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DISABLED AMERICANS IN THE U.S. ARMED SERVICES**

Duquette, Kristin M.

Monterey, CA; Naval Postgraduate School

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**THESIS**

**THE DISABLED SOLDIER: A CASE FOR DISABLED  
AMERICANS IN THE U.S. ARMED SERVICES**

by

Kristin M. Duquette

March 2022

Co-Advisors:

Lauren Wollman (contractor)  
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**THE DISABLED SOLDIER:  
A CASE FOR DISABLED AMERICANS IN THE U.S. ARMED SERVICES**

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Submitted in partial fulfillment of the  
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES  
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from the

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## **ABSTRACT**

Despite the rising demands and functions of non-kinetic warfare, the military bars most disabled Americans from entry. Artificial intelligence, complex decision-making, and fifth-generation-warfare elements stress a multidimensional force and cognitive skills over dominant kinetic traits. This thesis investigates the feasibility requirements, national security implications, and benefits to the Department of Defense of expanding active military service to disabled Americans. After reviewing U.S. and international integration of disabled persons, the defined needs and skills for emerging warfare, academic studies of disabled talents, and military policy, this thesis reveals the feasibility of inclusion. Recommendations include mainstreaming persons with disabilities within the existing military model, making changes to defense policy, establishing a pilot program or corps, and undertaking future research.



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# TABLE OF CONTENTS

<b>PREFACE.....</b>	<b>1</b>
<b>I. INTRODUCTION.....</b>	<b>5</b>
<b>A. RESEARCH QUESTION .....</b>	<b>11</b>
<b>B. LITERATURE REVIEW .....</b>	<b>11</b>
<b>1. Barriers to Work and Disabled Talent .....</b>	<b>11</b>
<b>2. The Military System and Entry Requirements .....</b>	<b>13</b>
<b>3. The History of Physical Assessment for Active Duty .....</b>	<b>14</b>
<b>4. Cognitive Standards.....</b>	<b>15</b>
<b>5. Medical Waivers and Fit for Duty.....</b>	<b>16</b>
<b>6. Changing Nature of Warfare and Skills Needed for the             Future.....</b>	<b>20</b>
<b>C. RESEARCH DESIGN .....</b>	<b>22</b>
<b>II. THE CHANGING NATURE OF WARFARE AND MILITARY STANDARDS .....</b>	<b>25</b>
<b>A. PREPARING ARMED PERSONNEL FOR 5GW.....</b>	<b>28</b>
<b>B. MAXIMIZING HUMAN CAPITAL IN THE ACTIVE FORCE:     EVIDENCE AND FLEXIBILITY IN MILITARY STANDARDS.....</b>	<b>30</b>
<b>1. DOD Policies and Laws on Disability.....</b>	<b>30</b>
<b>2. Shifting Nature of Military Standards.....</b>	<b>32</b>
<b>C. THE ARGUMENT FOR THE DISABLED IN SPACE, CYBER,     AND REMOTE CONFLICT .....</b>	<b>36</b>
<b>D. CONCLUSION .....</b>	<b>39</b>
<b>III. DISABLED TALENT AND NON-KINETIC SKILLS.....</b>	<b>41</b>
<b>A. NON-KINETIC CHARACTERISTICS AND     REQUIREMENTS.....</b>	<b>41</b>
<b>B. DISABLED SPORT AND WAR .....</b>	<b>45</b>
<b>C. TOUGHNESS, GRIT, AND ADAPTABILITY .....</b>	<b>47</b>
<b>D. BLADE RUNNER PROSTHETICS AND THE HUMAN BODY .....</b>	<b>49</b>
<b>E. DISABILITY IN THE PRIVATE SECTOR.....</b>	<b>50</b>
<b>F. EMERGING TECHNOLOGIES, DISABILITY, AND     MILITARY ADVANCEMENTS .....</b>	<b>53</b>
<b>G. RISK AND BENEFIT CONSIDERATIONS FOR THE FORCE .....</b>	<b>55</b>
<b>H. CONCLUSION .....</b>	<b>58</b>
<b>IV. CONCLUSION .....</b>	<b>59</b>

**A. FINDINGS .....59**

**B. RECOMMENDATIONS.....60**

**1. Expand the Current Model.....60**

**2. Initiate a Policy Shift .....60**

**3. Create a Corps for Non-Kinetic Missions.....61**

**4. Establish a Disabled-American Pilot Program .....61**

**5. Garner Military and Congressional Support.....62**

**C. FUTURE AREAS OF RESEARCH.....62**

**D. SUMMARY .....63**

**LIST OF REFERENCES.....65**

**INITIAL DISTRIBUTION LIST .....77**

## LIST OF ACRONYMS AND ABBREVIATIONS

4GW	fourth-generation warfare
5GW	fifth-generation warfare
ADA	Americans with Disabilities Act
ADHD	attention-deficit/hyperactivity disorder
AFQT	Armed Forces Qualification Test
AI	artificial intelligence
ASVAB	Armed Services Vocational Aptitude Battery
BCI	brain-computer interfaces
CHDS	Center for Homeland Security
DOD	Department of Defense
ESA	European Space Agency
IAAF	International Association of Athletics Federation
LGBTQ	lesbian, gay, bisexual, transgender, and queer or questioning
MOS	military occupational specialty
PDQ	permanent medical disqualification
PPE	personal protective equipment
WAC	Women's Army Corps
WCAP	World Class Athlete Program

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## EXECUTIVE SUMMARY

The time to act is now. Government leaders cannot ignore the changing nature, complexities, and grave consequences of non-kinetic warfare. Cognitive and technical modes continue to outpace defense systems and warfare strategies that were once successful. Fifth-generation warfare (5GW) and emerging technologies give more power to remote and virtual networks, surveillance tactics, biological warfare, laser weapons, artificial intelligence, autonomous systems, and more, leaving physical violence as a secondary or, in some cases, an obsolete defense strategy.<sup>1</sup> Russia, China, and Iran target the United States with “hackers, spies, special operations forces” online and “in the shadows” over traditional soldiers and battlefields.<sup>2</sup> Their actions require little physical strength and agility to manipulate and overthrow U.S. cyber, economic, and technological interests behind desks and computer screens.<sup>3</sup> Non-kinetic warfare gives birth to once inconceivable threats, calling for the reassessment of talents and skillsets from military personnel.

Despite the conflict urgency and shift in demands, the Department of Defense has not conducted a large-scale examination of recruitment standards for non-kinetic warfare. Even as non-kinetic settings require more cognitive skills, such as critical thinking, decision-making, and reasoning, the military prohibits most disabled Americans from entering active service due to the physical and medical standards outlined in Department of Defense (DOD) Instruction 6130.03, Volume 2.<sup>4</sup> This restriction contradicts the department’s current practice of retaining active-duty or limited-service-status soldiers disabled in the field who meet satisfactory performance standards for their original or other

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<sup>1</sup> Waseem Qureshi, “Fourth- and Fifth-Generation Warfare: Technology and Perceptions,” *San Diego International Law Journal* 21, no. 1 (2019): 210.

<sup>2</sup> Seth Jones, *Three Dangerous Men: Russia, China, Iran, and the Rise of Irregular Warfare* (New York: Norton, 2021), 4.

<sup>3</sup> Jones, 6.

<sup>4</sup> Department of Defense, *Medical Standards for Military Service: Retention*, vol. 2, DOD Instruction 6130.03 (Washington, DC: Department of Defense, 2020), 3, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/613003v2p.pdf?ver=2020-09-04-120013-383>.

military positions.<sup>5</sup> Advancements in technology and science provide more reliable and adaptable medical equipment that disabled soldiers can use without posing a risk to the mission or forces; regardless, the same resources are available for Americans disabled prior to service. Therefore, a transtibial amputee or paraplegic soldier might now, however, be of benefit to the virtual battlefield.

## A. THESIS QUESTION AND RESEARCH

As the warfare landscape fluctuates and challenges force personnel, this thesis sought to answer the following inquiry: What are the feasibility requirements, national security implications, and benefits to the DOD of expanding active military service to disabled Americans? The research methods used primarily included evaluations, qualitative, and quantitative analysis on relevant information to the thesis question. The research was outlined through a literature review, government documents, law, politics, historical examples, academic studies, and scholarship opinions. The research for this thesis followed Bardach and Patashnik’s evaluation process by developing concepts with the provided information, estimating outcomes, confronting trade-offs, and providing recommendations.<sup>6</sup>

From a programmatic and systematic view, the DOD can leverage disabled Americans in military service. The Revolutionary War employed disabled soldiers, as did the Union and Confederate Armies in the Civil War.<sup>7</sup> In World War I and II, the Army established the Limited Service program—men with physical conditions and varying disabilities could meet manpower demands and serve in essential military functions.<sup>8</sup> By 1946, the Army’s Chief Classification and Personnel Actions Branch, as described by

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<sup>5</sup> Nathan D. Ainspan and Walter E. Penk, *Returning Wars’ Wounded, Injured, and Ill* (Westport, CT: Praeger Security International, 2008), 89.

<sup>6</sup> Eugene Bardach and Eric M. Patashnik, *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*, 6th ed. (Washington, DC: CQ Press, 2020).

<sup>7</sup> Bernard Rostker, “The American System of Providing for the Wounded Evolves,” in *Providing for the Casualties of War: The American Experience through World War II* (Santa Monica, CA: RAND Corporation, 2013), 64, <http://www.jstor.org/stable/10.7249/j.ctt2t90p.12>.

<sup>8</sup> Sanders Marble, *Scraping the Barrel: The Military Use of Sub-Standard Manpower* (Bronx: Fordham University Press, 2012), ProQuest.

Colonel George R. Evans, projected the possibility of enlisting a man with only “one eye, one leg, or even no legs,” if he met all job requirements aside from physical standards.<sup>9</sup> In addition to outlining that such service is feasible, these historical examples show the gains of this practice by fulfilling recruitment and retention goals and executing missions in significant conflicts.

Research also indicates that disabled American athletes have the required skillsets and mental agility to excel in non-kinetic positions. Numerous studies support that disabled athletes are mentally capable of withstanding unimaginable mental and physical stress and challenging environments.<sup>10</sup> They are also more resilient and courageous than non-disabled athletes, as these traits are essential to overcoming societal and institutional barriers regarding disability.<sup>11</sup> Disabled people may achieve similar outcomes for the military. As the military strives to surpass rivals and adversaries, the force could benefit from disabled athlete characteristics to improve resilience, adaptability, and cognitive capabilities required in non-kinetic settings.

Disabled Americans could bring advanced technological capabilities to the military and improve mission success. Indeed, companies have experienced increased profits and cost savings when disabled employees are in the workforce.<sup>12</sup> Additionally, disabled employees have higher retention rates than non-disabled counterparts.<sup>13</sup> Employing disabled Americans could fulfill military recruitment and retention goals for non-kinetic and noncombatant positions. The military seeks high-aptitude recruits with the very skills Silicon Valley—Google and Microsoft, for example—and the Israeli Defense Force

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<sup>9</sup> George R. Evans, “Not So Disabled,” *Army Information Digest* 1, no. 8 (December 1946): 44.

<sup>10</sup> Karen M. Whitfield and Kyle John Wilby, “Developing Grit, Motivation, and Resilience: To Give Up on Giving In,” *Pharmacy: Journal of Pharmacy Education and Practice* 9, no. 2 (2021): 109, <https://doi.org/10.3390/pharmacy9020109>; Jeffrey Martin and Laurie Malone, “Elite Wheelchair Rugby Players’ Mental Skills and Sport Engagement,” *Journal of Clinical Sport Psychology* 7 (2013): 253–63, <https://doi.org/10.1123/jcsp.7.4.253>.

<sup>11</sup> Iwona Sikorska and Krzysztof Gerc, “Athletes with Disability in the Light of Positive Psychology,” *Baltic Journal of Health and Physical Activity* 10, no. 1 (2018), <https://doi.org/10.29359/BJHPA.10.1.07>.

<sup>12</sup> Sally Lindsay et al., “A Systematic Review of the Benefits of Hiring People with Disabilities,” *Journal of Occupational Rehabilitation* 28, no. 4 (December 2018): 648, <http://doi.org/10.1007/s10926-018-9756-z>.

<sup>13</sup> Lindsay et al., 648.



employ with disabled individuals to create computer scripts, programs, and algorithms.<sup>14</sup> Disabled Americans can accomplish and improve the military’s reliance—and success—with semi-autonomous technologies, computing, and artificial intelligence.<sup>15</sup> In all of these ways, disabled individuals could help the military recruit, retain, and advance talent for non-kinetic missions.

The risks associated with military expansion are strategic, logistic, and process-related, needing careful consideration. Disabled Americans may increase military costs, but this is not certain until academics and the Congressional Budget Office conduct further research. The public and international adversaries may also perceive the force as weak for admitting disabled Americans. Yet, such debates are not new and repeat arguments of previous generations about women and African Americans. From higher costs to biological incompetence, African Americans and women were once considered a hindrance to missions and excluded from service—until the military made appropriate accommodations. Such concerns are valid but should not stop military progress and integration efforts with disabled Americans. Expanding military service to disabled Americans is feasible and beneficial and creates minimal national security implications under appropriate guidance, strategy, and leadership.

## **B. RECOMMENDATIONS**

### **1. Expand the Current Model**

The DOD should expand service to disabled Americans who meet current military requirements and undergo the medical waiver process on a case-by-case basis. This avenue is beneficial for elite and Paralympic amputee athletes who are most likely to surpass

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<sup>14</sup> Stacy Rader, Matthew D. Nelson, and Marvin Gorgas Jr., “Attention Deficit Hyperactivity Disorder (ADHD) and the U.S. Army: Recruiting and Readiness Implications” (master’s thesis, Naval Postgraduate School, 2018), 20, <https://calhoun.nps.edu/handle/10945/61251>; Ben Sales, “Deciphering Satellite Photos, Soldiers with Autism Take on Key Roles in IDF,” *Jewish Telegraphic Agency* (blog), December 8, 2015, <https://www.jta.org/2015/12/08/israel/deciphering-satellite-photos-soldiers-with-autism-take-on-key-roles-in-idf>.

<sup>15</sup> Barbara A. Bicksler and Lisa G. Nolan, *Recruiting an All-Volunteer Force: The Need for Sustained Investment in Recruiting Resources—An Update* (Arlington, VA: Strategic Analysis, Inc., 2009), 2, <https://prhome.defense.gov/Portals/52/Documents/RFM/MPP/Accession%20Policy/docs/Bicksler%20Recruiting%20Paper%202009.pdf>.

physical fitness standards and match the skills of active-duty amputee members disabled from the field.

