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Professional Soldier Athlete: The Cornerstone of Strategic Landpower's Human Dimension

Deydre S. Teyhen

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The Cornerstone of Strategic Landpower's
Human Dimension**

by

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The Institute of Land Warfare
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LAND WARFARE PAPER NO. 104, October 2014

Professional Soldier Athlete: The Cornerstone of Strategic Landpower's Human Dimension

by Deydre S. Teyhen

Colonel Deydre Teyhen, DPT, PhD, U.S. Army Medical Specialists Corps, is currently serving as the Lead for the System for Health & Performance Triad, Office of the Surgeon General. She received her Bachelor of Arts in Sports Science at Ohio Wesleyan University and her Master's in Physical Therapy from the U.S. Army–Baylor University. She completed her PhD in Biomechanics from the University of Texas, her Doctoral Degree in Physical Therapy from the Baylor University and her Master of Strategic Studies at the U.S. Army War College.

Prior to joining the Surgeon General's staff, COL Teyhen was the Deputy Director, Telemedicine and Advanced Technology Research Center, at the U.S. Army Medical Research and Materiel Command. Previous assignments include Commander, Public Health Command Region–South; Associate Professor and Director of the Center for Physical Therapy Research for the U.S. Army–Baylor University Doctoral Program in Physical Therapy at Fort Sam Houston, TX; Officer-in-Charge, Task Force 10 Delta Med, Al Kut, Iraq; Chief, Musculoskeletal Care Center and Chief, Physical Therapy at Kimbrough Ambulatory Care Center, Fort Meade MD; Chief, Outpatient Physical Therapy, Walter Reed Army Medical Center, Washington DC; Chief, Physical Therapy, 21st Combat Support Hospital, Tuzla, Bosnia; and physical therapist, Darnall Army Community Hospital, Fort Hood, TX.

COL Teyhen's research has focused on injury prevention and rehabilitation with a special emphasis on Soldier medical readiness. Her research accomplishments include over 4 million dollars in research grants, 60 peer-reviewed publications, 90 research presentations at conferences and 100 invited lectures. She currently serves as Associate Editor for the *Journal of Orthopaedic and Sports Physical Therapy* and is a board-certified Orthopaedic Clinical Specialist from the American Board of Physical Therapy Specialties, a certified Health Fitness Instructor from the American College of Sports Medicine and a certified Health Promotion Director through the Cooper Institute.

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Foreword

Although technology has been able to advance warfare, the cornerstone of landpower's historical and future success hinges around the human dimension. Physical and mental resilience are fundamental and often-unarticulated assumptions required for achieving national interests through landpower. Although the military has struggled with negative impacts of poor sleep, activity and nutrition throughout history, the current costs to readiness, recruitment, retention and health require a comprehensive strategic plan to ensure the military is able to meet future security needs of our nation.

The author's purposes here are 1) to outline the strategic importance of sleep, activity and nutrition for both the military and the nation's youth from a readiness and health perspective and 2) to provide recommendations to enhance readiness and resilience of the future military force. This review incorporates perspectives from military leaders and historical data with a specific emphasis on interwar eras. The recommendations include a whole-of-government approach, cultural and system changes, military recruitment strategies, leveraging environmental and social networks, military recruitment and squad-level programs.

This paper focuses on the cost of overweight and obese young adults entering the military, but its utility far exceeds that parameter. The author's wide-ranging research, carefully documented here, serves as a portal to a wealth of information about the importance of sleep, activity and nutrition to people of every demographic.



Gordon R. Sullivan
General, U.S. Army Retired
President, Association of the United States Army

6 October 2014

Professional Soldier Athlete: The Cornerstone of Strategic Landpower's Human Dimension

The strength of our nation is our Army. The strength of our Army is our Soldiers.

General Raymond T. Odierno
Chief of Staff, Army¹

Introduction

General Charles Chandler Krulak, 31st Commandant, U.S. Marine Corps, outlined a need for the military to prepare for a “three-block war, in which full-scale military action, peace-keeping operations and humanitarian relief can occur within three city blocks.”² Strategic landpower requires physical and mental adaptability, stamina and resilience for Soldiers to shift effectively among tasks. When Soldiers fail to transition appropriately or become fatigued, their actions at the tactical level can result in negative strategic ramifications (coined the “Strategic Corporal” effect).³ Challenges to the human dimension of warfare have real costs in combat and can lead to increased risk of injury, death, fratricide or war crimes. In garrison, decreased physical and mental resilience can lead to increased rates of limited duty, nondeployable status, sexual assault and suicide.

In every war since 1860, impaired physical readiness and the inability to endure the physical requirements of combat have resulted in casualties on the battlefield.⁴ Unfortunately, competing priorities and fiscal constraints have hampered physical readiness, especially during interwar periods. Dr. Whitfield East, a professor at the U.S. Military Academy, analyzed the history of physical readiness training and determined that the “Army’s emphasis on physical readiness has followed a sinusoidal pattern of surge and consolidation through multiple force mobilizations and times of peace.”⁵

The health and fitness of our nation’s youth directly relates to the strength of our nation and future military readiness. Carl von Clausewitz recognized the importance of the trinity between the people, the government and the army as an essential basis to succeed at war.⁶ However, the extension of this concept to a whole-of-government approach to ensure that next-generation military recruits are prepared for the mental and physical rigors of war has had limited success.⁷ For example, Dr. East noted that after World War I “Americans moved steadily away from a physically active [lifestyle] . . . to a sedentary urban society, which further deteriorated

personal health and fitness,” leading to concerns about American preparedness for World War II.⁸ These concerns remain today, as America’s youth are becoming more unhealthy, overweight and unfit.⁹

Both Army Chief of Staff General Raymond Odierno’s Readiness and Resilience Campaign and the Performance Triad Initiative of Army Surgeon General Lieutenant General Patricia Horoho seek to develop physical and mental resilience. The requirements to build resilience in Soldiers are similar to the requirements for professional athletes.¹⁰ The Performance Triad Initiative seeks to optimize military readiness and improve the health of the military force—and ultimately the nation—through optimal sleep, activity and nutrition (SAN).¹¹ Poor SAN degrades readiness, recruitment, retention and health. General Odierno’s Waypoint #2 calls for Soldiers to be committed to the Army profession.¹² As part of that call, the military culture will need to embrace optimal SAN. A comprehensive strategic plan is necessary to ensure the military can meet our nation’s future national security needs. The purposes of this review are to 1) outline the strategic importance of SAN for both the military and nation’s youth from a military readiness and health perspective and 2) provide recommendations to enhance military readiness and resilience of the future military force.

