healthy nutrition habits in new Soldiers. Specifically, together nutritionists and sports trainers should conduct initial body composition assessments of every new Soldier upon their initial entry to Basic Combat Training. During this assessment, nutritionists and sports trainers will assist the new Soldier in identifying their customized portion-control plan. Unit nutritionists will then provide the new Solider with a laminated individual Serving Size Card based on their identified customized portion-control plan. Much like a Soldier's dog tags or Identification Card, the Serving Size Card should always remain with the Soldier. The new Soldier should present his or her individualized Serving Size Card to the servers in the cafeteria for each meal to ensure they receive the proper and adequate portions of each food group needed for their weight management needs and goals. Given that basic training lasts approximately 10 weeks, nutritionists and sports trainers should conduct individual body composition assessments every three weeks (21 days). The assessment will allow the unit nutritionist and sports trainer to identify necessary changes, if any, needed in the

Soldier's diet and training which will increase the likelihood of the new Soldier's successful transformation from a civilian to a Soldier Athlete. Second, the assessment will empower the new Soldier by providing the Soldier an opportunity to not only experience results but see the results and assess the positive benefits of adequate and proper nutrition tailored to their individual needs.

Conclusion

The steady increase of an unfit Army culture compromises the Army's ability to contribute to the lethality of the joint force. This growing epidemic of an unfit Army culture is reflective of the increasingly unfit American culture. Obesity rates continue to rise in America, and as the Army recruits from its US populace, the Army stands vulnerable to this growing epidemic. Analysis of several contributing factors to the increasing rise of an unfit Army culture reveal that over time technological advancements have led to a generational requirement of instant gratification, which fosters an American cultural pattern that lacks adequate exercise and enables poor nutrition choices. Research proves that nutrition is 80 percent of the weight management process, leaving 20 percent of the process to physical fitness. Despite multiple initiatives focused primarily on instituting adequate and formal exercise for Army Soldiers, obesity continues to be a problem within the Army culture. This paper recommends Army leadership focus on the other 80 percent of the fitness solution, prioritizing proper and adequate nutrition for Soldiers to address the growing epidemic of an unfit Army culture.

The current Army culture and mindset of nutrition as a secondary priority to physical fitness training fosters an ineffective environment in which a nutrition strategy can thrive. By instituting a stand-alone Army nutrition guide, embedding nutritionist and sports trainers at the unit level, and instilling healthy nutrition habits in Soldiers starting at basic training, Army

leadership can create a new culture that prioritizes proper and adequate nutrition as a vital component to achieving peak performance. In today's increasingly complex environment, defined by challenges from adversaries operating in every domain, the Army must stand ready to contribute to the joint force. Instituting an effective nutrition strategy that is complementary of the Army's current physical fitness training initiatives enables the Army's ability to develop Soldier Athletes across its ranks, increasing the overall lethality and readiness of the total Army force.

To expound upon the research conducted, this paper recommends a detailed analysis of the socio-economic factors that may influence a Soldier's nutrition choices. As previously discussed, research revealed that fast food consumption varied by age, income level, race and sex. The military determines income based on time in grade as well as time in service; therefore, conducting further research on a Soldier's nutrition choices based on his or her income level may reveal further areas of improvement for Army leadership.

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