## **2. Initiate a Policy Shift**

The DOD should refine and establish new entry standards to match the demands of non-kinetic warfare. First, it should establish a standard intellect requirement like the physical fitness test for all service personnel. The test should be administered twice per calendar year, and consecutive failures in meeting this baseline should result in repercussions similar to those for failing to meet physical fitness requirements, such as denial of promotions or, eventually, separation from the armed forces. Such a test would significantly maintain and improve the mental quality of the force.

Second, the DOD should waive the physical fitness tests for recruits receiving a score of 90 percent or higher on the Armed Services Vocational Aptitude Battery. Such a shift mirrors recruitment efforts of Silicon Valley and the Israel Defense Forces' Unit 9900 toward persons with autism and intellectual disabilities for non-kinetic and technical settings. The DOD would then match the recruits to 5GW positions.

Third, the DOD should implement a resilience and adaptability test for baseline entry to non-kinetic roles. It would place recruits in non-kinetic scenarios through virtual reality headsets and devices. The military could test a range of physically disabled and non-disabled candidates for the qualities—determination, resilience, mental toughness, and problem-solving—needed to excel in virtual and remote warfare. Candidates in the highest percentile of the resilience and cognitive tests would waive the physical fitness standard and perform non-kinetic functions. These avenues expand the talent pool to disabled and non-disabled recruits who best meet the emerging 5GW modes of warfare.

## **3. Create a Corps for Non-Kinetic Missions**

The DOD should create a Corps for Non-Kinetic Missions of disabled and non-disabled servicemembers. Non-kinetic settings will continue to rise, and such a corps would select the best and most-equipped talent—disabled and non-disabled alike—to meet the demands and advance military capabilities for non-physical spaces.

#### **4. Establish a Disabled-American Pilot Program**

The DOD should consider a pilot program for disabled American service upon entry. Government officials and policymakers must carefully consider this avenue, as a pilot program may create a separate-but-equal component with disabled Americans instead of whole-system integration.

#### **5. Garner Military and Congressional Support**

Congress and military officials should consider and implement variations of the aforementioned recommendations. Medical waivers, specific policy shifts, and the creation of a pilot program can be accomplished at the department level, but congressional support is encouraged.

##### ***a. Create a Stakeholder Committee***

The DOD should establish a stakeholder committee to collect and synthesize relevant information and data on expanding service to disabled Americans to implement these changes. The committee would consist of the following partners: the DOD, military experts and stakeholders, disability rights leaders, and advocacy groups. The committee would provide best practices and an implementation plan to the secretary of defense and the U.S. House and Senate Armed Services Committees.

##### ***b. Schedule a Congressional Hearing***

Recommendations for a corps and additional funding will need congressional support and approval. The U.S. House or Senate Armed Services Committee should consider the stakeholder committee findings and schedule a hearing to further examine and evaluate the benefits and barriers for disabled Americans entering military service. Depending on congressional leadership and political climate, the hearing results could spark new legislation or amendments to relevant defense bills.

#### **C. FUTURE AREAS OF RESEARCH**

The following areas require further research on disabled Americans and their entry into military service:

- A cost–benefit analysis of disability entry, service coverage, and defense spending. The research could include budget estimates from the Department of Veteran Affairs, the National Defense Authorization Acts, and the Social Security Administration. The Congressional Budget Office could provide additional information.
- The cultural barriers and solutions for disability integration into the military system.
- The difference between civil and military service in 5GW settings aside from conducting lethal force.
- The reassessment of deployment terms and defense policies for remote and virtual warfare.

Disabled Americans will continuously meet the call of service in times of distress and conflict pressures. Given warfare’s fluid demands, the past performance of disabled soldiers in kinetic environments, and the current talents of disabled individuals, it is advantageous for the military to consider and integrate disabled Americans into lethal, non-kinetic service.

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To the U.S. Paralympic sport community: Thank you for embracing me as a young high school student. I will never forget my first para swim meet in December 2007. It was the first time I felt a sense of belonging with others without having to say a word on the pool deck. I grew confidence in myself and my disabled body in the water, largely due to the coaches, teammates, and support staff who believed in my talent and potential. The water is my home, and I'm indebted to your love and support.

To the professors at Trinity College: Thank you for offering human rights as an area of study. Writing my undergraduate thesis on whether disability rights are viewed as human rights, particularly the right to sport, helped me contextualize and give meaning to all facets of my life. Intersecting my personal, sport, and academic life laid the foundation of how I view the global disability rights community and its intersectionality with all levels of society.

To the disability rights community: Thank you for your grit, resilience, and determination to make a more inclusive world. You welcomed me as a college student as I grew into myself and navigated advocacy and Washington, DC. I learned how to be proudly disabled, view the world through the social model, and apply my talents to improve exclusive structures. Since then, I have been incredibly grateful for my mentors, leaders, and friends made throughout the years.

To my colleagues at the Department of Homeland Security and the Federal Emergency Management Agency: Thank you for believing in my goals and my willingness to grow in the homeland security landscape. I am in awe of my colleagues and their passion to serve communities in significant times of need. To my colleagues in public service: Thank you for your commitment to serving the American people. I am grateful to learn from, contribute to, and advance initiatives alongside you.

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To the reader: Thank you for your time. I hope my thesis provides you with insight and sparks action for a better country and world.

## **PREFACE**

Testimony of  
Kristin Duquette  
Naval Postgraduate School,  
Center for Homeland Defense and Security

United States House Armed Services Committee  
Subcommittee on Readiness  
March 25, 2024

Room 2118 Rayburn  
Public Hearing

“Leveraging Disabled Talent in Active Military Roles”

Good afternoon, Chairman John Garamendi, Ranking Member Doug Lamborn, and members of the House Armed Services Subcommittee on Readiness. It is a privilege to share my expertise on the importance of today’s legislation in leveraging disabled talent into active military roles for non-kinetic warfare.

I come before you today as a person with a disability who has served and represented the United States in various capacities. I am a former world-class swimmer and captain of Team USA. I have served inside the U.S. Senate and President Barack Obama’s administration. I now serve at FEMA to prevent and mitigate terrorist attacks in public transportation through federal grants. I am a student at the Naval Postgraduate School, Center for Homeland Defense and Security, and am a security fellow at the Truman National Security Project. I have served—and will continue to serve—our country—and bring my whole self to this critical and timely discussion.

I appreciate the leaders, advocates, and experts who tirelessly worked to advance military expansion upon entry to disabled Americans. This includes Senator Harkin’s past efforts to design a pilot program that brought public support from Secretary Panetta to Congressman Takano’s sponsorship with the Keith Nolan Air Force Deaf Demonstration Act of 2015 and 2018. Their determination is with me today.



The United States military is familiar with recognizing minority groups within the force. This may seem unfathomable to imagine, but past lawmakers experienced this uncertainty when adopting the Women's Auxiliary Corps in World War II. During that time, it was unclear if women would compromise the force and unit cohesion despite women's contributions to the defense landscape since the Revolutionary War. Regardless of the unknown, global threats pushed our military to make this expansion. Now we see women at the top ranks of the force and continuing to break legacy barriers.

Disabled Americans fought on the front lines of the Revolutionary and Civil Wars under the Invalid Corps. Disabled Americans within the Invalid Corps protected Washington, DC, and escorted Abraham Lincoln's casket. By World War II, five-star generals reported to a disabled commander-in-chief. Disabled Americans serving and defending the United States is not new. The United States needs to formally acknowledge—and cultivate—past, current, and future disabled talent in the defense arena.

Like the adoption of women, African Americans, and the LGBTQ community into the force, it is in the interest of our country to use all forms of talent—including voluntary—that best equips the military for future warfare. This too is possible for disabled Americans who are interested and best qualify for military service.

Physical talent is no longer the primary metric for military success. Future warfare will always have physical components, but having more bodies on the battlefield is outdated and places the United States at a disadvantage. Technical, scientific, and virtual advances call for personnel innovation and change. The current talent requirements are based on legacy systems to win past wars and consequently exclude the best merit for virtual and non-kinetic worlds. We should not expect that all soldiers will excel in the responsibilities of physical and virtual environments. Our best runners will not outpace an adversary's computing.

I understand the difficulty and controversy regarding the legislation before the committee. It places responsibility and trust in disabled Americans to fill roles in the new defense environment. Still, disabled Americans are creative, talented, adaptive, and resilient. They think outside the box, bring critical perspectives to complex issues, lead

teams, persevere across barriers, and drive action. These are all imperative requirements and qualities the military strives to uphold.

We must redefine active duty and deployments for non-kinetic modes. Active duty previously meant defending the line requiring unwavering strength. Suppose deployments are virtual, social, and non-kinetic, requiring cognitive and emotional strength over physical talent. What is the difference between a double below-the-knee amputee remote piloting a drone in service to her country and a non-disabled service member that meets the physical fitness standard? Will we let legacy requirements exclude the best talent for the roles at hand? It is in the best interest of the Department of Defense—and the United States at large—to leverage confident Americans with disabilities into active service for non-kinetic roles.

The fact is, disabled Americans have served inside the military and progressed our defense capacities since the creation of this country. Disabled Americans bring value to the new and evolving conflict environments. This bill is appropriately timed and guarantees much-needed talent into the force. The bill makes good strategic sense to best ready and prepare for the next mission at hand.

It is time for the United States to officially recognize disabled talent in military service and enlist the best merit and skills for the next big war. Leveraging disabled talent will bring strategic advances to the force previously experienced with minority groups. We can do this. We must do this. Our future is dependent on today. Thank you.

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## I. INTRODUCTION

Sergeant First Class Elizabeth Marks is the first Paralympian and active-duty servicemember in the U.S. Army. Marks joined the military in 2008 at 18 because of her passion for service and family legacy. Marks dreamed of combat missions and earned the rank of Sergeant in the combat medic field.<sup>1</sup> In Operation Iraqi Freedom, Marks developed musculoskeletal hip injuries and turned to the water for rehabilitation in hopes of rejoining active service. Two years later, Marks was judged fit for duty and accepted into the U.S. Army World Class Athlete Program (WCAP) to train for the Paralympics. In 2014, set to compete at the Invictus Games—an international sporting event for sick, wounded, and disabled servicemembers—she fell to a respiratory illness and was placed in a medically induced coma.<sup>2</sup> Marks was back in the water less than a month after her coma and lung complications; she became a below-knee amputee in 2017 due to lingering complications from the respiratory illness and 2010 musculoskeletal injuries.<sup>3</sup>

Today, Sergeant Marks is a Paralympic athlete and serves in the military as an active-duty combat medic. Marks swims and fulfills her military duties even with limited lung capacity, vision, and mobility.<sup>4</sup> She recently competed in the Tokyo 2020 Paralympic Games for Team USA as a gold, silver, and bronze medalist, and a world-record holder. Sergeant Marks is the Army’s first Paralympic swimmer and is an inductee for the Army Women’s Hall of Fame.<sup>5</sup>

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<sup>1</sup> Matt Crossman, “The Things She Carries—The Story of Paraswimmer and U.S. Army Sgt. Elizabeth Marks,” ESPN, May 24, 2016, [https://www.espn.com/espnw/culture/feature/story/\\_/id/15702441/the-things-carries-story-paraswimmer-us-army-sergeant-elizabeth-marks](https://www.espn.com/espnw/culture/feature/story/_/id/15702441/the-things-carries-story-paraswimmer-us-army-sergeant-elizabeth-marks).

<sup>2</sup> Crossman, “The Things She Carries”; “Home Page,” Invictus Games Foundation, accessed October 26, 2021, <https://invictusgamesfoundation.org/>.

<sup>3</sup> “Elizabeth Marks,” Team USA, accessed July 16, 2021, <https://www.teamusa.org/443/us-paraswimming/athletes/Elizabeth-Marks>.

<sup>4</sup> Sarah Cammarata, “‘A Place of Peace’: Army’s First Paralympic Swimmer Reflects on Journey to the Pool and the Tokyo Games,” Stars and Stripes, July 21, 2021, <https://www.stripes.com/branches/army/2021-07-21/olympics-paralympic-tokyo-army-soldiers-marks-swimmer-2220734.html>.

<sup>5</sup> Brittany Nelson, “New World Record and Three Medals for Paralympic Soldier-Athlete,” U.S. Army, September 8, 2021, [https://www.army.mil/article/250052/new\\_world\\_record\\_and\\_three\\_medals\\_for\\_paralympic\\_soldier\\_athlete](https://www.army.mil/article/250052/new_world_record_and_three_medals_for_paralympic_soldier_athlete).

Captain Scotty Smiley is the first blind active-duty officer in the U.S. Army.<sup>6</sup> A West Point graduate and Purple Heart recipient, Smiley permanently lost his vision in 2005 due to a vehicle explosion in Mosul, Iraq. Upon rehabilitation, the Army Medical Review Board deemed Smiley fit for active service.<sup>7</sup> In 2010, Captain Smiley became a company commander of the Warrior Transition Unit at West Point.<sup>8</sup> Lieutenant General Robert Van Antwerp—former chief of engineers and commanding general of the U.S. Army Corps of Engineers—stated, “Scott brings a whole new dimension to soldiering and leadership.”<sup>9</sup> Today, Smiley works at the Gonzaga University’s Reserve Officers’ Training Corps program.<sup>10</sup>

Army Major D. J. Skelton is the Army’s most severely disabled servicemember in combat leadership. In 2004, Skelton lost an eye, his upper mouth, and partial mobility in his left arm and ankle from an explosion in Fallujah, Iraq. The shrapnel injuries left Skelton able to eat and drink only with a medical prosthetic, but after rehabilitation, the Army cleared Skelton for active service and combat command. In 2011, though disabled, Skelton led the Second Stryker Cavalry Regiment of 192 members in Afghanistan. Skelton retired from the Army in 2018 and is now the co-founder of a disabled sports organization.<sup>11</sup>

These incredible personal stories illustrate the immense talent and endurance, in addition to passion to serve and love of country, that are brought to bear on the uniformed services of the United States.

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<sup>6</sup> USAA, “Blind Officer Still Serves and Inspires,” Military.com, October 26, 2018, <https://www.military.com/veterans-day/scotty-smiley-profile.html>.

<sup>7</sup> USAA.

<sup>8</sup> Tommy Gilligan, “West Point’s Smiley—Driving on with Life,” U.S. Army, February 1, 2010, [https://www.army.mil/article/33852/west\\_points\\_smiley\\_driving\\_on\\_with\\_life](https://www.army.mil/article/33852/west_points_smiley_driving_on_with_life).