Health of Our Nation and Military

Health care costs are rising at an unsustainable rate. Underlying the national debate on the Affordable Care Act is the fact that federal health care costs rose from 4.9 percent of the Gross Domestic Product (GDP) in 1960 to 16.4 percent in 2011, and health care costs contribute to more than 50 percent of all personal bankruptcies.¹³ While the United States spends more on health care than any other country, it has one of the lowest life expectancies among high-income countries.¹⁴ Although the debate often focuses on the cost of health care, the reality is that the health of American citizens has decreased over time, which contributes to increased health care costs. The American adult obesity rate increased from less than 15 percent in 1991 to 34 percent in 2008 (figure 1).¹⁵ Medical costs associated with obesity totaled \$147 billion in 2008; obesity is also associated with greater risk for diabetes, cardiovascular disease and other causes of death.¹⁶ In 1994, the prevalence of diabetes was less than 6 percent for 49 of the 50 states; by 2010, all 50 states had prevalence rates greater than 6 percent, with 15 states having prevalence rates greater than 9 percent.¹⁷

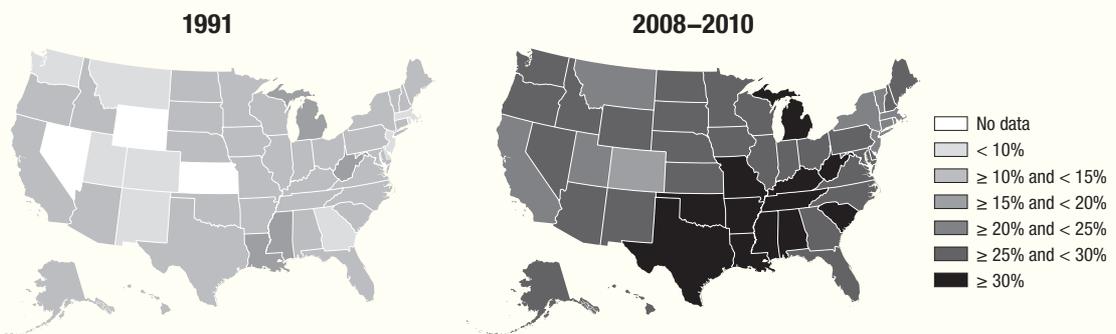


Figure 1 – Obesity Trends Among U.S. Adults¹⁸

Despite the Army’s physical fitness, body composition and medical standards, nearly 66 percent of all military personnel are overweight and 12 percent are clinically obese.¹⁹ The medically nondeployable rate for active duty Soldiers is approximately 4 percent (20,820

Soldiers—equivalent to roughly six brigades) with another 5 percent (26,168 Soldiers—equivalent to roughly 7.5 brigades) having limited-duty profiles.²⁰ In addition to their medical costs, the cost of salaries for Soldiers who cannot deploy is approximately \$3 billion annually.²¹ Annually there are approximately 750,000 musculoskeletal injuries which result in more than 25 million limited-duty days per year.²² Many of these injuries are preventable, as more than 80 percent of the musculoskeletal conditions are the result of overuse and relate to sports and physical training.²³

Not surprisingly, musculoskeletal conditions are the leading cause of all medical disability claims across the services, accounting for 40 to 75 percent of all claims.²⁴ While active duty servicemembers are generally considered to be younger and healthier than the civilian workforce, 130,000 servicemembers—including 76,700 Soldiers—were evaluated for medical discharge between Fiscal Years (FYs) 2007 and 2012.²⁵ The long-term cost of medical disability is staggering; approximately 35 percent of all claimants received a permanent medical retirement package. Furthermore, 60 percent of those Soldiers received a disability rating greater than 30 percent. Another 30 percent of Soldiers received a financial severance package as part of their military separation.²⁶ Although this review focuses on the costs to the Department of Defense (DoD), one should note that 56 percent (\$86.1 billion) of the FY 2014 Veterans Administration budget covers mandatory entitlements for medical disability payments.²⁷

The health of the future force is dependent on America’s youth. However, the health of America’s youth is deteriorating. Poor health, fitness and weight problems are the leading reasons that approximately 75 percent of 17- to 24-year-old Americans are unfit for military service.²⁸ Obesity rates among 18- to 29-year-olds have risen from 10 percent in 1995 to 19 percent in 2007 (figure 2).²⁹ Per the National Health and Nutrition Examination Survey, 92 percent of American children between 12 and 19 years of age do not have healthy diets.³⁰ It is therefore not surprising that obesity accounted for 16.8 percent of all military medical disqualifications between FYs 2007 and 2011.³¹

The health of America’s youth already affects military costs. Overweight recruits are 47 percent more likely to become injured and they utilize 49 percent more health care resources during their first 90 days in the military.³² Physical performance among Army trainees has declined over time. First-time failure rates on the modified fitness test during basic training increased from 4 percent to 40 percent for males and from 12 percent to 54 percent for females from FY 2000 to FY 2010.³³ During the first 90 days of military service, 31 percent of Soldiers who failed a pre-accession fitness test are injured.³⁴

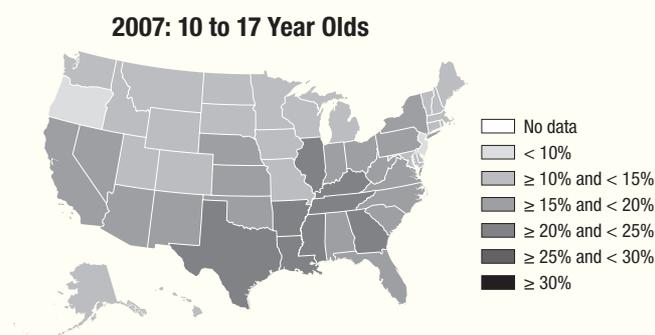


Figure 2 – Proportion of Children Ages 10–17 Classified as Obese per State³⁵

Poor health and fitness levels among America's youth impair recruitment efforts and generate financial costs for DoD. Attrition rates across the services range from 10 percent at 90 and 180 days to nearly 20 percent at two years of service.³⁶ The associated FY 2005 cost to recruit and train a Soldier through Army basic training was \$57,500 per recruit.³⁷ Based on 60,000 Army recruits, a 10 percent attrition rate at 180 days would cost the Army \$345 million annually in replacement costs.³⁸ Based on the additional training costs that occur after basic training, replacement costs associated with a Soldier discharged between one and two years of service would be greater than the replacement costs for those lost within the first 180 days. However, using the \$57,500-per-Soldier estimate, the replacement cost would be at least \$683 million to replace the Soldiers discharged between one and two years of service.³⁹

The societal trends reviewed demonstrate systematic changes in personal readiness and health across the nation. Analysis of interwar eras and medical readiness data reveal the importance of personal readiness for military readiness. The next section will review the role of SAN in building personal readiness to meet future national security challenges. In addition to physical fitness training, the section will outline why personal readiness and resilience require a more comprehensive approach. Specifically, personal readiness also requires optimizing sleep and nutrition, while minimizing sedentary behaviors.

Impact of Sleep, Activity and Nutrition

The leading cause of disability or death is from preventable chronic conditions (e.g., musculoskeletal conditions, cardiovascular disease, obesity and diabetes).⁴⁰ Considerable evidence supports the benefits of healthy lifestyle choices in preventing a wide range of physical and behavioral health conditions (e.g., musculoskeletal conditions, cardiovascular disease, diabetes, cancer, hypertension, hyperlipidemia, obesity, osteoporosis, depression and other mood-related conditions).⁴¹ Conversely, lack of sleep, physical inactivity and poor nutritional choices are contributing factors to the prevalence and cost of these conditions.⁴²

In 1869, the British military physical fitness advocate Archibald MacLaren wrote, "The power of the man and the serviceability of the Soldier are inseparable conditions."⁴³ This statement underlines the historical importance placed on healthy lifestyle choices to enhance physical and mental resilience required for combat. Ultimately, the process of building physical and mental resilience endows Soldiers with the understanding that they can overcome the difficulties encountered during combat based on confidence in their strength, endurance, power, mental focus and resolve.⁴⁴ To assess personal readiness, the upcoming sections use the U.S. Department of Health and Human Services' Healthy People 2020 Initiative as a framework for evaluating SAN among American adults, adolescents and servicemembers.⁴⁵

Sleep

In 1991 B.H. Liddell Hart warned military leaders that Soldiers will "succumb quickest to paralysis of the brain."⁴⁶ Researchers have associated insufficient sleep with decreased mental effectiveness and increased risk of errors and accidents.⁴⁷ Specifically, 20–25 hours without sleep degrades performance equivalent to a blood alcohol concentration of 0.10 percent—the criterion for alcohol intoxication in most states.⁴⁸ Healthy People 2020's goal is for 71 percent of the population to sleep seven to eight hours nightly.⁴⁹ Servicemembers sleep less than their civilian counterparts; fewer than 41 percent report sleeping seven to eight hours, while more than 11 percent report four hours or less a night.⁵⁰ Only 20 percent of those with high levels of anxiety, depression, anger propensity or post-traumatic stress reported sleeping seven to

eight hours; 30 percent reported sleeping four hours or less nightly.⁵¹ Current sleep trends of America’s youth could influence our future military force. Sufficient sleep is important for childhood development, yet only 30 percent of high school students get adequate sleep.⁵² Insufficient sleep degrades performance and impairs combat effectiveness while increasing risk for disease, injuries and obesity (table 1).

Physical Performance	<ul style="list-style-type: none"> • Fatigue and sleepiness are a leading cause of motor vehicle and industrial accidents.⁵³ • Reaction time decreases with sleep restriction.⁵⁴ • Maximum bench press decreases by 20 lbs after four days of restricted sleep.⁵⁵ • Perception of exertion increases 17–19% after 30 hours without sleep.⁵⁶
Mental Performance	<ul style="list-style-type: none"> • Increased sleep leads to quicker reaction times, improvement in split-second decisionmaking and improved targeting (9% improvement in free throw and 3-point shooting accuracy).⁵⁷ • Increased sleep duration is associated with greater visuospatial processing.⁵⁸ • Psychomotor and cognitive speed, vigilant and executive attention, working memory, learning and higher cognitive abilities decrease with sleep deprivation.⁵⁹ • Exhaustion occurs 11% quicker with sleep deprivation.⁶⁰ • Greater risk-taking occurs with sleep deprivation.⁶¹
Health Implications	<ul style="list-style-type: none"> • Insufficient sleep is associated with mental distress, obesity, diabetes, coronary heart disease, stroke, high blood pressure, asthma and arthritis.⁶² • Less than four hours of sleep increases likelihood of depressive symptoms and suicidal ideation but not suicide attempts.⁶³ • Unhealthy habits such as smoking, heavy and binge drinking, physical inactivity and unhealthy food habits are associated with poor sleep.⁶⁴
Links to Activity	<ul style="list-style-type: none"> • Sleep deprivation results in decreased physical activity, less vigor and heavy or binge drinking.⁶⁵ • Sports- and work-related injuries increase with decreased sleep and fatigue.⁶⁶ • The risk of a work-related injury is 86% greater for those with less than six hours of sleep.⁶⁷
Links to Nutrition	<ul style="list-style-type: none"> • Increased sleep duration is associated with greater weight reductions for those enrolled in a weight management program.⁶⁸ • Poor sleep is associated with increased consumption of desserts and sweets.⁶⁹ • Sleep restriction leads to a 30–40% reduction in glucose metabolism.⁷⁰

Table 1 – Sleep

Physical Activity

The Department of the Army wrote in 1946 that “war places a great premium upon the strength, stamina, agility and coordination of the Soldier because victory and his life are so often dependent upon them.”⁷¹ Units in combat are more resilient when their leaders and Soldiers are physically fit.⁷² Although physical requirements of combat exceed the requirements for healthy living and physical fitness, national guidelines provide a foundation to compare fitness levels.

The American College of Sports Medicine, the American Heart Association and the Centers for Disease Control and Prevention recommend that 18- to 65-year-olds perform a minimum of 30 minutes of moderate-intensity exercise five days a week or a minimum of 20 minutes of vigorous-intensity exercise three days a week.⁷³ Healthy People 2020’s intent is to have 48 percent of the population meet this goal by 2020.⁷⁴ Although servicemembers (63 percent) more readily achieve these recommendations than their civilian counterparts (44 percent), servicemembers’ compliance is much lower than expected given the physical requirements of

combat and mandatory physical training.⁷⁵ Specifically, fewer than 40 percent perform 150 minutes of moderate-intensity exercise weekly and fewer than 50 percent perform 75 minutes of vigorous-intensity exercise weekly.⁷⁶ Upon departing the military, former servicemembers tend to perform less physical activity than their civilian counterparts.⁷⁷ In regard to our future force, only 18 percent of adolescents meet current physical activity guidelines.⁷⁸ Additionally, the average American spends 7.7 hours a day in sedentary behaviors that expend very little energy.⁷⁹ Insufficient activity and sedentary lifestyles degrade performance and impair combat effectiveness while increasing risk for disease, injuries and obesity (table 2).

Physical Performance	<ul style="list-style-type: none"> • Physical inactivity, smoking or being overweight limits physical performance before onset of physical disease.⁸⁰ • Physical inactivity, smoking, being overweight and a prior history of injury decreases physical performance of Soldiers by up to 10%.⁸¹
Mental Performance	<ul style="list-style-type: none"> • Physical activity improves cognition, executive functions and learning.⁸² • Fatigue leads to decreased executive functions that impair decisionmaking.⁸³
Health Implications	<ul style="list-style-type: none"> • Regular physical activity can improve health and quality of life and lower the risk of early death, coronary artery disease, stroke, high blood pressure, type 2 diabetes, breast and colon cancer and depression.⁸⁴ • Sitting more than ten hours per day results in 34% higher overall mortality, even after accounting for physical activity levels.⁸⁵ • Physical inactivity is associated with the development of psychological disorders.⁸⁶ • Routine physical activity helps manage mild-to-moderate mental health diseases (e.g., depression and anxiety) and is as effective as prescribing antidepressants for first-line treatment.⁸⁷
Links to Sleep	<ul style="list-style-type: none"> • Routine physical activity is associated with improved sleep.⁸⁸ • Increased television and computer use is associated with decreased sleep.⁸⁹
Links to Nutrition	<ul style="list-style-type: none"> • Fasting increases both noncontact and training overuse injuries.⁹⁰ • Physical inactivity is associated with decreased consumption of fruits and vegetables and increased consumption of soft drinks and unhealthy snacks.⁹¹ • Physical inactivity and increased sedentary behaviors are associated with increased body weight.⁹²