<sup>9</sup> Gilligan.

<sup>10</sup> USAA, “Blind Officer Still Serves and Inspires.”

<sup>11</sup> Kristina Wong, “Capt. D.J. Skelton, the Army’s Most Seriously Wounded Commander, Returns to Combat,” ABC News, February 23, 2011, <https://abcnews.go.com/Politics/dj-skelton-armys-wounded-commander-returns-combat/story?id=12984099>; Devon L. Suits, “Keeping a Promise: Wounded Warrior Shares Why He Served,” U.S. Army, September 11, 2019, [https://www.army.mil/article/226913/keeping\\_a\\_promise\\_wounded\\_warrior\\_shares\\_why\\_he\\_served](https://www.army.mil/article/226913/keeping_a_promise_wounded_warrior_shares_why_he_served).

However, what if Elizabeth Marks had lost her leg to childhood cancer prior to military service? Would she still be using her talents and skills as an active-duty combat medic today? If Smiley had lost his sight in a car accident, would West Point have accepted his application? As current defense requirements stand, neither would have been eligible to contribute to the military in active service, thereby excluding precious talent and personnel needed to combat today's and tomorrow's threats.

Remaining in service as a disabled soldier is a relatively new concept from Operation Iraqi Freedom and Enduring Freedom. Advancements in technology and science provide more reliable and adaptable medical equipment that disabled soldiers can use without posing a risk to the mission or forces. In 2003, at Walter Reed Army Medical Center, President George W. Bush stressed, "A grievous injury, such as the loss of a limb, no longer means forced discharge and if wounded service members want to remain in uniform and can do the job, the military tries to help them stay."<sup>12</sup> Servicemembers have the option to meet satisfactory performance for their original role or other military specialties.<sup>13</sup> Soldiers injured and disabled on the field can be cleared for duty, return to active service responsibilities, or receive a medical discharge from service. Soldiers can maintain a "duty-limiting medical condition," or disability to restrict deployment locations upon re-entering the service.<sup>14</sup> As of now, 60 percent of soldiers with noncombat musculoskeletal injuries classify as limited duty while 65 percent are non-deployable.<sup>15</sup> Ultimately, the Department of Defense (DOD) determines soldiers' fitness and ability to remain in active service.

Retaining injured and disabled talent is especially pertinent as the military faces recruitment and retention barriers with an all-volunteer force. Roughly all services—except

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<sup>12</sup> Nathan D. Ainspan and Walter E. Penk, *Returning Wars' Wounded, Injured, and Ill* (Westport, CT: Praeger Security International, 2008), 69.

<sup>13</sup> Ainspan and Penk, 69.

<sup>14</sup> Ainspan and Penk, 89.

<sup>15</sup> Joseph M. Molloy et al., "Musculoskeletal Injuries and United States Army Readiness Part I: Overview of Injuries and Their Strategic Impact," *Military Medicine* 185, no. 9–10 (2020): e1461–71, <https://doi.org/10.1093/milmed/usaa027>.

the Marine Corps—missed recruitment goals in 2021.<sup>16</sup> The Air Force Recruiting Service warns that recruitment will continue to struggle due to economic and labor impacts from the COVID-19 pandemic.<sup>17</sup> Even the Army now offers up to \$50,000 in bonuses for recruits to alleviate manpower shortages.<sup>18</sup>

The military precludes most disabled Americans from active service due to the physical and medical entry standards in DOD Instruction 6130.03, Volume 2.<sup>19</sup> A transtibial amputee or paraplegic soldier might now, however, be of benefit to the virtual battlefield. Indeed, not every disabled American would meet force, branch, or unit enlistment standards, but many might meet those re-evaluated standards, underlying requirements, and assumptions to execute lethal role responsibilities. Furthermore, 61 million Americans—or 26 percent of the U.S. population—currently live with a disability.<sup>20</sup> These numbers will increase due to population growth and gains in science and technologies. Moreover, many people will become permanently or temporarily disabled in their lifetime.<sup>21</sup>

Americans disabled prior to service have pressed for military change. Keith Nolan advocates for the deaf and hard of hearing to serve in the Air Force.<sup>22</sup> Hannah Cvancara, an amputee, received high scores on Naval entry standards and awaits medical waiver

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<sup>16</sup> Ellie Kaufman, “US Military Struggled to Meet Recruitment Goals Last Year,” WSIL News 3, January 14, 2022, [https://www.wsiltv.com/coronavirus/us-military-struggled-to-meet-recruitment-goals-last-year/article\\_a630d13c-33a0-5550-a0aa-f22e4b6bcd92.html](https://www.wsiltv.com/coronavirus/us-military-struggled-to-meet-recruitment-goals-last-year/article_a630d13c-33a0-5550-a0aa-f22e4b6bcd92.html).

<sup>17</sup> Rachel S. Cohen, “Air Force’s Enlisted Recruitment Pipeline Is Drying Up, General Warns,” *Air Force Times*, January 21, 2022, [https://www.airforcetimes.com/news/your-air-force/2022/01/21/air-forces-enlisted-recruitment-pipeline-is-drying-up-general-warns/?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2001.24.2022&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.airforcetimes.com/news/your-air-force/2022/01/21/air-forces-enlisted-recruitment-pipeline-is-drying-up-general-warns/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2001.24.2022&utm_term=Editorial%20-%20Early%20Bird%20Brief).

<sup>18</sup> “Army Ups Top Bonuses for Recruits to \$50K amid COVID-19 Related Staffing Shortages,” CBS News, January 12, 2022, <https://www.cbsnews.com/news/army-covid-staffing-shortages-recruit-bonuses/>.

<sup>19</sup> Department of Defense, *Medical Standards for Military Service: Retention*, vol. 2, DOD Instruction 6130.03 (Washington, DC: Department of Defense, 2020), 3, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/613003v2p.pdf?ver=2020-09-04-120013-383>.

<sup>20</sup> “Disability Impacts All of Us,” Centers for Disease Control and Prevention, September 16, 2020, <https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html>.

<sup>21</sup> “Disability and Health,” World Health Organization, November 24, 2021, <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>.

<sup>22</sup> Keith Nolan Air Force Deaf Demonstration Act of 2018, H.R. 5831, 115th Cong. (2018).

approval.<sup>23</sup> Despite their endeavors and qualifications to advance the force, Congress and the DOD have not made significant policy shifts to expand military entry standards to disabled Americans.

Exclusionary practices are especially worrisome as the nature and characteristics of warfare change for the United States, international partners, and adversaries. Air, water, outer space, chemical, and cyber battlefields have quickly replaced physical, hand-to-hand combat.<sup>24</sup> These domains include such new weaponry as artificial intelligence, robotics, biotechnology, energy sources, hypersonics, and computer data that determine the success or failures of U.S. conflict.<sup>25</sup>

This new frontier requires the force to expand and rethink the art and science of waging modern conflict. Bombs and bullets increasingly give way to autonomous algorithms, power grids, computer programming, and synthetic biology.<sup>26</sup> Imagine a dynamic force that can adapt and excel in these virtual battlefields as opposed to shooting from the trenches—with servicemembers’ main specialties in mathematics, computer science, rapid decision-making, biology, chemistry, research, and strategic communications rather than physical combat.

Remote and non-earth-centric warfare will redefine the core knowledge, skills, and abilities required of American warfighters. Although the DOD’s strategic thinkers and planners have recognized these novel theaters and modes of conflict, including the individual skillsets and weaponry appropriate to such missions, this new frontier has exposed an unconsidered opportunity for a force to include untapped pools of intelligent and talented disabled Americans in the military service—a group historically excluded from such opportunities.

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<sup>23</sup> Geoff Ziezulewicz, “Meet the Civilian Nurse Trying to Become the First Pre-service Amputee to Join the Navy,” *Navy Times*, February 9, 2022, <https://www.navytimes.com/news/your-navy/2022/02/09/meet-the-civilian-nurse-trying-to-become-the-first-pre-service-amputee-to-join-the-navy/>.

<sup>24</sup> Department of Defense, *Quadrennial Defense Review 2014* (Washington, DC: Department of Defense, 2014), 3, [https://www.acq.osd.mil/ncbdp/docs/2014\\_Quadrennial\\_Defense\\_Review.pdf](https://www.acq.osd.mil/ncbdp/docs/2014_Quadrennial_Defense_Review.pdf).

<sup>25</sup> Department of Defense, *Summary of the 2018 National Defense Strategy: Sharpening the American Military’s Competitive Edge* (Washington, DC: Department of Defense, 2018), 3.

<sup>26</sup> Department of Defense, 14.



International partners already acknowledge and leverage disabled talent in the defense sphere. Germany believes diversity offers creative and adaptable solutions to complex situations. This is outlined in the *Charta der Vielfalt* (Diversity Charter) signed by the Ministry of Defense.<sup>27</sup> The country acknowledges the disabled talent and influence on its defense system through its policy framework. At a minimum, the United States could incorporate similar language to defense policies and future authorization acts. Whether motivations derive from efforts for diversity and inclusion or enlightened self-interest, countries increasingly recognize the strategic benefits and advancements disabled servicemembers bring to uniformed service.

Past technological advances have enhanced the talents of disabled Americans and, in some cases, matched or surpassed the average non-disabled human capability. Through adaptability and innovation, an armless female pilot can now fly the skies with her legs, and a person with quadriplegia can operate a motor vehicle with eye and breath movements at racetrack speeds.<sup>28</sup> On prosthetic technology, bilateral below-the-knee amputee runners outpace non-disabled elite athletes in national and Olympic arenas.<sup>29</sup>

Given the paucity of recruits, the profile of sustained injuries in the last 20 years of war, the impracticality of faulty retention, and the changing nature of warfare, it makes sense to formalize and expand the roles, change the official posture, and grant the opportunity for disabled Americans to serve in non-kinetic, active-duty positions. The armed forces are obligated—in addition to recruiting and retaining the best fighting force—

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<sup>27</sup> “Inclusion in the Bundeswehr,” Bundeswehr, accessed December 10, 2021, <https://www.bundeswehr.de/en/about-bundeswehr/identity-of-the-bundeswehr/equal-opportunities/inclusion-bundeswehr>; “About the Diversity Charter,” Charta der Vielfalt, accessed December 10, 2021, <https://www.charta-der-vielfalt.de/en/diversity-charter-association/about-the-diversity-charter/>.

<sup>28</sup> Nathan Brown, “More Than 20 Years after Devastating Crash, Sam Schmidt Returns to Racing,” *Indianapolis Star*, October 8, 2020, <https://www.indystar.com/story/sports/motor/2020/10/08/sam-schmidt-returns-racing-first-time-since-2000-crash/5929828002/>; Jamie Jones, “Jessica Cox Flies in the Face of Challenges,” *Smithsonian Magazine*, March 4, 2021, <http://www.smithsonianmag.com/blogs/smithsonian-affiliations/2021/03/04/jessica-cox-flies-face-challenges/>.

<sup>29</sup> Sam Borden, “Pistorius Misses Chance at Final, but Remains Upbeat,” *New York Times*, August 5, 2012, <https://www.nytimes.com/2012/08/06/sports/olympics/pistorius-eliminated-track-and-field-roundup.html>; Matthew Futterman, “Another Double Amputee’s Fight for the Olympics Is Dealt a Major Setback,” *New York Times*, October 27, 2020, <https://www.nytimes.com/2020/10/27/sports/blake-leeper-prostheses-ruling.html>.

to uphold the ethics and justice standards of opportunity, merit, and inclusion of American democracy.<sup>30</sup>

Now, the United States is losing valuable talent by excluding this population. Such loss hinders advancements and outweighs the risks of institutional change. Given the speed at which conflict is throttling into the future, pondering the plausibility, legality, and strategic, economic, and cultural implications of such expansion is prudent.

## **A. RESEARCH QUESTION**

What are the feasibility requirements, national security implications, and benefits to the DOD of expanding active-duty military service to disabled Americans?

## **B. LITERATURE REVIEW**

The following body of research provides multiple perspectives on disability and defense. This literature review discusses concepts of disability employment, military standards, the changing nature of warfare, and military skills needed for future readiness.

### **1. Barriers to Work and Disabled Talent**

This literature review reveals common themes on the hesitations and barriers to advancing disability rights within U.S. culture and the law—particularly employment. Persons with disabilities are owed access and rights, but a common resistance has pervaded disability rights throughout U.S. history—seeing the disabled as objects with no autonomy over their bodies and shunning them from society through institutionalization.<sup>31</sup> Until the passing of the Americans with Disabilities Act (ADA), no U.S. law prohibited disability discrimination regarding employment, transportation, public education, and voting.<sup>32</sup>

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<sup>30</sup> Christopher C. Miller, “Actions to Improve Racial and Ethnic Diversity and Inclusion in the U.S. Military” (official memorandum, Washington, DC: Department of Defense, 2020).

<sup>31</sup> Fred Pelka, *What We Have Done: An Oral History of the Disability Rights Movement* (Amherst: University of Massachusetts Press, 2011), ix, ProQuest.

<sup>32</sup> Robert Burgdorf, “A Dozen Things to Know about the ADA,” *Burgdorf on Disability Rights* (blog), accessed June 10, 2021, <https://adachronicles.org/stories-essays/a-dozen-things-to-know-about-the-ada/>.

Resistance to disability employment included the myth that it was more expensive to employ a professional with a disability. One challenge to passing the ADA came from small-business lobbying groups that assumed mandating disability accommodations in the workplace would increase costs and require resources unavailable to small-business owners.<sup>33</sup> However, in 2003, *HR Focus* studied the fears of and barriers to hiring disabled workers, as many professionals believed it was too expensive—although 38 percent of employers surveyed had no costs and 28 percent of them spent \$1,000 or less for disability accommodations in the workplace.<sup>34</sup> In this way, the reality contradicted the overblown fear of employing disabled workers.

In a similar myth-buster finding, disabled workers have shown themselves to be better employees in some ways but mixed in others. Researcher Thomas Aichner has discovered that disabled employees improve corporate performance—creating higher revenue, income, return on investment, innovation, and adaptability and outperforming their competitors.<sup>35</sup> He also finds that 90 percent of employees with disabilities scored average or above average in their performance reviews compared to their non-disabled counterparts.<sup>36</sup> Along the same line, an Australian study concludes that workers with Asperger syndrome, a condition that puts them on the so-called autism spectrum, pay greater attention to detail in projects and ethics protocols than their non-disabled colleagues.<sup>37</sup> The Australian study also reveals that employees with autism have difficulty completing tasks without constant supervision and experience more miscommunication than their non-disabled counterparts.<sup>38</sup> In keeping with the benefits side of hiring the

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<sup>33</sup> Linda Hamilton Krieger, ed., *Backlash against the ADA: Reinterpreting Disability Rights* (Ann Arbor: University of Michigan Press, 2003), ProQuest.