Table 2 – Activity

Nutrition

Optimizing nutrition enhances Soldier performance, physical activity and recovery from exercise.⁹³ However, 76 percent of Americans have a poor diet and do not meet basic dietary recommendations.⁹⁴ Ironically, overweight and obese Americans are frequently undernourished due to poor food choices, as fats and sugars comprise more than 34 percent of their total caloric intake.⁹⁵ Chronic malnutrition leads to stunting of growth, even in children who are overweight.⁹⁶ Environment plays a key role in food choices. Urban areas with low densities of grocery stores, high densities of fast-food restaurants and lower rates of fruit and vegetable consumption are associated with higher rates of obesity and chronic disease.⁹⁷ Healthy People 2020’s goal is to increase the percentage of the population maintaining a healthy weight from 31 to 34 percent by 2020.⁹⁸ Despite mandated military body composition standards, only 36 percent of servicemembers reported a healthy weight.⁹⁹ This problem worsens upon departing the military, with an average weight gain of 12.5 pounds (men) and 13.9 pounds (women).¹⁰⁰ The concern for tomorrow’s military is that nearly 18 percent of 6- to 19-year-old American youths are clinically obese.¹⁰¹ Poor nutrition degrades performance and impairs combat effectiveness while increasing risk for disease, injuries and obesity (table 3).

The evidence reviewed advocates for optimizing SAN to improve personal readiness and health. In addition to building physical resilience, the evidence demonstrates that enhancing SAN provides a positive foundation for building mental resilience. The confluence of benefits associated with optimal SAN on the military and the nation suggests the need for a comprehensive strategy. The next section will provide analysis and recommendations to improve physical and mental resilience and health and wellness for both the military and the nation.

Physical Performance	<ul style="list-style-type: none"> • Optimal nutrition enhances performance and exercise recovery.¹⁰² • Carbohydrate and proteins are required to replenish glycogen stores and repair tissue.¹⁰³ • Caffeine can improve short-term muscular strength and reduce perceived exertion and muscle pain.¹⁰⁴
Mental Performance	<ul style="list-style-type: none"> • Higher body mass index and obesity are associated with decreased attention and processing speed, memory, verbal fluency, learning and executive functioning in the brain.¹⁰⁵
Health Implications	<ul style="list-style-type: none"> • Diets that include more nutritious foods decrease likelihood of depression; diets that include more processed and unhealthy foods are associated with increased rates of depression and anxiety.¹⁰⁶ • Obesity is associated with greater risk for diabetes, cardiovascular disease (e.g., heart disease, hypertension and cerebrovascular accidents) and other causes of death.¹⁰⁷ • Obesity is associated with increased risk of mental illness (e.g., major and moderate-to-severe depression).¹⁰⁸ • Higher body mass index values are associated with higher prevalence of injury, illness and cost of care compared to those with normal weight in the military.¹⁰⁹
Links to Sleep	<ul style="list-style-type: none"> • Poor nutrition and obesity are linked with poor sleep quality.¹¹⁰ • Caffeine consumption can degrade sleep.¹¹¹
Links to Activity	<ul style="list-style-type: none"> • For every 1% increase in prevalence of physical activity in a U.S. county, obesity prevalence decreases by 0.11%.¹¹² • Higher body mass index values have been associated with increased risk for musculoskeletal injury. Specifically, the odds of sustaining an injury are 15% greater for those considered overweight; the odds increase incrementally (up to 48% greater injury risk) with each progressive class of obesity (e.g., types I to III).¹¹³

Table 3 – Nutrition

Analysis and Recommendations

Ultimately, improving personal readiness and health requires individuals to develop healthier habits, set personal goals and make better decisions regarding SAN. Societal trends leading to decreased personal readiness, health and fitness are complex; countering these trends requires a synchronized effort that ranges from the whole-of-government approach to addressing personal health habits. The analysis and recommendations focus on developing appropriate strategic policies, infrastructure and cultural changes to help engineer healthier choices to become the easy choices.

Although these lifestyle behaviors have negative health consequences, approaching the problem from a health perspective may have limited appeal among younger Americans.¹¹⁴ Therefore, the analysis and recommendations presented will focus on specific strategies to develop an environment and culture that emphasizes optimal SAN to improve performance and readiness and encourages Soldiers to view themselves as “Professional Soldier Athletes.”¹¹⁵ Additionally, the strategies suggested to enhance military readiness will focus on today’s Soldier, the military family and our nation’s youth.

However, the American health care system has over-medicalized life. It is easy to suggest that results of poor SAN are solely a health care issue. However, the Army Surgeon General reminds us that the average Soldier seeks health care about five times a year, with the average encounter lasting approximately 20 minutes. Combined, those 100 minutes are typically a time when the patient has an acute crisis or need. Hence, health and readiness occur when people make decisions influencing health and well-being during the other 525,500 minutes a year.¹¹⁶ Understanding this, the Surgeon General challenged the medical community to transition from a health care system to a “System for Health” to better support the health and readiness of the total force, including family members, retirees and Department of the Army civilians.¹¹⁷ Therefore, the recommendations outlined will embrace a holistic approach supporting the Surgeon General’s vision for health and General Odierno’s vision for strategic landpower, which requires a trained, ready and professional force.¹¹⁸

Thinking back to the origins of the anti-smoking efforts that started in the 1960s, the running boom in the 1970s, the movement to improve seatbelt use in the 1980s and the nationwide campaign to curb drinking and driving in the 1990s, the possibility of starting a nationwide movement toward health and personal readiness in our country has historical precedence. These campaigns focused on the health of our nation while improving the health of the military force. The following analysis and recommendations will outline why leadership at all levels will be required to create and sustain changes in health, physical and mental resilience and personal readiness.

National Strategy: Whole-of-Government Approach

Analysis. In addition to its role in health and readiness, SAN influences public education. Dr. Edward Hartwell, considered by many to be one of the forefathers of physical education in the United States, recognized in 1871 that physical readiness should be a component of public education, as fitness training was required at an early age to serve as the foundation for future military superiority.¹¹⁹ Understanding the importance of building physical resilience in American youth, Benjamin Franklin stated, “Education forms the national ethos” as he advocated for building physical resilience within the school system.¹²⁰ Facing the demobilization of the Army after World War II, General George C. Marshall advocated for universal military training in public schools as “the only sensible, business-like, democratic and financially possible way” to ensure national preparedness for future conflicts with a smaller standing Army.¹²¹

Despite the wide-ranging benefits of ensuring physically fit youth, the political will to influence the preparedness of America’s youth has been limited. Lieutenant General Mark P. Hertling, USA Retired, wrote while a student at the Army’s Command and General Staff College:

After every major war in our nation’s history, dating to the Revolution, bills had been presented in the House and Senate seeking appropriations for military and physical training programs for non-aged (i.e., pre-draft) youth. In every instance, these postwar bills were initiated because of inadequate military fitness levels shown by the men conscripted at the start of the recently completed war. As an example, between 1918 and 1941 only one of six bills promoting military training in schools introduced into Congress was passed after debate; of twenty-four bills introduced on behalf of physical education in schools for military, none passed.¹²²

The benefits of emphasizing SAN in our nation’s public school systems extend beyond military preparedness. Insufficient sleep degrades academic performance and simple solutions

such as delaying start times can increase sleep duration, alertness and student performance.¹²³ From an activity perspective, cardiovascular fitness improves academic performance and incorporating physical activity into the school day does not hinder academic achievement.¹²⁴ Despite the evidence, fewer than 10 percent of all public schools require physical education and only 60 percent of school districts require or recommend dedicated time for elementary school recess.¹²⁵ Congress initiated the federally funded school lunch program at the end of World War II based on the difficulty of military recruitment due to malnutrition and the problems associated with being underweight.¹²⁶ Ironically, students currently using the program are 20 to 43 percent more likely to be overweight or obese than those who pack a lunch.¹²⁷ Only eight states have incentive policies for schools to follow national dietary guidelines, while fewer than 7 percent of school districts require availability of fruits and vegetables and more than 90 percent of schools sell or offer calorically sweetened beverages.¹²⁸

Recommendations. The declining health of our nation and the increased cost of health care combined with the positive influence of SAN on academic achievement and military preparedness provide an opportunity for a whole-of-government approach. A synchronized effort among the Departments of Education, Health and Human Services, Veterans Affairs and Defense could facilitate the change required for the country to embrace SAN as a fundamental requirement for optimal health and well-being. Although some think of the “whole-of-government” approach as one focused internationally around diplomacy, development and defense, President Barack Obama defined it broadly in the *National Security Strategy*: “Our strategy starts by recognizing that our strength and influence abroad begins with the steps we take at home.”¹²⁹ President John F. Kennedy requested a similar whole-of-government approach:

[T]he physical vigor of our citizens is one of America’s most precious resources. . . . Throughout our history we have been challenged to armed conflict by nations which sought to destroy our independence or threatened our freedom. . . . [O]ur growing softness, our increasing lack of physical fitness, is a menace to our security. . . . [T]he stamina and strength which the defense of liberty requires are not the product of a few weeks’ basic training or a month’s conditioning. These only come from bodies which have been conditioned by a lifetime of participation in sports and interest in physical activity.¹³⁰

Historically, when the government has approached health and wellness from a whole-of-government perspective, the nation has responded. More than 70 percent of high schools implemented the Victory Corps fitness program and more than 50 percent fully adopted the program in preparation for World War II.¹³¹ A relatively simple first step would be to gain interdepartmental support for such policies as the Physical Activity Guidelines for Americans; the National Prevention Strategy; the Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296); the FY 2010 Agriculture Appropriation Act (P.L. 111-80); the Reauthorization of the Elementary and Secondary Education Act (ESEA); and the Food Guidelines for Federal Worksites.¹³² Interdepartmental support for existing programs such as Michelle Obama’s Let’s Move Initiative or the National Football League’s Play 60 program could improve the programs’ reach and success.¹³³

Military Strategy: Culture

Analysis. Sir Max Hastings, a British journalist, historian and author, addressed the Army’s historical tendency to decrease emphasis on physical readiness during interwar years. His

writings clearly identify that failure to prioritize and sufficiently fund physical readiness efforts results “in an Army that [is] ill prepared, physically, mentally or emotionally for combat.”¹³⁴ The sinusoidal support for the U.S. Army Physical Fitness School (USAPFS) and the Master Fitness Trainer (MFT) programming exemplifies Hastings’ concerns (table 4).

One of the possible reasons for the sinusoidal support for physical readiness is the belief that “we’ve got this” or it is “part of our DNA” based on the familiarity of daily physical training. For example, the Army established the Comprehensive Soldier and Family Fitness (CSF2) program in 2008 to enhance the social, emotional, spiritual, family and physical fitness of Soldiers and their families. Due to the widely held belief that the Army had already codified the physical domain within its culture, CSF2 did not incorporate the physical domain until January 2014.¹³⁵ Unfortunately, the self-reported rates of poor sleep hygiene, the high rates of sports- and training-related injuries and the difficulty of maintaining body fat standards previously presented challenge those assumptions. Additionally, differences between Marine and Army discharge rates suggest there may be systematic cultural differences that may be beneficial for developing physical readiness. Although Soldiers and Marines report similar sleep durations and physical activity rates, the Marines have a 14 percent lower rate of medical disability resulting from musculoskeletal injuries.¹³⁶ Additionally, the Marines have a lower rate of obesity (5 percent) than the Army (16 percent).¹³⁷ Understanding cultural differences between the services may provide additional avenues for enhancing readiness.

1920	Physical training and bayonet school established at Camp Benning, GA.
1946–1953	USAPFS established at Fort Bragg, NC. The Army terminated the program in 1953 to save \$225,000/year.
1970	For the fourth time since 1885, a formal recommendation was made to establish a school to train commissioned and noncommissioned officers in physical readiness programming.
1980	President Jimmy Carter ordered an assessment of physical readiness of the armed forces.
1982	Army declared the “Year of Fitness” and established the USAPFS at Fort Benjamin Harrison, IN.
1983	A four-week MFT training program was established, resulting in an additional skill identifier (ASI): 03C.
1987	MFT program was terminated due to lack of support from key leaders.
1990	Reduction in staffing took place at USAPFS and MFT skill identifier was eliminated.
1991	Army Chief of Staff approved elimination of USAPFS in FY92. The Army transferred policy functions to the U.S. Army Infantry Center.
1992	Army-approved mobile training teams developed MFTs and issued ASI of 6P until 2002.
2001	Army terminated MFT mobile training teams and removed the 6P ASI from the Army personnel system. Policy functions remained.
2007	USAPFS moved to Fort Jackson, SC.
2013	Army reestablished the MFT course and ASI.

Table 4 – Support for the U.S. Army Physical Fitness School (USAPFS) and Utilization of Master Fitness Trainers (MFT)¹³⁸

Changing cultural views toward sleep may be more difficult than the modifications required to enhance activity and nutrition. General George S. Patton’s statement that “a pint of sweat saves a gallon of blood” reflects the well-understood link between physical activity and battlefield survivability.¹³⁹ This cultural acceptance still holds true today, as an officer returning from Afghanistan stated, “It may not be the most important thing we do in a day, but it’s the most important thing we do every day.”¹⁴⁰ Despite current trends in poor nutrition habits and

obesity rates, military leadership has traditionally acknowledged the importance of proper nutrition for military performance. According to B.H. Liddell Hart, “Nothing undermines morale more decisively than hunger. . . . An Army fights on its stomach, and falls if its stomach is upset.”¹⁴¹ Similarly, Frederick the Great stated in 1747 that “hunger exhausts men more surely than courage.”¹⁴² However, despite field manuals outlining operational sleep requirements, military culture has traditionally placed less emphasis on the importance of sufficient sleep for optimal performance.¹⁴³ For example, Napoleon Bonaparte stated, “It is at night when a commander must work. . . . A commander is not expected to sleep.”¹⁴⁴

Recommendations. As the Army enters a fiscally constrained postwar era, its senior leadership must apply lessons learned from prior interwar eras. Senior leaders must instill a sense of urgency consistent with John Kotter’s first step of leading organizational change.¹⁴⁵ General Odierno stated that it is “important that we instill a mindset of resiliency and self-reliance over dependency. We must create a culture of resiliency.”¹⁴⁶ His Readiness and Resilience Campaign and General Horoho’s Performance Triad Initiative have created a guiding coalition and developed a vision for change.¹⁴⁷ However, gaining buy-in at the operational and tactical levels will be challenging.