<sup>34</sup> “Advantages and Opportunities in Hiring Disabled Workers,” *HR Focus* 80, no. 6 (June 2003), EBSCO.

<sup>35</sup> Accenture, *Getting to Equal 2018: The Disability Inclusion Advantage* (Dublin: Accenture, 2018), [https://www.accenture.com/\\_acnmedia/PDF-89/Accenture-Disability-Inclusion-Research-Report.pdf](https://www.accenture.com/_acnmedia/PDF-89/Accenture-Disability-Inclusion-Research-Report.pdf).

<sup>36</sup> Accenture.

<sup>37</sup> Melissa Scott et al., “Employers’ Perception of the Costs and the Benefits of Hiring Individuals with Autism Spectrum Disorder in Open Employment in Australia,” *PLOS One* 12, no. 5 (May 2017), ProQuest.

<sup>38</sup> Scott et al.

disabled, Aichner’s study demonstrates that employees with disabilities bring advantages and a competitive edge to the workplace, including higher motivation, creativity, superior problem-solving skills, and experimentation for better outcomes.<sup>39</sup> Scholars from different fields concur that the disabled deliver value to their employers, but specific disabilities, such as autism, may require employer investment in training and mentorship to mitigate drawbacks.

## 2. The Military System and Entry Requirements

Although still widely contested concerning bias and force readiness, a concept central to active military service is uniform physicality standards. On the one hand, a 2020 study from the *International Journal of Exercise Science* contends that more research across age and gender with the Physical Fitness Test and Combat Fitness Test needs to provide the best measurement of Marines’ physical abilities.<sup>40</sup> On the other hand, according to Hollander, Bell, and Sharp, soldiers’ physical abilities do not fully match the demands of their assigned occupational titles, and this mismatch leads to injuries, disabilities, and a degraded force.<sup>41</sup> These outcomes suggest more research needs to explore the misalignments between assigned military occupational specialty (MOS) codes and the required tests. This body of knowledge raises the alarm about the lack of available information detailing the physical demands of military occupational roles.

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<sup>39</sup> Thomas Aichner, “The Economic Argument for Hiring People with Disabilities,” *Humanities & Social Sciences Communications* 8, no. 1 (January 2021), <https://doi.org/10.1057/s41599-021-00707-y>.

<sup>40</sup> Marc Keefer and Mark Debeliso, “A Comparison of United States Marine Corps Physical Fitness Test and Combat Fitness Test Results,” *International Journal of Exercise Science* 13, no. 4 (2020): 1741–55.

<sup>41</sup> Ilyssa E. Hollander, Nicole S. Bell, and Marilyn Sharp, *Physical Demands of Army Military Occupational Specialties: Constructing and Applying a Crosswalk to Evaluate the Relationship between Occupational Physical Demands and Hospitalizations*, Technical Report No. T08-06 (Natick, MA: U.S. Army Research Institute of Environmental Medicine, 2008), <https://apps.dtic.mil/dtic/tr/fulltext/u2/a482364.pdf>.

### 3. The History of Physical Assessment for Active Duty

Official screening tests reflected in DOD policies began in 1919 for World War I for mass physical training, known as the Individual Efficiency Test.<sup>42</sup> The test involved running 100 yards, throwing a hand grenade, climbing an eight-foot wall, and completing an obstacle course.<sup>43</sup> By World War II, the force added the Army Ground Forces Test (1942) and the Physical Efficiency Test Battery (1944).<sup>44</sup> These tests required more physical agility to enter the force, such as push-ups, pull-ups, burpees, squats, and shuttle runs. These tests went through a series of changes following World War II and into the post-Vietnam era. These included outdoor and indoor challenges, combat-specific exercises, weather and climate specifics, specialty tests, and physical fitness tests for women.<sup>45</sup> In 1980, the U.S. Army introduced the Army Physical Readiness Test, later adopted as the Army Physical Fitness Test, which included both genders and all age groups and required little equipment for evaluation.<sup>46</sup> Despite improvements and specificity of the standards, a 1984 Training and Doctrine Command research group noted high recruit discharges due to the lack of physical fitness.<sup>47</sup> By 1998, based on findings from a Government Accountability Office report on low service recruitment rates, the acting assistant secretary of defense implemented initial physical tests before basic training.<sup>48</sup>

During this period, the Army revamped the physical standards of the Physical Fitness Test. It involved a six-tier point system to determine enlistment eligibility, including physical stamina, the upper body, the lower body, auditory levels, vision, and

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<sup>42</sup> Veronique Hauschild et al., *Correlations between Physical Fitness Tests and Performance of Military Tasks: A Systematic Review and Meta-Analyses*, PHR No. 12-02-0614 (Aberdeen Proving Ground, MD: U.S. Army Public Health Command, 2014), B-2, <https://apps.dtic.mil/sti/pdfs/ADA607688.pdf>.

<sup>43</sup> Hauschild et al., B-2.

<sup>44</sup> Hauschild et al., B-2.

<sup>45</sup> Hauschild et al., B-2.

<sup>46</sup> Hauschild et al., B-2.

<sup>47</sup> Joseph J. Knapik et al., *The Case for Pre-enlistment Physical Fitness Testing: Research and Recommendations*, USACHRPM Report No. 12-HF-01Q9D-04 (Ft. Knox, KY: U.S. Army Center for Accessions Research, 2004), 1, <https://apps.dtic.mil/sti/pdfs/ADA426848.pdf>.

<sup>48</sup> Knapik et al., 1.

psychiatric assessments.<sup>49</sup> The physical and upper and lower limbs tests gauged various capabilities ranging from strength, to disease history, to range of motion, to agility. The ears and eyes tests had the same purpose of determining issues with function and reliability. The mental portion of the assessment evaluated the recruit’s personality, emotional well-being, and cognitive disorders that might not be suitable for specific roles and missions.<sup>50</sup>

The current DOD system requires a recruit to pass the Medical Fitness Standard (Army Regulation 40-501) and the Physical Readiness Testing (Army Regulation 350-1). The Medical Fitness Standard determines the recruit’s ability to perform the Army’s active-duty role. This pre-entry test is also conducted as needed for retention. The Physical Readiness Test, which determines the physical fitness for a job specialty, is administered after the Medical Fitness Standard during screening and annually for retention purposes.<sup>51</sup> In general, the required tests to enter and remain an active-duty member are as follows: 1) medical fitness for duty requirements, 2) basic physical aptitude test, 3) MOS requirements, 4) unit requirements, and 5) particular assignments such as airborne or ranger school.<sup>52</sup>

#### **4. Cognitive Standards**

The DOD requires two knowledge-based criteria for an active-duty force. The first is to obtain a high school diploma or earn its equivalent, and the second is to pass the Armed Services Vocational Aptitude Battery Test (ASVAB). The “quality benchmarks” for active duty, according to the Congressional Research Service, denote that 90 percent of the force must complete a high school education and that at least 60 percent must achieve an above-average Armed Forces Qualification Test (AFQT) score on the ASVAB.<sup>53</sup>

The ASVAB is the standard cognitive assessment for entry into the U.S. Armed Forces. The purpose is to evaluate the prospective members’ skills and best align them with

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<sup>49</sup> Hauschild et al., “Physical Fitness Tests and Performance of Military Tasks,” 65.

<sup>50</sup> Hauschild et al., 65.

<sup>51</sup> Hauschild et al., 7.

<sup>52</sup> Hauschild et al., 45.

<sup>53</sup> Lawrence Kapp, *Defense Primer: Active Duty Enlisted Recruiting*, CRS Report No. IF11147 (Washington, DC: Congressional Research Service, 2021), 3, <https://crsreports.congress.gov/product/pdf/IF/IF11147>.

a potential MOS title. The test—outlined by the Office of the Under Secretary of Defense for Personnel and Readiness—leaves each branch to develop and implement variations applicable to mission needs.<sup>54</sup> The ASVAB’s 10 assessments are divided into four areas for cognitive evaluation—general science, math, reading and writing, and spatial awareness. Questions are generally multiple choice and test high-school-level mathematics, biology, paragraph synthesis, word equivalence, mechanics, auto technologies, and combinations of similar shapes.<sup>55</sup> The test autogenerates questions based on the prospect’s answers to gauge cognitive skills—in other words, the system generates more manageable questions if answers are incorrect.

Answers from all sections create the AFQT score. This score matches the prospect to the best relevant occupational standard (based on a point scale) within the given branch.<sup>56</sup> Prospects must score 10 or higher in the AFQT per DOD Instruction 1145.01 for all forces’ active duty. The military prioritizes AFQT scores of 50 or higher and accepts only 4 percent of scores between 10 and 30—considered below average. At minimum, ideal prospects must have completed a high school education, and non-high school graduates can enlist into active service on rare occasions.<sup>57</sup>

## **5. Medical Waivers and Fit for Duty**

The DOD Military Entrance Processing Command determines the requirements and standards recruits must meet to ensure a “healthy, fit, and lethal force.”<sup>58</sup> Conditions for fully qualified, temporarily medically disqualified, and permanent medical

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<sup>54</sup> Janet D. Held et al., *Technical Guidance for Conducting ASVAB Validation/Standards Studies in the U.S. Navy*, NPRST-TR-15-2 (Millington, TN: Navy Personnel Research Studies and Technology, 2015), 1, <https://apps.dtic.mil/sti/citations/ADA612759>.

<sup>55</sup> “What to Expect When You Take the ASVAB,” Official website of the Armed Services Vocational Aptitude Battery, accessed November 2, 2021, <https://www.officialasvab.com/applicants/what-to-expect/>.

<sup>56</sup> “ASVAB Fact Sheet,” Official website of the Armed Services Vocational Aptitude Battery, accessed November 3, 2021, <https://www.officialasvab.com/applicants/fact-sheet/>.

<sup>57</sup> Department of Defense, *Qualitative Distribution of Military Manpower*, DOD Instruction No. 1145.012 (Washington, DC: Department of Defense, 2020), <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/114501p.pdf?ver=2019-03-22-095340-833>.

<sup>58</sup> William Washington et al., *Accession Medical Standards Analysis and Research Activity: 2019 Annual Report* (Silver Spring, MD: Walter Reed Army Institute of Research, 2019), 5, [https://www.wrair.army.mil/sites/default/files/2020-07/FY19\\_AMSARA\\_AR\\_Final3\\_0.pdf](https://www.wrair.army.mil/sites/default/files/2020-07/FY19_AMSARA_AR_Final3_0.pdf).

disqualification (PDQ) are defined by DOD Instruction 6130.03.<sup>59</sup> In some cases, prospects who do not meet the physical standards can pursue a medical waiver for active service. The Walter Reed Army Institute of Research in its *Accession Medical Standards Analysis and Research Activity* report for 2019 details medical waivers from all military components in fiscal years 2013–2018.<sup>60</sup> Over this period, the institute found that among 1.6 million applications for all service branches, 86 percent of active and 87 percent of reserve applicants did not meet the medical standards outlined in DOD Instruction 6130.03 due to a medical condition. Furthermore, 68 percent of active and 61 percent of reservist applicants with a PDQ requested a medical waiver.<sup>61</sup> Of this group, medical waivers were approved at a 70 percent rating. Permanent disqualified white males with a higher AFQT score and education received higher approval rates for medical waivers. The report found a pattern that the higher the AFQT score, the more likely the applicant received a medical approval—meaning that the higher the level of education, the higher the chances of waiver approval. Despite the accepted belief that the forces decrease their readiness and effectiveness if not all prospects meet the medical standards for active service, the report notes that more than 80 percent of PDQ applicants with an approved medical waiver ascended the ranks, and only 6–12 percent received an early discharge.<sup>62</sup>

The Air Force recently included learning disabilities as an eligible criterion for medical waivers. According to a 2017 memo from Secretary James and Chief of Staff Goldfein, the Air Force allows medical waivers for eczema, attention-deficit/hyperactivity disorder (ADHD), and asthma for all components.<sup>63</sup> Statistics from the Air Force Surgeon General’s Office reflect 1,908 issued medical waivers for these conditions from 2017 to

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<sup>59</sup> Washington et al., 7.

<sup>60</sup> Washington et al., 2.

<sup>61</sup> Washington et al., 2.

<sup>62</sup> Washington et al., 2.

<sup>63</sup> Office of the Secretary of the Air Force Chief of Staff, “Air Force Policy Memorandum for Appearance and Accession Standards Review” (official memorandum, Washington, DC: U.S. Air Force, 2017), 2, <https://www.af.mil/Portals/1/documents/Policy%20Memo.pdf?ver=2017-01-10-100008-623>.



2018.<sup>64</sup> Of these, 46 percent, or 881, waivers were approved for ADHD, and 31 percent (593 waivers) received approval for mild asthma.<sup>65</sup>

Despite this policy change for opening medical waivers, the Air Force issued its highest recorded denial rate of 2,555 for enlisted and officer candidates. It is important to note that such expansion does not include all ranges of ADHD, particularly candidates needing medication. The *Aerospace Medicine Waiver Guide* states that medical waivers may be approved if a candidate demonstrates academic and cognitive excellence applicable to the occupational role without a history of using medication for more than 12 months.<sup>66</sup> To date, no potential candidate has received medical approval to use ADHD medication while in service due to the risk to mission and deployment readiness.<sup>67</sup> However, in 2018, the DOD's *Medical Surveillance Monthly Report* found that 2.8 percent of all active branch components were diagnosed with ADHD after enlistment, and 60.2 percent of soldiers in the study were prescribed medications.<sup>68</sup> It is also important to note that in some cases, active-duty members with ADHD can receive medications for other medical conditions with secondary impacts to treat ADHD or receive medications without a prescription.<sup>69</sup>

The ADHD example is important, as it shows inconsistencies within the DOD's system of medical standards. The branch approves or denies an ADHD medical waiver (on a case-by-case basis), but the condition can be treated under certain provisions once a candidate qualifies for active duty and a specific occupation. Since ADHD is recognized

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<sup>64</sup> Oriana Pawlyk, "Air Force Admits Nearly 2,000 Airmen under Medical Waiver Policy," *Military.com*, December 13, 2018, <https://www.military.com/daily-news/2018/12/12/air-force-admits-nearly-2000-airmen-under-medical-waiver-policy.html-0>.

<sup>65</sup> Pawlyk.

<sup>66</sup> U.S. Air Force Medical Service, *Aerospace Medicine Waiver Guide* (Washington, DC: U.S. Air Force, 2020), 74, [https://www.afrl.af.mil/Portals/90/Documents/711/USAFSAM/USAF-waiver-guide-201202.pdf?ver=CfL6CVKyrAbqyXS7A-OX\\_A%3D%3D](https://www.afrl.af.mil/Portals/90/Documents/711/USAFSAM/USAF-waiver-guide-201202.pdf?ver=CfL6CVKyrAbqyXS7A-OX_A%3D%3D).

<sup>67</sup> U.S. Air Force Medical Service, 74.

<sup>68</sup> David Sayers, Zheng Hu, and Leslie L. Clark, "The Prevalence of Attention-Deficit/Hyperactivity Disorder (ADHD) and ADHD Medication Treatment in Active Component Service Members, U.S. Armed Forces, 2014–2018," *Medical Surveillance Monthly Report* 28, no. 1 (January 2021): 10, <https://www.health.mil/Reference-Center/Reports/2021/01/01/Medical-Surveillance-Monthly-Report-Volume-28-Number-01>.

<sup>69</sup> Sayers, Hu, and Clark, 10–13.

as a disability under the ADA, the DOD already allows certain Americans with disabilities into active military service under the medical waiver process.<sup>70</sup> Indeed, not all cases of ADHD or similar conditions are approved for military service, but the current system allows exceptions that leave opportunities to expand talent standards historically not recognized.

The DOD's other avenue for specific persons with disabilities to qualify for active service is field injuries and being declared fit for duty. To date, DOD Instruction 6130.03, Volume 2, from the Office of Defense for Personnel and Readiness drives the medical standards for all military services. The instruction details the qualifications and requirements to retain or classify servicemembers unfit for duty, including those re-entering service from field injuries or disabilities.<sup>71</sup> To understand and optimize military retention, Washington et al. with the Disability Evaluation System Analysis and Research project at the Walter Reed Army Institute of Research studied the rates of disability discharges and those returned to duty from fiscal years 2013–2018. As detailed in their 2019 annual report, only 27.1 percent of injured or disabled servicemembers were declared fit for duty across all branches.<sup>72</sup>

In kinetic settings, advancements in combat equipment and care continue to save lives on the field, and more servicemembers return from deployments with significant limb loss. A controlled study of amputee reviews for the Physical Evaluation Board from 2001 to 2006 found that members who sustained amputations on deployments returned to duty at 2.3 to 16.5 percent during the Afghanistan and Iraq conflicts.<sup>73</sup> This is a significant increase from the 2.3 percent acceptance rate for amputees sustained on active duty between 1980 to 1988.<sup>74</sup> The study also found that rank is heavily considered for retention,

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<sup>70</sup> Americans with Disabilities Act of 1990, 42 U.S.C. 126 (1990) (amended 2008), <https://www.ada.gov/pubs/adastatute08.pdf>.

<sup>71</sup> Department of Defense, *Medical Standards for Military Service: Retention*.

<sup>72</sup> Washington et al., *Disability Evaluation System Analysis and Research*, 13.

<sup>73</sup> Daniel J. Stinner et al., "Return to Duty Rate of Amputee Soldiers in the Current Conflicts in Afghanistan and Iraq," *Journal of Trauma Injury, Infection, and Critical Care* 68, no. 6 (June 2010), <https://apps.dtic.mil/sti/citations/ADA630195>.

<sup>74</sup> Stinner et al., 1476.

meaning the senior officials had a higher chance of a return-to-duty approval than junior staff. This may be because senior personnel are in leadership positions and are less likely to be in physically demanding situations. However, servicemembers who became amputees in combat roles had higher rates of returning to duty. This is the opposite of senior official approvals, as combat arms are generally physically challenging. The study concludes that patriotism and satisfaction may motivate this trend.<sup>75</sup>

The U.S. Army Institute of Surgical Research focused on amputees returning to service. The institute collected data from the Joint Trauma Theater Database and the Physical Evaluation Board Liaison Office for amputee severity, conditions, and demographics. The study identified 1,221 amputees—93 percent of amputations resulting from explosions—from all branches between 2001 and 2011. The most prevalent amputations were below the knee (43 percent), above the knee (32 percent), upper extremity (16 percent), and through the knee (5 percent).<sup>76</sup> The study found that infantry positions in the U.S. Army and Marine Corps represented 57 percent of all amputees, but only 8 percent returned to duty, meaning that servicemembers were more likely to experience an amputation from infantry positions and leave active service than in other occupational roles.<sup>77</sup> Amputees in special forces commando units returned to duty at a rate of 21 percent and remained fit for duty at a rate of 58 percent.<sup>78</sup> The study did not conclude why special forces had higher approval and retention rates than other combat-related amputees, thus calling for further research on this topic.

## **6. Changing Nature of Warfare and Skills Needed for the Future**

Scholarship foresees the shifting nature of warfare to unconventional and covert operations vis-à-vis past conflicts. Carl Miller advises that the new battlefield will entail—

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<sup>75</sup> Stinner et al., 1478.

<sup>76</sup> Jeffery G. Belisle, Joseph C. Wenke, and Chad A. Krueger, “Return-to-Duty Rates among U.S. Military Combat-Related Amputees in the Global War on Terror: Job Description Matters,” *Journal of Trauma and Acute Care Surgery* 75, no. 2 (2013): 282.

<sup>77</sup> Belisle, Wenke, and Krueger, 281.

<sup>78</sup> Belisle, Wenke, and Krueger, 286.

and, indeed, already does entail—information flow, fake news, and digital manipulation.<sup>79</sup> A 2017 study from Oxford University coins the term “cyber troops” for those waging organized warfare in the social media space to influence the power of governments and public opinion digitally.<sup>80</sup> In other concerns, Praprotnik, Ivanusa, and Podbregar predict that the new warfare of information, cyber, and communication technologies can produce massive amounts of death and economic damage in addition to changing public opinion and dispersing misinformation.<sup>81</sup> Experts on this subject concur that the significant shift and space of future warfare will be vastly different from conventional, physical combat.

With the changing nature of warfare, the literature suggests that the military force pivot away from physical ability toward greater mental adaptability. Scholar Whitney Grespin argues that special operations forces need robust talent, interpersonal communications, mentoring, and capability building to keep their edge and save lives.<sup>82</sup> Along the same line, Colonel Steven Shapiro confirms the need for adaptability with soldiers to improve military readiness—that adaptability improves units in asymmetric warfare and changing conflict environments.<sup>83</sup> On the contrary, the American Enterprise Institute asserts that special operations forces need not change personnel talent but improve operational and strategic processes to influence future conflict.<sup>84</sup> As warfare changes in the 21st century, the subliterate claims that military branches must adjust human resource systems to build soldier expertise in diversity, interpersonal communications, and

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<sup>79</sup> Carl Miller, “Inside Information Wars,” *New Scientist* 244, no. 3252 (2019): 38–41.

<sup>80</sup> Samantha Bradshaw and Philip N. Howard, “Troops, Trolls and Troublemakers: A Global Inventory of Organized Social Media Manipulation,” Working Paper No. 2017.12 (Oxford: University of Oxford, December 2017), <https://demtech.oii.ox.ac.uk/wp-content/uploads/sites/89/2017/07/Troops-Trolls-and-Troublemakers.pdf>.

<sup>81</sup> Gorazd Praprotnik, Teodora Ivanusa, and Iztok Podbregar, “EWar: Reality of Future Wars,” in *Proceedings of the IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (Piscataway, NJ: IEEE, 2013), 1068–72, <https://doi.org/10.1145/2492517.2500321>.

<sup>82</sup> Whitney Grespin, “From the Ground Up: The Importance of Preserving SOF Capacity Building Skills,” *Journal of Strategic Security* 7, no. 2 (2014): 37–47.

<sup>83</sup> Steven Shapiro, “Soldier and Unit Adaptability” (master’s thesis, U.S. Army War College, 2007), <https://apps.dtic.mil/dtic/tr/fulltext/u2/a469130.pdf>.

<sup>84</sup> Hal Brands and Tim Nichols, *Special Operations Forces and Great-Power Competition in the 21st Century* (Washington, DC: American Enterprise Institute, 2020), <https://www.aei.org/research-products/report/special-operations-forces-and-great-power-competition-in-the-21st-century/>.

adaptability.<sup>85</sup> Generally speaking, this subliterate forewarns the need to change active military skillsets.

### C. RESEARCH DESIGN

This thesis determines the feasibility requirements, national security implications, and benefits to the DOD of expanding active military service roles to disabled Americans. The research has a two-part policy analysis: qualitative research followed by solution feasibility and viability—spanning three chapters, excluding the preface and introduction. The chapters present a qualitative analysis through literature review, historical examples, and military policies and studies. It is vital to provide meaningful information to the conversation before constructing new policy concepts and structures.<sup>86</sup> This thesis uses analysis to identify the problem and categorize evidence.

The topics span technological advancements, potential tools, and soldier qualities necessary for future conflict to the flexible nature of military entry standards and the various levels of disabled talent that meet non-kinetic demands. Chapters II and III cover these topics in depth. Chapter II primarily references government documents, law, policies, scholarship opinions, and historical events to provide an in-depth understanding of the problem—the changing nature of warfare in unconventional spaces and the military’s shift of entry standards to meet dire challenges.

Chapter III opens with the military’s assessment of talent and force characteristics for non-kinetic warfare, followed by supporting evidence on disabled talent and potential benefits to non-kinetic service. The analysis follows Bardach and Patashnik’s evaluation process by developing concepts with the provided information, estimating outcomes, confronting trade-offs, and answering the research question.<sup>87</sup> This chapter includes an analysis of quantitative and qualitative information and a literature review. The Chapter III

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<sup>85</sup> Scott Hendrix, “Network Centric Operations and Naval Officers of the Future: A First Order Analysis of Desired Knowledge, Skills, Abilities, and Personality Traits” (master’s thesis, Naval Postgraduate School, 2001), <http://hdl.handle.net/10945/9730>.

<sup>86</sup> Eugene Bardach and Eric M. Patashnik, *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*, 6th ed. (Washington, DC: CQ Press, 2020).

<sup>87</sup> Bardach and Patashnik.

conclusion synthesizes these findings and a call for expanding military service to persons with disabilities. Chapter IV answers the research question, expands recommendations, and offers areas for future research for U.S. military leaders, policy experts, and academics.

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## II. THE CHANGING NATURE OF WARFARE AND MILITARY STANDARDS

What was recently considered abnormal is the new normal of technology and war.

—Peter Singer<sup>88</sup>

This chapter provides the landscape of war, its shift in nature, and past efforts by the DOD to meet demanding and unforeseen environments. The chapter illustrates that military service standards change to bring a high volume of talent into the force during significant periods of war. Such standards include entry for certain disabled Americans. The sections outline current law and policies to draw a feasible connection for department change. Through analysis of the presented information, the chapter calls for a shift in policy entrance requirements to meet the gravity of fifth-generation warfare (5GW), technology advancements, and personnel expansion.

The nature and complexity of warfare calls for change. Today’s military leaders are called to address and shift strategies, concepts, and force structure to excel from the recent past of fourth-generation warfare (4GW) to evolving 5GW. 4GW was the nuance of combatant and noncombatant spaces with small groups for political power.<sup>89</sup> 4GW used unconventional means and asymmetric—or insurgency—warfare principles and tactics with nonstate actors against a state, such as the September 11, 2001, terrorist attacks and the global war on terror.<sup>90</sup> With developments over time, 4GW took place in technology and information spaces.<sup>91</sup>

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<sup>88</sup> Wayne Phelps, *On Killing Remotely: The Psychology of Killing with Drones* (New York: Little, Brown and Company, 2021), 32.

<sup>89</sup> Sarah V. Marsden and Alex P. Schmid, “Typologies of Terrorism and Political Violence,” in *The Routledge Handbook of Terrorism Research*, ed. Alex P. Schmid, Albert Jongman, and Eric Price, 2nd ed. (London: Routledge, 2011), 167, ProQuest.

<sup>90</sup> “Asymmetric Warfare,” RAND Corporation, accessed January 12, 2022, <https://www.rand.org/topics/asymmetric-warfare.html>.

<sup>91</sup> Waseem Qureshi, “Fourth- and Fifth-Generation Warfare: Technology and Perceptions,” *San Diego International Law Journal* 21, no. 1 (2019): 202.



5GW is the practice of kinetic and non-kinetic conflict to influence an actor's perception and context. It is the manipulation of information and identity through virtual and remote technologies to influence physical and non-physical environments by any means.<sup>92</sup> The purpose of warfare is to undermine state actors and create public distrust to delegitimize reality.<sup>93</sup>

5GW is silent. It is publicly at peace and privately at war. The increase of information technology gives more power to network and surveillance tactics and leaves physical violence with an adversary secondary or obsolete.<sup>94</sup> It takes place in virtual hemispheres, space, cyber, networks, and social media. Successful 5GW warfighters “hide in the static” and “are never identified.”<sup>95</sup> 5GW conflict is so discreet that the target is unaware of being attacked and losing power against an adversary.<sup>96</sup>

Emerging technologies will advance and potentially destabilize current military operations in the 5GW sphere. Artificial intelligence, advanced computing, bioeconomics, autonomous systems, quantum science, and semiconductors are known developments identified as critical and emerging threats from adversaries.<sup>97</sup> Although not enough is currently known about the implications to security, such advancements empower adversaries to attack the United States with little to no warning.<sup>98</sup>

Artificial intelligence (AI) evaluates and perceives information faster and more accurately than human talent, and adversaries like Russia and China use AI to manipulate and steal U.S. data.<sup>99</sup> Quantum information science and technology—quantum computing, networking, sensing, and metrology—can solve complex problems faster than a computer.

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<sup>92</sup> Marsden and Schmid, “Typologies of Terrorism and Political Violence,” 167.

<sup>93</sup> Daniel H. Abbott, *The Handbook of 5GW* (Ann Arbor, MI: Nimble Books, 2010), 69.

<sup>94</sup> Qureshi, “Fourth- and Fifth-Generation Warfare,” 210.

<sup>95</sup> Abbott, *The Handbook of 5GW*, 16.

<sup>96</sup> Qureshi, “Fourth- and Fifth-Generation Warfare,” 209.