The Sergeant Major of the Army (SMA) establishes themes to help facilitate change across the Army. The most recent was “The Year of the Noncommissioned Officer.” To improve the fitness of the force, the SMA proclaimed 1982 “The Year of Fitness.”¹⁴⁸ Establishing “The Year of the Professional Soldier Athlete” could enhance communication channels, improve buy-in and generate the momentum required to facilitate the movement toward health and readiness.

General Martin E. Dempsey, Chairman, Joint Chiefs of Staff, recognized that “we need to institutionalize resiliency. It is not an additional training task; it is a way of life.”¹⁴⁹ How the Army institutionalizes these changes within its military culture will be critical for long-term success. Kotter’s eighth step for leading change highlights the importance of developing new organizational norms and shared values while gaining the support of a majority within the organization to embrace the new culture.¹⁵⁰ History provides lessons learned and highlights the Army’s sinusoidal support for personal readiness, but questions remain regarding the path forward. Will policy changes hold leaders accountable for improving personal readiness by optimizing SAN within their unit? Will the USAPFS and the MFT program survive the upcoming budget cuts? Will the Army leverage the availability of organic medical assets (e.g., physical therapists, physician assistants and dietitians) to establish a cultural focus on physical readiness or relegate these assets to their traditional roles of intervening after injury and disease have occurred? Finally, will the Army model the Australian Defence Force program, which established permanent medical occupational specialties that focus solely on readiness?¹⁵¹ Ultimately, strategic policies with associated infrastructure that supports personal readiness will be required to drive and codify the cultural changes.

Military Strategy: Environment and Social Networks

Analysis. The physical environment influences personal health and readiness. It should come as no surprise that the deployment environment degrades sleep for approximately 75 percent of servicemembers.¹⁵² Environmental factors such as neighborhood cleanliness, noise and crime, and bedroom factors such as light, noise and temperature also degrade sleep regardless of deployment status.¹⁵³ Physical activity increases with specific community characteristics, including proximity to recreational facilities, high density of walk/cycle paths and workplace

proximity.¹⁵⁴ Accessibility to food stores with fruits and vegetables increases consumption, improves dietary behaviors and decreases saturated fat intake.¹⁵⁵

Social dynamics with family, friends and co-workers influence personal choices regarding health and readiness and can create a “social contagion.”¹⁵⁶ Family stress, educational levels and family norms concerning electronics use in the bedroom influence sleep quality and duration.¹⁵⁷ Parents and peers influence exercise programs and physical activity levels.¹⁵⁸ Further, the influence of social networks on food choice and body composition is considerable. The chance of becoming obese increases by 37, 40 or 57 percent, if one’s spouse, sibling or friends, respectively, are obese; this demonstrates how obesity can be socially contagious.¹⁵⁹

Recommendations. The Army should support public health programs that make the healthy choice the easy choice. New York City’s public health initiatives decreased intake of sugar-sweetened drinks by 8 percent and increased fruit and vegetable consumption by 4 percent within six years in the city’s poorest neighborhoods.¹⁶⁰ Military leadership should maintain support for DoD’s Operation Live Well, its Healthy Base Initiative and the Army’s Go for Green programs, which have similar aims.¹⁶¹ Additionally, leadership should pursue initiatives to bring farmers’ markets on post, increase access to fruits and vegetables at post convenience stores and dining facilities and increase availability of walking and biking areas in residential areas.

Army leadership should support programs that harness the positive influences of social and family networks on behavioral change. Coordinating programs designed to improve Soldiers’ health and readiness with sister programs for military family members—sponsored by the U.S. Army Medical Command, the U.S. Army Installation Management Command (IMCOM) and the U.S. Army Morale, Welfare and Recreation (MWR) Activity—have the greatest chance for success. Within the military, the squad functions as a Soldier’s military family and can provide a social network that can influence personal readiness. A focus on the squad aligns with military guidance to concentrate on squad-level training to build their capabilities as a decisive force.¹⁶² The size and organizational structure of the squad provides a foundation for future initiatives focused on improving readiness and health of the force.

Military Strategy: Recruitment of Personnel

Analysis. As previously discussed, approximately 4 percent (20,820 Soldiers; approximately six brigades) of active duty Soldiers are medically nondeployable, while another 5 percent (26,168 Soldiers; approximately 7.5 brigades) are on limited-duty profiles.¹⁶³ President Theodore Roosevelt believed that “the unfit should be ruthlessly weeded out.”¹⁶⁴ However, current policy options are limited based on the low propensity for military service in the American population combined with the fact that 75 percent of all 17- to 24-year-olds in America are unfit for military service.¹⁶⁵ Of those who enlist, nearly 20 percent are medically discharged before completing two years of service.¹⁶⁶ Additionally, the Army incurs greater attrition rates (4 percent higher) and medical discharge rates (14 percent higher) due to musculoskeletal conditions than the Marine Corps.¹⁶⁷ This raises the question of whether there is a better way to build readiness among eligible youth who have agreed to enlist in the military.

The U.S. Marine Corps’ Delayed Entry Program may provide a strategy to build physical and mental resilience prior to entering the military. The Marine Corps reduced its attrition by 8 percent from FY 2012 to FY 2013 and 18 percent since inception of this program.¹⁶⁸ The program requires recruiters to provide weekly preparedness training for new recruits between the time of enlistment and reporting for basic training.¹⁶⁹ Since the greatest gains in aerobic and

strength occur during the first two to three months after starting a training program, this approach follows evidence-based recommendations.¹⁷⁰ The Army's Fitness Training Units (FTUs) displayed similar success rates, with 97 percent of recruits in the FTUs eventually meeting basic-training fitness requirements and saving over \$14 million in attrition-based costs annually in the early 2000s.¹⁷¹ However, the FTU program was ultimately terminated because it occurred after recruits started basic training, which resulted in increased training days and staffing requirements.