<sup>97</sup> “Protecting Critical and Emerging U.S. Technologies from Foreign Threats,” National Counterintelligence and Security Center, October 2021, [https://www.dni.gov/files/NCSC/documents/SafeguardingOurFuture/FINAL\\_NCSC\\_Emerging%20Technologies\\_Factsheet\\_10\\_22\\_2021.pdf](https://www.dni.gov/files/NCSC/documents/SafeguardingOurFuture/FINAL_NCSC_Emerging%20Technologies_Factsheet_10_22_2021.pdf).

<sup>98</sup> National Counterintelligence and Security Center.

<sup>99</sup> National Counterintelligence and Security Center.

This same technology could also decode fire walls, cybersecurity, and private communication systems primarily used to sustain infrastructure, potentially putting a halt to a functioning society. Biological weapons may reach the point of directly targeting and exploiting food resources and specific populations and influencing human genetics. This could have catastrophic and destructive impacts on global economies, climate, and the current functions of society. The same goes for semiconductors—the foundation of telecommunications, infrastructure, military weapons, and technology systems at large. As semiconductors are the backbone of technology, adversaries could manipulate semiconductors to exploit modern and emerging technologies to undermine or delegitimize a country.<sup>100</sup>

Semi-autonomous weapons like drone strikes may still be widely used in 5GW, but an emerging concern involves autonomous systems. Autonomous weaponized vehicles by air, ground, space, and sea will expand the distance between soldiers and physical violence and emphasize remote warfare. An autonomous weapon relies heavily on advanced computing, making it highly vulnerable to cyberattacks for manipulation.<sup>101</sup> This technology requires servicemembers to understand and dictate commands in the cyber and remote arenas that influence physical spaces.

Technologies will evolve faster in the next 20 years with potentially devastating outcomes if placed in nefarious hands. By 2040, developments in sensors, AI, chemical and biological weapons, and more may continue to progress and intersect with big data. Militaries may encounter revolutionary—once inconceivable—advancements in laser weapons, unmanned submarines, reusable rockets, railguns, robotic swarms, and chemical nanomaterials—in almost all kinetic and non-kinetic domains. Such developments will only continue to advance, and so must defense capabilities for homeland and national security interests.<sup>102</sup>

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<sup>100</sup> National Counterintelligence and Security Center.

<sup>101</sup> National Counterintelligence and Security Center.

<sup>102</sup> Michael E. O’Hanlon, *Forecasting Change in Military Technology, 2020–2040* (Washington, DC: Brookings Institution, 2018), <https://www.brookings.edu/research/forecasting-change-in-military-technology-2020-2040/>.

However, the military’s use of these technologies may not match the scale of irregular warfare in the 5GW sphere. Russia, China, and Iran target the United States with “hackers, spies, special operations forces” online and “in the shadows” over traditional soldiers and battlefields.<sup>103</sup> Their daily actions—requiring little physical strength and agility—are swift in espionage, cyber, economic, and technological means against U.S. interests and power.<sup>104</sup> Military and intelligence officials anticipate adversaries’ gains and grave implications if U.S. capabilities remain stagnant in these fluid domains.

The force must change with the tides of conflict. 5GW is pushing military leaders to strategize defense capabilities in mostly non-kinetic modes against the backdrop of unimaginable threats. In essence, 5GW calls for new defense strategies and challenges the force to reposition personnel for shifting environments.

#### **A. PREPARING ARMED PERSONNEL FOR 5GW**

The military needs to recalibrate manpower skills toward 5GW requirements. The physical brawn and strength to run and shoot will not combat advanced computing and manipulation of large networks and perception. As combat modes shift to non-kinetic missions in 5GW, the military should seriously consider all forms of non-kinetic talent from U.S. demographics, including Americans with disabilities, to address evolving demands and threats in new spheres.

The United States has in the past broadened the force to meet recruitment demands, new threats, and monumental conflicts. Such official expansion has usually included establishing a separate group or corps before integration—with many barriers still faced today—alongside the traditional white cisgender male servicemember. The rise of formerly enslaved people and low-volunteer personnel pushed the Union army to expand military service to Black troops (men) in separate units during the Civil War.<sup>105</sup> By World War II,

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<sup>103</sup> Seth Jones, *Three Dangerous Men: Russia, China, Iran, and the Rise of Irregular Warfare* (New York: Norton, 2021), 4.

<sup>104</sup> Jones, 6.

<sup>105</sup> “Black Soldiers in the U.S. Military during the Civil War,” National Archives, September 1, 2017, <https://www.archives.gov/education/lessons/blacks-civil-war>.

the military created the Women's Army Corps (WAC) for women to enlist in noncombatant positions as the country faced an overwhelming need for more soldiers—men—on the battlefield. The saying “free a man for combat,” with the purpose of women filling men's previously held positions as they fought in the battle, was a significant incentive for women to join the WAC.<sup>106</sup>

Disabled Americans, meanwhile, have defended the United States since the inception of the country. Expanding service to disabled Americans is not a new practice by the military during overwhelming periods of conflict and war. To meet the needs of fighters and manpower against the British, General Washington ordered injured or disabled soldiers from the battlefield to join the Invalid Corps—composed of disabled servicemembers—in 1777 for noncombatant roles.<sup>107</sup> As casualties increased and the Civil War continued, the Confederacy and Union Armies reestablished the Invalid Corps—disabled enlisted and field members—divided into battalions based on responsibilities and disabilities, from light duties to warfighting with swords and muskets.<sup>108</sup>

Although the Invalid Corps dissolved after the Civil War, the Corps—and the aforementioned examples—show that all Americans can contribute to conflict and defense. Today's leaders strive to uphold the virtues of the Founding Fathers, especially George Washington, yet current military standards do not embrace the strategic, innovative, and moral contributions Washington imagined and expected of disabled fighters. Despite advancements in science and technology, these practices instituted by George Washington challenge current and future military institutions to re-examine which human forms merit, skill, and talent can take to best address the evolving battle space.

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<sup>106</sup> “The Women's Army Corps,” History, accessed January 13, 2022, <https://history.army.mil/brochures/wac/wac.htm>.

<sup>107</sup> Bernard Rostker, “The American System of Providing for the Wounded Evolves,” in *Providing for the Casualties of War: The American Experience through World War II* (Santa Monica, CA: RAND Corporation, 2013), 64, <http://www.jstor.org/stable/10.7249/j.ctt2tt90p.12>.

<sup>108</sup> R. Gregory Lande, “Invalid Corps,” *Military Medicine* 173, no. 6 (June 2008): 525–28.

## **B. MAXIMIZING HUMAN CAPITAL IN THE ACTIVE FORCE: EVIDENCE AND FLEXIBILITY IN MILITARY STANDARDS**

The following laws and regulations comprise department policies regarding force recruitment and retention. Concerning Americans with disabilities serving in the military, U.S. laws are nuanced and open to interpretation. It is at the branch level that most specific requirements are developed and published.

### **1. DOD Policies and Laws on Disability**

U.S. law neither categorically excludes nor includes Americans with disabilities from military service. Under 10 U.S.C. 504, an “insane, intoxicated, deserter from an armed force, or a convicted felon” cannot serve; however, the secretary can authorize exceptions.<sup>109</sup> Section 504 leaves room for interpretation of the meaning “insane,” yet the term is historically understood as a severe mental illness or disability.<sup>110</sup> Even intoxication and addiction disorders can cause severe mental and physical disabilities that inhibit daily living under the ADA.<sup>111</sup> Yet disabilities are varied and nuanced, and the *U.S. Code* does not explicitly state the physical and mental attributes that are best—or needed—to serve. The vagueness in wording allows the DOD and branch to decipher precisely who is or is not optimally qualified for lethal positions and responsibilities.

The *Code of Federal Regulations*, under 5 C.F.R. 339, is also referenced in department policies and does not exclude disability from service.<sup>112</sup> The regulation states that personnel have to be medically examined to meet the standards of a position and, in some cases, can receive a reasonable accommodation or medical waiver.<sup>113</sup> Under this regulation, qualified personnel include individuals who hold the expertise and skills to

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<sup>109</sup> Persons Not Qualified, 10 U.S.C. 504.

<sup>110</sup> *Merriam-Webster*, s.v. “insane,” accessed January 17, 2022, <https://www.merriam-webster.com/dictionary/insane>.

<sup>111</sup> “Introduction to the ADA,” Department of Justice, Civil Rights Division, accessed January 17, 2022, [https://www.ada.gov/ada\\_intro.htm](https://www.ada.gov/ada_intro.htm).

<sup>112</sup> Medical Qualification Determinations, 5 C.F.R. 339 (2022), <https://www.ecfr.gov/current/title-5/chapter-I/subchapter-B/part-339>.

<sup>113</sup> Medical Qualification Determinations.

perform the functions of their role.<sup>114</sup> Again, such language empowers the DOD—and branches—to determine the standards and process to recruit and maintain appropriate warfare talent.

On a general level, the DOD establishes policies pertinent to all service members for recruitment and retention. DOD Directive 1308.3—*Physical Fitness/Body Composition Program*—and Instruction 6130.03, Volume 2—*Medical Standards for Military Service: Retention*—assess who can serve in the armed forces. DOD Directive 1308.3 obligates active-duty members to possess “the necessary body composition and aerobic and anaerobic fitness (which includes, at a minimum, components of cardiorespiratory endurance, muscular strength, and muscular endurance) to successfully perform in accordance with their Service-specific requirements, missions, and military specialties.”<sup>115</sup> DOD policy does not define specific tests or measurements of a qualified active-duty member and leaves each branch to determine relevant requirements for success in service roles.

DOD Instruction 6130.03 specifically outlines physical, emotional, and psychiatric standards.<sup>116</sup> For example, asthma symptoms or treatment for asthma after one’s 13th birthday disqualifies a prospect from military service.<sup>117</sup> On rare occasions, depending on the case, a prospect can be approved for active duty under a medical waiver.<sup>118</sup> Medical waiver approval rates increase with advanced education, as discussed in the literature review in Chapter I. Despite the current DOD stance, a prospect with highly sought skills or advanced capabilities can gain entry into the force without meeting all medical standards.

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<sup>114</sup> Medical Qualification Determinations.

<sup>115</sup> Department of Defense, *DOD Physical Fitness/Body Composition Program*, DOD Directive 1308.3 (Washington, DC: Department of Defense, 2022), 3, [https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/130803p.pdf?ver=v5atpuD4j\\_nbloEbongDAA%3d%3d](https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/130803p.pdf?ver=v5atpuD4j_nbloEbongDAA%3d%3d).

<sup>116</sup> Department of Defense, *Medical Standards for Military Service: Retention*.

<sup>117</sup> Department of Defense.

<sup>118</sup> Department of Defense.

Across the department, the branch level outlines the requirements for military roles. Indeed, the nature of certain branch-specific functions demands physical strength and agility that would not align with most physically disabled talent. Army combat roles require heavy physical demands, at times the ability to lift more than 100 pounds.<sup>119</sup> In comparison, disabled Americans could meet the cyber and electronic warfare officer (MOS 17B) responsibilities and facilitate defense capabilities with advanced computing and technical operations at a desk and screen.<sup>120</sup> Like the Army, certain Marine roles are physically demanding. However, Marine intelligence occupations call for cognitive, communication, and even clerical skills mainly conducted at a computer and require little to no physical strength.<sup>121</sup> Disabled Americans can excel in these active-duty roles. Yet, as the current entry posture stands, all recruits must meet the military's mental and physical fitness standards, even if they do not apply to the branch's roles and responsibilities.

## **2. Shifting Nature of Military Standards**

The threshold for physical and cognitive capabilities shifts over time depending on evolving science and technology, conflict demands, and talent within a given demographic. Such shifts and multiple avenues for entry—and re-entry—allow the DOD to seriously consider military standards to leverage merit within disabled populations.

The military is made primarily of support function roles such as mechanics, engineers, and analysts to build, collect, and solve problems.<sup>122</sup> Roughly 40 percent of active servicemembers are not deployed, and among the remaining 60 percent, only 10–20

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<sup>119</sup> Hollander, Bell, and Sharp, *Physical Demands of Army Military Occupational Specialties*; “Enlisted OPAT Physical Demand Categories,” U.S. Army, accessed February 12, 2022, <https://recruiting.army.mil/Portals/15/Documents/WO/Enlisted%20OPAT%20Physical%20Demand%20Categories-20181213.pdf?ver=2019-01-29-142947-077>.

<sup>120</sup> “Cyber and Electronic Warfare Officer,” U.S. Army, accessed February 12, 2022, <https://www.goarmy.com/careers-and-jobs/career-match/signal-intelligence/languages-code/17b-cyber-electronic-warfare-officer.html>.

<sup>121</sup> “Military Occupational Specialty,” U.S. Marine Corps, accessed February 12, 2022, <https://www.marines.com/about-the-marine-corps/roles/military-occupational-specialty.html>.

<sup>122</sup> Veterans Coming Home, “10% of the U.S. Military Sees Combat. What Does the Other 90% Do?,” July 12, 2016, YouTube video, 1:43, <https://www.youtube.com/watch?v=IB9ukB5rUTA>.

percent are on the frontlines in combat support roles—in other words, only one in 10 active-duty members fires a weapon in combat scenarios.<sup>123</sup>

In the most significant kinetic wars—World War I and II—the military understood that physical requirements were unnecessary for all essential positions and even expanded service to men with physical limitations and disabilities. In World War I, the Army needed more men—in addition to the first draft and General Service—to fill noncombat units for technical and administrative roles. To meet these demands, the Army implemented the Limited Service program—enlisting men with physical conditions who did not meet physical fitness standards but could accomplish necessary functions, from such roles as cooks, medical staff, and factory workers to the Historical Branch of the General Staff—fitting the right man to the right job.<sup>124</sup> The Limited Service accepted men with a variety of disabilities and physical conditions including “local paralysis,” nonprogressive neurological diseases, blindness in one eye, scoliosis, loss of one extremity yet functioning on a prosthetic limb, deafness (in one ear), webbed hands or feet, and functioning with one kidney.<sup>125</sup>

In World War II, the Army again used the Limited Service to place disabled men in a classified system based on ability and job requirements: fit for combat, close combat support, and communications abroad or domestic.<sup>126</sup> Although classifying talent to jobs strained the system, the Limited Service did solve the Army’s manpower issue and addressed essential functions during World War II.

In peacetime, the War Department experimented and allowed physically disabled veterans into the Regular Army. In 1946, the Chief Classification and Personnel Actions Branch’s Colonel George R. Evans stated, “Such [disabled] men are as valuable as men

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<sup>123</sup> Veterans Coming Home.

<sup>124</sup> Sanders Marble, *Scraping the Barrel: The Military Use of Sub-Standard Manpower* (Bronx: Fordham University Press, 2012), 137, ProQuest.

<sup>125</sup> Robert S. Anderson and Charles M. Wiltse, eds., *Physical Standards in WWII* (Washington, DC: U.S. Army Medical Department, 1967), 67, 175, 190.

<sup>126</sup> Marble, *Scraping the Barrel*, 148.



unhindered by any handicap” for the force.<sup>127</sup> Colonel Evans even projected the possibility of enlisting “a man with only one eye, one leg, or even no legs” if he met all job requirements aside from physical standards.<sup>128</sup> In hindsight, the War Department did not implement these programs because manpower levels never reached or exceeded World War I or II demands for entry standard considerations.

The same goes for Americans with cognitive disabilities and low-aptitude levels. In World War II, the military enlisted illiterate men with below-average cognitive skills to address manpower demands. Research indicates that 90 percent of these men performed as well as their high-aptitude counterparts.<sup>129</sup> A military testing error opened entry for more low-aptitude men to join the force in the Korean War. Despite the mishap, low-aptitude soldiers received high-performance evaluations like their colleagues.<sup>130</sup> By expanding personnel and matching their skills to specific roles, the force can leverage existing talent for new and demanding opportunities consequent from evolving conflicts. Similar practices occur today when Americans with ADHD enter the force, as discussed in Chapter I. As illustrated in all these examples, Americans with ADHD contribute to missions and do not lower overall force talent. In sum, soldiers excel when their skills and talents match their roles and responsibilities.

These findings, too, are applicable to disabled Americans in meeting force requirements and demands. Readers may argue these historical examples indicate disabled Americans are not helpful to the force, but such a claim would be false. If disabled Americans did not meet military responsibilities and, overall, performed poorly in significant conflict, the military would have failed to succeed in these dire times of war. These examples show that disabled persons can excel in physical conflict and contribute to the betterment of the force.

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<sup>127</sup> George R. Evans, “Not So Disabled,” *Army Information Digest* 1, no. 8 (December 1946): 42.

<sup>128</sup> Evans, 44.

<sup>129</sup> Marble, *Scraping the Barrel*, 268.

<sup>130</sup> Marble, 268.

The issue is not the disabled person serving essential roles in conflict but program implementation, measurement, and placement. Limited Service members fulfilled their roles and responsibilities, but the Army faced system difficulties in quickly matching skills and disabilities to positions.<sup>131</sup> Indeed, the military improved processes to match the skills of newly disabled soldiers to position requirements and retain service.<sup>132</sup> However, the military has not expanded service to disabled Americans since World War II. If disabled Americans were unfit to serve, the military would not have leveraged this talent and excelled in pivotal periods of physical conflict.

A pilot program matching disabled talent to roles may demonstrate interest and advancements to the force. In February 2021, the European Space Agency (ESA) devised the Parastronaut Feasibility Project as a pilot program—its purpose, to employ cognitively, technically, and psychologically equipped professionals to be astronauts who could not otherwise qualify due to physical disability.<sup>133</sup> The program is open to Europeans with specific physical disabilities to be crew members on space missions.<sup>134</sup> The targeted disabilities are primarily leg and height centered: amputations, abnormalities, or a height below four feet, three inches.<sup>135</sup>

The ESA organizes disability and job functions from the Paralympic classification model. The eligible disabilities are categorized into three levels: red, the disability is not safe for the mission; green, the disability aligns with the safety and functions of the mission as is; and yellow, the disability can match the tasks of the mission with some modifications. The ESA connects these disabilities to adaptive space hardware, equipment, and flight suits.<sup>136</sup> The ESA prides itself on these missions' being safe and just as important as missions with non-disabled astronauts.

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<sup>131</sup> Marble, *Scraping the Barrel*.

<sup>132</sup> Ainspan and Penk, *Returning Wars' Wounded, Injured, and Ill*, 67.

<sup>133</sup> "Parastronaut Feasibility Project," European Space Agency, accessed November 24, 2021, [https://www.esa.int/About\\_Us/Careers\\_at\\_ESA/ESA\\_Astronaut\\_Selection/Parastronaut\\_feasibility\\_project](https://www.esa.int/About_Us/Careers_at_ESA/ESA_Astronaut_Selection/Parastronaut_feasibility_project).

<sup>134</sup> European Space Agency.

<sup>135</sup> European Space Agency.

<sup>136</sup> European Space Agency.

It is feasible to adjust and restructure systems. With advancements in technology and increased occurrences of non-kinetic warfare, it is possible—and strategically beneficial—for the military to expand service roles to disabled Americans. Military requirements do change depending on the needs and nature of conflict. Suppose the DOD leveraged disabled men for manpower in critical periods of war and peace in kinetic settings. What are the benefits of excluding disabled Americans from service in cyber, virtual, and remote lethal environments, especially as physical fitness is not the primary metric for skilled fighting?

Waiting for the next significant crisis for institutional change is poor strategic planning. Given the shifting nature of standards, leveraging certain persons with disabilities, and well-performed assignments during the utmost times of need, what unimaginable impacts could occur if the military used this talent in times of peace and preparedness for future battles? Militaries that adapt and innovate technologies and personnel will have a higher chance of dismantling opponents' legacy structures and systems fixated on past strategies. The military must transform and improve the force for all transcending environments faced in future warfare.

Leveraging disabled talent is more than solving manpower issues in times of distress. Disabled Americans hold numerous skills and talents that can benefit the military—this idea is fully supported in the following chapter. If the force waits for future conflict and personnel issues, its absence of action during peacetime implies that the military is satisfied with average and ill-equipped talent for what is to come.

### **C. THE ARGUMENT FOR THE DISABLED IN SPACE, CYBER, AND REMOTE CONFLICT**

Requirements for space and cyber conflict continue to shift and change, allowing a range of talent to enter the force. Under certain conditions, for example, the Space Force is authorized to transfer older and experienced professionals from the private sector into the

force and provide them with a comparable ranking title.<sup>137</sup> The 2019 National Defense Authorization Act allows this new avenue for space entry to meet the “operational needs of the armed force concerned.”<sup>138</sup> In this case, experience and talent for space defense capabilities bypass the military standard to be a certain age for entry into service.

Remote warfare, including in outer space, questions pre-existing medical standards for deployment—moving personnel and needs to address conflict. The medical policy requires a service member to be adaptable and healthy enough not to put colleagues and the mission at risk in a foreign or domestic location.<sup>139</sup> Such a branch standard is reasonable to include disabled Americans as most servicemembers rely heavily on satellite operations, missile defense space trackers, monitoring, and warnings from separate locations instead of being physically located in outer space.<sup>140</sup>

A guardian who excels in space tracking, has one arm (prior to service), and performs all the position’s responsibilities advances the mission and does not place a mitigated vulnerability in the force. A physical disability may pose more of a risk to the force in kinetic settings, yet the previous examples proved successful with force capabilities. Given the Space Force’s changes to entry, the technology used for non-kinetic conflict, and historical examples of the disabled in kinetic settings, remote deployments question the necessity and validity of current medical standards for deployments.

The Navy also leverages outside talent to bolster the force for cyber conflict. Of note, the Marine Corps has a “cyber auxiliary” volunteer force—or Cyber Aux—to prepare the force while utilizing outside expertise within the cyber field. The Cyber Aux experts do not wear a uniform and are not required to meet physical standards despite training

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<sup>137</sup> John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115–232, §§501–502, 132 Stat. 1636, 1739–1740 (2018), <https://www.congress.gov/115/plaws/publ232/PLAW-115publ232.pdf>.

<sup>138</sup> John S. McCain National Defense Authorization Act, 1739.

<sup>139</sup> Department of Defense, *Medical Standards for Military Service: Retention*.

<sup>140</sup> Michael Spirtas et al., *A Separate Space: Creating a Military Service for Space* (Santa Monica, CA: RAND Corporation, 2020), 34, <https://doi.org/10.7249/RR4263>.

alongside Marines.<sup>141</sup> The Aux is a voluntary force composed of cyber experts to mentor, educate, and work alongside Marines in virtual environments.<sup>142</sup> Under these guidelines, disabled American experts in cyber conflict could assist and train Marines.

In theory, a person with autism who works in cyber at Google could teach and mentor Marines for these modes, yet the Marines would be considered cyber or desk warriors for 5GW settings. Knowledge of cyber capabilities could be transferred from one person to another, yet the talent and qualities needed to perform in cyber environments would stay with the disabled expert. If a Marine and a disabled expert are excelling in the same cyber task and mission, and cyber is a conflict mode on the rise, then the main barrier to military entry for the disabled person is not the disability itself but rather institutional standards that do not enhance capabilities for future conflict. It appears that entry requirements for fitness are not entirely applicable to the cyber position and nature of warfare.

The same analogy and points apply to semi- and fully autonomous weapons across all branches. Such technologies enable service members to exert force and violence through remote means. Lethal autonomous weapon systems—the use of sensors and algorithms to identify and strike a target—will still require human oversight—supervision, judgment, and command despite the absence of a physical field.<sup>143</sup> Remotely piloted aircraft—weaponized drones—strike targets in different parts of the world, primarily controlled by servicemembers in the United States.<sup>144</sup> Despite the range of autonomy, weaponized systems will always need the human element to perform tasks, but this role can be assumed from a chair—both now and into the future.

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<sup>141</sup> “Marine Corps Cyber Auxiliary,” U.S. Marine Corps, accessed December 14, 2021, <https://www.hqmc.marines.mil/Agencies/Deputy-Commandant-for-Information/Marine-Corps-Cyber-Auxiliary/>.

<sup>142</sup> “Marine Corps Cyber Auxiliary: Frequently Asked Questions,” U.S. Marine Corps, accessed December 14, 2021, <https://www.hqmc.marines.mil/Agencies/Deputy-Commandant-for-Information/Marine-Corps-Cyber-Auxiliary/FAQ/>.

<sup>143</sup> Kelley M. Saylor, *Defense Primer: U.S. Policy on Lethal Autonomous Weapon Systems*, CRS Report No. IF11150 (Washington, DC: Congressional Research Service, 2020), 3.

<sup>144</sup> Phelps, *On Killing Remotely*.

Elizabeth Marks—the active-duty combat medic and Paralympian discussed in Chapter I—could pilot remote aircraft with her disability as doing so would not hinder the position. The military also approves Marks as a combat medic, which places more physical demands and poses a higher risk to the mission than supervising remote warfare. Suppose an American with the same disabilities as Marks was highly skilled and wanted to pilot remote aircraft for the force. Despite the military’s retention of servicemembers with similar disabilities sustained from deployments, the person would be rejected and deemed unfit to serve for not meeting entry standards. However, the risks of hiring this person versus approving and retaining Marks are minimal to none. The military’s entry policies exclude the talent and capabilities it strives to maintain.

Expanding the military to meet non-kinetic demands does not change the virtues required for war. Lieutenant Colonel Wayne Phelps evokes the analogy of football players from different periods to warriors in shifting environments. Yesterday’s helmetless football player had no less gumption than today’s athlete using modern equipment.<sup>145</sup> In the same vein, Clausewitz’s classical stances on war remain significant among modern-day leaders despite profound military advances since 1832.<sup>146</sup> Daily operations will shift tactically, but disabled and non-disabled fighters alike will act honorably and courageously just as past servicemembers have.

#### **D. CONCLUSION**

Understanding the shifts and gravity of warfare and military standards is essential to answering the research question. It is imperative to know the military’s past efforts to expand personnel requirements and match the impending demands of new technologies and significant conflict. As warfare and adversaries’ capabilities speed toward 5GW modes and beyond, the DOD will continue to face recruitment and retention challenges to meet future threats. The force needs to build on past expansion programs and leverage new forms of talent, including the skillsets of disabled Americans.

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<sup>145</sup> Phelps, 172.

<sup>146</sup> Carl von Clausewitz, *On War*, trans. Michael Howard and Peter Paret (Oxford: Oxford University Press, 2007), ProQuest.

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### III. DISABLED TALENT AND NON-KINETIC SKILLS

War is not a thing which can be seen; it must be thought. No one has ever seen war in all of its dimensions—physical, moral, and spiritual—because each participant sees the event from their own narrow, partial perspective. In the distant future, war and the professional skills needed to survive and prevail may be very different with the advent of robotics, information warfare, and even space technologies.

—William E. Hocking<sup>147</sup>

This chapter explores the consonance between disabled talent and military demands. The first section outlines the characteristics of non-kinetic service; the cognitive and technical advancements of elite, disabled athletes; and the private-sector benefits of hiring persons with disabilities. Then, the chapter provides qualitative analysis from military publications, biographical examples, and academic studies. The sport and war connection argues for the success of disabled excellence in remote and virtual warfare.

This chapter concludes with a discussion of disabled expertise on emerging technologies and the potential risks and benefits for military consideration. Such risks mirror past challenges with the integration of women and African Americans into the military. Based on the evidence presented, this chapter shows the parallels between non-kinetic skillsets and disabled talent, calling for a shift in policy for the military to (again) meet future conflict demands.

#### A. NON-KINETIC CHARACTERISTICS AND REQUIREMENTS

As conflict continues to expand in non-kinetic spaces, the military anticipates the required characteristics of servicemembers in future warfare. Such attributes include greater reliance on cognitive skills over heavy emphasis on physical traits.

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<sup>147</sup> John W. Brinsfield and Peter A. Baktis, “The Human, Spiritual, Ethical Dimensions of Leadership in Preparation for Combat,” *Fires* (July/August 2011): 52–69.



Non-kinetic settings will require that personnel sense and communicate through various robotics, machinery, and automated networks.<sup>148</sup> Many studies conclude that these environments will require more cognitive abilities such as critical thinking, communication, problem-solving, and more. The Army projects that by 2030, conflict will largely depend on intellect for executing tactical and strategic planning in multiple capacities.<sup>149</sup> Personnel will need to engage in rapid cognitive processing to quickly assess, diagnose, and solve problems in such situations as cloud networks, cyber threats, and unforeseeable attacks.<sup>150</sup> Similarly, in discussing cyber capabilities by 2050, West Point has concluded that critical thinking, problem-solving, inquisitiveness, and communication are vital qualities for future military personnel.<sup>151</sup> In this way, scholars and the U.S. Army concur that future forces need strong cognitive skills to fight impending wars.