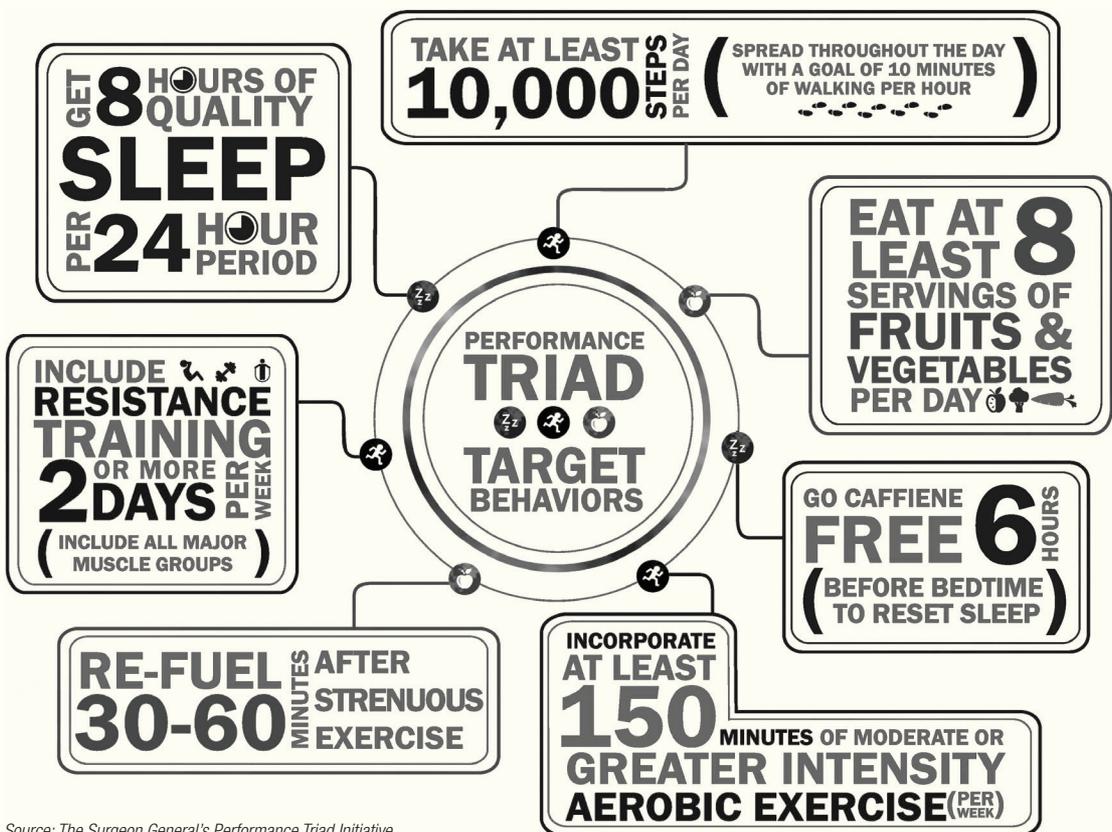
Recommendations. Although the Army's recruiting mission is larger, adopting something similar to the Marine Corps' Delayed Entry Program could assist in decreasing attrition while addressing FTU-related concerns. Recruiters could leverage technology solutions (e.g., personal readiness devices, web-based virtual coaches, etc.) to provide personal training programs to recruits in geographically dispersed locations. Altering Army programs such as CSF2's ArmyFit and the Surgeon General's Performance Triad to accommodate this population would also assist recruiters. The combination of these tools would allow recruiters to develop a virtual social network, distribute personal readiness information and conduct weekly challenges to develop the recruits prior to attending basic training. Interactive dashboards could alert recruiters to possible recruits with poor compliance with pre-basic training developmental programs. Once altered for this population, these tools could be applied to Reserve Officer Training Corps (ROTC) and Junior ROTC programs. Finally, children of military parents are twice as likely to consider joining the military.¹⁷² Therefore, programs sponsored by DoD Dependent Schools, IMCOM and MWR could be adjusted to incorporate SAN to facilitate health and readiness in this population.

Military Strategy: Operational and Tactical Level

Analysis. Improving readiness and health requires that people make healthier decisions. Daily choices concerning sleeping, moving and eating can increase longevity and decrease disease risk if one consistently adheres to these choices.¹⁷³ Traditional programs designed to help people make healthier decisions center around goal setting. Although setting goals is an effective strategy for changing health behaviors, developing healthy habits is critical in creating and sustaining health and readiness.¹⁷⁴ Habits account for about 45 percent of daily activities and habitual events trigger many decisions related to SAN.¹⁷⁵ Behavior change interventions are more effective when they incorporate the automatic bases of behaviors.¹⁷⁶ Healthy habits can act as a substitute for self-control.¹⁷⁷ Developing and reinforcing good habits increase compliance with personal goals when stress or fatigue complicate decisionmaking.¹⁷⁸ Interventions with the greatest chance for success incorporate personal goals when creating new healthy habits while simultaneously disrupting context-cues that trigger existing unhealthy habits.¹⁷⁹

Technology can help track and achieve personal health and readiness goals. Regular self-monitoring, often within the context of goal setting, has been effective for improving sleep, physical activity, diet and body composition.¹⁸⁰ Tracking sleep patterns induces healthier sleep habits and can improve sleep duration by an average of 50 minutes nightly.¹⁸¹ Physical activity tracking can increase physical activity by 27 percent and is associated with improved weight and blood pressure levels.¹⁸² Tracking caloric intake, weight and physical activity can double one's weight loss or triple the number of people who meet weight-loss goals.¹⁸³ Social networks, which provide social reinforcement, can result in more people adopting healthy behaviors.¹⁸⁴ Finding ways to leverage technology to assist with personal health and readiness goals may decrease barriers to tracking personal readiness and provide cost-effective solutions for our geographically dispersed force.

Recommendations. Ultimately, any strategy designed to improve readiness requires people to take action. The Surgeon General’s Performance Triad Initiative is a strategy to improve readiness and resilience through improved SAN and leader involvement. Although most individuals fundamentally understand what they should do—get more sleep, exercise more and eat better (figure 3)—creating and sustaining those behavioral changes remains a societal challenge. The Performance Triad Initiative differs in that it provides evidence-based strategies that help teach Soldiers and their families “why” it is important for their health, well-being and personal readiness while focusing on “how,” with small changes in daily behaviors and habits, the healthy choice can become the easy choice. The Performance Triad Initiative provides a series of weekly challenges tailored for each person and designed to build healthy habits while reducing unhealthy habits. Upon completing the weekly challenge, the program incorporates reflection to help determine how the simple change improved stamina, mood, relationships or work performance. The program challenges people to maintain the most beneficial and newly acquired healthier habits.



Source: The Surgeon General’s Performance Triad Initiative

Figure 3 – Performance Triad Overarching Target Behaviors

Engaging the squad leader to be the agent of change may have the greatest chance for success. This approach aligns with the current Army training philosophy to focus on building the squad as the cornerstone for the military’s decisive force and is aligned with the concepts of Mission Command.¹⁸⁵ Squad leaders coach, mentor and train their Soldiers. Providing squad leaders additional tools and resources would allow them to be more effective in building resilience and readiness. The Performance Triad Initiative provides the squad leader with resources,

educational materials and weekly challenges to facilitate this role while providing the leader with the flexibility to adapt the program to meet the unit's needs. The newly established Master Resiliency Trainer (MRT) program and the reinstatement of the MFT program provide additional organic resources to assist the squad leader.¹⁸⁶ Physical therapists, dietitians, sleep experts and health educators, either organic to the military unit or at the local medical treatment facility, could provide additional subject-matter expertise for the squad leader. Squad and intersquad challenges and competitions could help facilitate the weekly personal challenges. Recognition of outstanding squad-level resilience and readiness could facilitate implementation of SAN across squads.

Kotter's eighth step of organizational change highlights the importance of anchoring change within the culture for long-term success.¹⁸⁷ Currently, 52 percent of recent graduates from Professional Military Education (PME) reported that training did not teach them how to develop others, and only 61 percent of Soldiers surveyed stated that their leader focused on coaching and mentoring.¹⁸⁸ Codifying these changes within the military culture will require integration into the PME system. The Army should add motivational interviewing technique instruction and additional practical exercises to facilitate preparedness and readiness at all levels of the PME system.¹⁸⁹ The combination of MRT and MFT into a military occupational specialty would provide units with a resource trained in all five domains: social, emotional, spiritual, family and physical. As with warfighting mission-essential tasks, leaders should be accountable for improving the health and preparedness of their unit. Development of appropriate metrics and holding leaders accountable for improving performance on those metrics could lead to innovative solutions that improve unit readiness.

In 1945 concerns were raised that "modern machines have to a great extent emancipated our muscles from work . . . and . . . have resulted in a lack of physical fitness in the youth of America, which seriously handicapped our war effort."¹⁹⁰ Although this was a quote from an Army publication toward the end of World War II, it rings true today. However, there are many options today where technology can assist with improving SAN. The Performance Triad Initiative uses a combination of personal readiness devices and web or mobile applications to facilitate changes in health and readiness. As outlined above, personal readiness devices that automatically track SAN can decrease the barriers to creating healthier habits. The Army should update regulations to allow the purchase and wear of these devices. The new ArmyFit platform provides assessments, educational tools and social networking capabilities to facilitate a "social contagion" toward health and readiness.¹⁹¹ Finally, the Army should consider developing online resources similar to those of the Canadian Defense Forces (www.DFit.ca) to provide personalized physical readiness programs designed around a Soldier's deployment cycle.¹⁹²

Strategy: Fiscally Constrained Environment

Establishing new programs and initiatives is a challenge in today's fiscally constrained environment. However, the impact of poor SAN on recruitment, attrition, readiness, health and medical discharges necessitates action and provides an opportunity for significant cost reductions. Lessons learned from prior interwar eras helped shape the recommendations outlined. As General Marshall remarked in the build-up to World War II, "The Army used to have all the time in the world and no money; now we've got all the money and no time."¹⁹³ Focusing on improving SAN during this postwar period can improve physical resilience and partly address the concerns of an unsatisfied force due to limited training dollars. During the build-up to World War II, military leaders scheduled physical conditioning programs in the morning and used afternoon sessions for sports, mass athletics, games and testing.¹⁹⁴

Although today’s programs to build physical resilience and readiness would differ from those of General Marshall’s era, the concept remains the same. The recommendations outlined focus on providing preparedness tools for the squad leader. Programs such as Comprehensive Soldier and Family Fitness and the Performance Triad Initiative contain costs through a centralized development but decentralized execution model that provides tools for military leaders to implement. No additional cost would be required for naming an upcoming year the “Year of the Professional Soldier Athlete,” as the costs have already been programmed. Other recommendations include building partnerships that would distribute costs through the whole-of-government approach or aligning programs from IMCOM, MWR and Army Medicine to better support the CSA’s Readiness and Resilience Campaign. The costs associated with the rest of the recommendations are minimal compared to costs associated with poor physical resilience and readiness as outlined in the “Health of Our Nation” section (p. 2) of this manuscript. Dr. East wrote the following regarding the cost-benefit analysis:

The most precious and irreplaceable resource in the U.S. Army is the individual Soldier. We must do all we can to develop and preserve this resource. Throughout the history of the Army, physical readiness training has been universally recognized as a force multiplier that enhances combat effectiveness, resilience and survivability on the battlefield. We spend billions of dollars each year developing and producing tactical weapons and funding the associated training necessary to deploy them. Although we have the most technologically advanced Army in the world, our commitment to physical readiness

Whole-of-Government Approach	A synchronized effort among the Departments of Education, Health and Human Services, Veterans Affairs and Defense would facilitate changes required for the country to embrace sleep, activity and nutrition (SAN) as fundamental to optimal health and physical readiness.
Cultural: Communicating the Vision and Creating Buy-In	Senior military leaders appreciate the urgency of the changes required, have created a vision and through different initiatives have built a coalition to drive change. However, gaining buy-in throughout the organization is required. Designating an upcoming year as the “Year of the Professional Soldier Athlete” could help communicate the vision and create the buy-in required for organizational change.
Cultural: Codifying Change in the Organization	<ol style="list-style-type: none"> 1. Develop a military occupational specialty that combines the skill sets of the Master Resiliency and Fitness Trainers. 2. Revise Professional Military Education to incorporate training on how leaders can enhance SAN to optimize readiness.
Environment	Continue to support DoD’s Healthy Base Initiative, whose goal is to make the healthy choice the easy choice by shaping the environment.
Social Networks	Social networks influence sleep duration, family activities and meal planning. The Army should support programs that incorporate or encourage family involvement.
Recruiting	The Army should adapt the Marine Corps Delayed Entry Program as it provides a unique approach to addressing attrition rates prior to recruits reporting for basic training.
Creating Change	Programs that provide tools on “how” and “why” to change may be more effective than educational programs telling people “what” to change. The Surgeon General’s Performance Triad provides weekly challenges and tools for leaders to facilitate SAN.
Squad Leader Focus	Programs that provide tools to the squad leader to lead, coach, mentor and teach may be the most effective and efficient way to improve readiness.
Technology	<ol style="list-style-type: none"> 1. Technology can enhance programs focused on improving health and readiness by decreasing barriers related to behavioral change. 2. Technology can provide a cost-effective means to reach the Army’s geographically dispersed population.

Table 5 – Summary of Recommendations

training is derisory by comparison. As the Army moves to a smaller, lighter, more mobile force in the fight against the global war on terrorism, a long-term, comprehensive commitment to the highest quality physical readiness training is mandatory to ensure our future success.¹⁹⁵

Conclusion

U.S. Army Training Manual No. 2 (*Studies in Citizenship for Recruits*, 1922) states, “No nation has ever survived, and no nation ever will survive, whose people are not physically, mentally and morally fit for survival.”¹⁹⁶ The health of our nation and the health of our military are mutually dependent. To implement the *National Security Strategy* and strategic landpower, we need a healthy nation and a fit force. This requires a whole-of-government approach to address a range of issues including public education, health care, military readiness and medical disabilities. Within the Army, we must create a culture that values SAN. This requires communicating our leaders’ vision, creating buy-in across the organization and codifying those changes within our systems. Three common principles underlie the recommendations: 1) distribute tools and resources to military leaders to implement, 2) provide expertise and reach-back capability for the military leaders as they implement change and 3) create an environment that makes the healthy choice the easy choice. At the close of World War I, Secretary of War Newton B. Baker “hoped that we will not again fall into the habit of slighting the body as we were on the point of doing when the war forced us to realize its importance as the basis of our national strength.”¹⁹⁷ As we wind down from Afghanistan, the question remains, “Will we learn from history?”

Endnotes

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