By the same token, the U.S. Air Force specifies the cognitive abilities needed in non-kinetic warfare. A 2019 RAND Corporation report sponsored by Major General Patrick C. Higby noted 11 key non-physical abilities for Air Force members to maintain a strong force in virtual and space settings.<sup>152</sup> Cognitive reasoning (verbal, non-verbal, and mathematical), communication skills (oral and written), perceptual speed, problem-solving, originality, and creativity are vital assets in non-kinetic environments. Furthermore, personnel who rely on curiosity and intuitive thinking have remained successful in rapid-paced and evolving environments.<sup>153</sup> RAND's report connects non-physical qualities, such as knowledge, skills, abilities, and capabilities, to specific job

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<sup>148</sup> David Fastabend, Jeff Becker, and Greg Gardner, *Mad Scientist Conference 2016: The 2050 Cyber Army* (Williamsburg, VA: Fastabend Solutions, 2016), 56, [https://files.nc.gov/deftech/press-release/files/ms\\_army\\_cyber\\_2050\\_final\\_report.pdf](https://files.nc.gov/deftech/press-release/files/ms_army_cyber_2050_final_report.pdf).

<sup>149</sup> U.S. Army Cyber Command, *U.S. Army LandCyber White Paper 2018–2030* (Ft. Meade, MD: U.S. Army Cyber Command, 2013), <https://apps.dtic.mil/sti/citations/ADA592724>.

<sup>150</sup> U.S. Army Cyber Command, 21.

<sup>151</sup> Fastabend, Becker, and Gardner, *Mad Scientist Conference 2016*, 39.

<sup>152</sup> Chaitra Hardison et al., *Attracting, Recruiting, and Retaining Successful Cyberspace Operations Officers: Cyber Workforce Interview Findings* (Santa Monica, CA: RAND Corporation, 2019), 24, <https://doi.org/10.7249/RR2618>.

<sup>153</sup> Hardison et al., 26.

functions for future military effectiveness. Military personnel must have the cognitive bandwidth to quickly analyze large volumes of information, understand the cultural context, know the current protocols, devise creative solutions, and relay the complex operation to decision-makers possibly through a virtual—or even AI—capacity. Coding, computer science, and technical skills will be only some of the many requirements for military personnel. Again, the traits outlined demonstrate the dominance of cognitive skills over physical abilities.

Military leaders understand that the nature of non-kinetic environments requires greater talent and capabilities—like decision-making—from the force. The Marine Corps’ Talent Management 2030 manpower model emphasizes the need for a recruitment and retention shift toward quality over quantity of servicemembers as evolving threats demand more education, cognitive, and technical skills.<sup>154</sup> General David H. Berger, commandant of the Marine Corps, affirms the need for such a shift, as past wars needed more bodies—making a “young, physically tough, and consequently replaceable force” instead of recruiting and maintaining complex and highly sought cognitive talent.<sup>155</sup> In this way, the Marine Corps also acknowledges the need to recruit and retain quality talent with superior cognitive traits.

General Berger also believes that decision-making will be a more important skill than technology for talent management in future warfare. Conflict will range in modes requiring servicemembers to use new technologies and make decisions in rapid and fluid environments. Partly for this reason, the general believes that the “core of America’s strength lies in its diversity” and that the military’s advantage is in the mind.<sup>156</sup> Supported by numerous studies and the *Harvard Business Review*, the most diverse teams create the

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<sup>154</sup> Dan Lamothe, “Marines Will Overhaul Recruiting, Retention in Shift Away from a Young, ‘Replaceable’ Force, General Says,” *Washington Post*, November 3, 2021, <https://www.washingtonpost.com/national-security/2021/11/03/marine-corps-talent-management-2030/>.

<sup>155</sup> Lamothe.

<sup>156</sup> Emma Bowman et al., “The Marine Corps Is Reinventing Itself to Reflect America, Says Top General,” NPR, November 12, 2021, <https://www.npr.org/2021/11/12/1054790980/marine-corps-david-berger-diversity-military>.

best decisions.<sup>157</sup> Diverse groups generate new styles of thinking, outline imperative facts often overlooked, process information more effectively, and outperform homogeneous counterparts.<sup>158</sup> Such diverse teams will excel in new conflict modes, thus demanding the military's consideration of new demographics and talents.

Military leaders also call for mental toughness, including resilience, adaptability, and flexibility, in non-kinetic spaces. At the 2018 Air Force Association's Air, Space and Cyber Conference, Air Force Chief Master Sergeant Kaleth O. Wright praised resilience as a powerful virtue, highly regarded and sought after in future conflict settings. Airmen must mirror this perspective to become more resilient and move through hardships, pain, and fear.<sup>159</sup> Fostering resilience from these challenges will also increase much-desired traits for military service such as determination, creativity, and agility.<sup>160</sup> As non-kinetic modes will continue to increase, so too will the mental toughness and desirable qualities from the force.

Similarly, Army Lieutenant General Edward Cardon articulated the traits of resilience and adaptability as crucial for the Army's 2050 force.<sup>161</sup> Personnel must have the creativity and self-awareness to understand the real-world impacts of virtual environments as military leaders.<sup>162</sup> Servicemembers will need to "adapt quickly to new situations, form cohesive teams, and demonstrate competence and confidence operating in complex and ambiguous environments."<sup>163</sup> In this case, the force will need to sharpen the desirable capabilities to excel in virtual and remote conflicts.

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<sup>157</sup> David Rock and Heidi Grant, "Why Diverse Teams Are Smarter," *Harvard Business Review*, November 4, 2016, <https://hbr.org/2016/11/why-diverse-teams-are-smarter>.

<sup>158</sup> Rock and Grant.

<sup>159</sup> Alyssa Gibson, "CMSAF Wright: The Airmen We Need Must Be Resilient," U.S. Air Force, September 19, 2018, <https://www.af.mil/News/Article-Display/Article/1639116/cmsaf-wright-the-airmen-we-need-must-be-resilient/>.

<sup>160</sup> Gibson.

<sup>161</sup> Fastabend, Becker, and Gardner, *Mad Scientist Conference 2016*, 39.

<sup>162</sup> Fastabend, Becker, and Gardner, 39.

<sup>163</sup> Brinsfield and Baktis, "Human, Spiritual, Ethical Dimensions of Leadership," 65.

Military leaders seek substantial non-physical characteristics to address the emergence of non-kinetic warfare that is undoubtedly different in scale, strategy, and tactics from previous wars. Mental toughness, critical thinking, resiliency, adaptability, and perseverance will outperform physical battlefield traits when servicemembers confront adversaries with advanced computing, AI, outer space, and semi to fully autonomous weapons. As warfare continues to shift in this direction, the military must recruit the appropriate personnel to meet these demands, calling for a policy shift from emphasizing the soldier's physical power to intellect and character traits.

## **B. DISABLED SPORT AND WAR**

Sport is frankly mimic warfare.

—George Orwell, 1945<sup>164</sup>

The nature of sport and war requires similar skillsets for success. Both command strength, tenacity, group collaboration, and character with honor and prestige.<sup>165</sup> This connection dates to ancient Greece. Sport races and language mirrored conflict culture, and ideologically, soldiers and athletes shared the same qualities to endure hardships for an end goal.<sup>166</sup> In the World War I, the British Army made sport a central part of military doctrine and training. Soccer was used to encourage teamwork and courage, which were “desirable qualities for a soldier.”<sup>167</sup> American Forces furthered this connection by using sport to enhance soldiers' morals, values, and patriotism for an “army of athletes.”<sup>168</sup> Just as sport

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<sup>164</sup> “The Sporting Spirit,” Orwell Foundation,” accessed January 10, 2022, <https://www.orwellfoundation.com/the-orwell-foundation/orwell/essays-and-other-works/the-sporting-spirit/>.

<sup>165</sup> T. J. Cornell, “On War and Games in the Ancient World,” in *The Global Nexus Engaged: Proceedings of the Sixth International Symposium for Olympic Research*, ed. Robert Knight Barney, Scott G. Martyn, and Kevin B. Wamsley (London, Ontario: International Centre for Olympic Studies, 2002), 29.

<sup>166</sup> “Sport and War,” Ancient Olympics, accessed February 6, 2022, <http://ancientolympics.arts.kuleuven.be/eng/TD004EN.html>.

<sup>167</sup> Steven W. Pope, “An Army of Athletes: Playing Fields, Battlefields, and the American Military Sporting Experience, 1890–1920,” *Journal of Military History* 59, no. 3 (1995): 435–56, <https://doi.org/10.2307/2944617>; J. D. Campbell, “‘Training for Sport Is Training for War’: Sport and the Transformation of the British Army, 1860–1914,” *International Journal of the History of Sport* 17, no. 4 (December 2000): 23, <https://doi.org/10.1080/09523360008714145>.

<sup>168</sup> Pope, “An Army of Athletes,” 436.

has been a training mechanism for war, scholars believe war is also the pinnacle of sport.<sup>169</sup> Dwight D. Eisenhower, five-star general and U.S. president, advanced the link between American conflict and sport, stating, “The true mission of American sports is to prepare young men for war.”<sup>170</sup> Given the nature of both settings and the use of sport to enhance personnel attributes for conflict dating to ancient times, examining disabled athletes, their qualities, and potential capabilities for non-kinetic warfare offers insight into their potential contributions to service branches.

Paralympic history also coincides with war and conflict. Because of the large number of injured veterans and civilians from World War II, the British government established an international sport venue that eventually became the Paralympic Games.<sup>171</sup> The Paralympics—*para* in Greek meaning “alongside” the Olympics—is now considered the largest elite international competition for various disabled athletes (primarily with physical and sight-related conditions). They compete in the same venues two weeks after the Olympic Games—winter and summer—and receive the same monetary awards for medaling as their Olympic counterparts.<sup>172</sup>

Considering these significant connections, disabled athletes embody the qualities and characteristics of military service. The DOD supports active-duty disabled athletes through the Army’s WCAP and the Paralympic Military Program, yet competition is primarily against disabled athletes with no military experience.<sup>173</sup> Given the military’s need for mental and emotional agility in non-physical conflict modes, the historical

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<sup>169</sup> Campbell, “Training for Sport Is Training for War,” 50.

<sup>170</sup> Callie Batts and David L. Andrews, “‘Tactical Athletes’: The United States Paralympic Military Program and the Mobilization of the Disabled Soldier/Athlete,” *Sport in Society* 14, no. 5 (June 2011): 555, <https://doi.org/10.1080/17430437.2011.574350>.

<sup>171</sup> John R. Gold and Margaret M. Gold, “Access for All: The Rise of the Paralympic Games,” *Journal of the Royal Society for the Promotion of Health* 127, no. 3 (2007): 134, <https://doi.org/10.1177/1466424007077348>.

<sup>172</sup> *Britannica*, s.v. “Paralympic Games,” accessed September 11, 2021, <https://www.britannica.com/sports/Paralympic-Games>; Kait Hanson, “For 1st Time, Paralympian Medalists Will Earn as Much as Olympians in Tokyo Games,” *Today*, July 23, 2021, <https://www.today.com/news/1st-time-paralympian-medalists-will-earn-much-olympians-tokyo-games-t226413>.

<sup>173</sup> “What Is WCAP?,” U.S. Army, accessed September 11, 2021, <https://www.armywcap.com/about>; “Athlete Services: Military and Veterans,” Team USA, accessed February 11, 2022, <https://www.teamusa.org/443/Team-USA-Athlete-Services/Paralympic-Sport-Development/Programs-and-Events/Military>.

association of traits, and the overlap of sport and war, the talents and contributions from disabled athletes—and the disability community at large—could aptly fulfill non-kinetic responsibilities.

### C. TOUGHNESS, GRIT, AND ADAPTABILITY

The military need look no further than disabled athletes for mental toughness and cognitive skills in high-performing environments. They can perform under pressure and deal with high volumes of stress.<sup>174</sup> Holding mental focus and remaining relaxed in highly stressful situations make the difference between medaling or missing the podium by milliseconds.<sup>175</sup> It takes perseverance and resilience to meet the challenges disabled athletes face in national to world competition. These are characteristics the military needs to adapt and excel in for future warfare.

Paralympic athletes are mentally capable of withstanding unimaginable mental and physical stress and challenging environments. These athletes specialize in discipline, vigor, mental imagery, concentration, and coping skills during times of high pressure and distress.<sup>176</sup> These athletes do not accept barriers to achieving goals but use various mental tools for problem-solving. As one Paralympian described in a study on mental agility, “I just carry on . . . [as] if there is a really negative environment around me, it just doesn’t influence me. . . . My brain . . . perceives things and can just switch off.”<sup>177</sup> Paralympic athletes problem-solve and persevere through hardships and stressful environments with their high-valued capabilities.

Disabled athletes also bounce back, persevere, and adapt to inconceivable challenges. The military strives to uphold these qualities in non-kinetic warfare. A study with wheelchair rugby players found common characteristics such as adaptability, spiritual

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<sup>174</sup> Jeffrey Martin and Laurie Malone, “Elite Wheelchair Rugby Players’ Mental Skills and Sport Engagement,” *Journal of Clinical Sport Psychology* 7 (2013): 254, <https://doi.org/10.1123/jcsp.7.4.253>.

<sup>175</sup> Martin and Malone.

<sup>176</sup> Martin and Malone, 261.

<sup>177</sup> Alexander J. Powell and Tony D. Myers, “Developing Mental Toughness: Lessons from Paralympians,” *Frontiers in Psychology* 8 (2017): 7, <https://doi.org/10.3389/fpsyg.2017.01270>.

fitness, leadership skills, and determination.<sup>178</sup> As previously stated, many of these athletes practice goal-setting and view limitations—or barriers—as challenges to work through. Many disabled athletes credit their ability to “bounce back” to success in navigating lived experiences.<sup>179</sup> Whether the challenge was in sport, health, or life, the athletes adapted and found creative ways to adjust to the task at hand. These characteristics can make the force more agile and inherently adaptable toward unforeseen scenarios and 5GW conflict.

Disabled athletes show more resilience than non-disabled counterparts, which may have a similar outcome for disabled and non-disabled servicemembers. The Institute of Applied Psychology studied 30 physically disabled and non-disabled athletes in skiing, cycling, swimming, fencing, and basketball.<sup>180</sup> The results showed that disabled athletes are more resilient and courageous as these traits are necessary to overcome societal and inaccessible structural barriers around disability.<sup>181</sup> As societal barriers exist in various outlets, including the military, one may logically conclude that such qualities exist in disabled Americans outside of sport. Given the necessary qualities disabled athletes and, possibly, disabled Americans possess to adapt and excel in inaccessible settings, disabled soldiers may bring such desirable qualities as resilience to the military for remote and virtual warfare.

Sergeant Elizabeth Marks—the Paralympian and active-duty member discussed in Chapter I—is a prime example of all the qualities listed in this section. She is mentally and physically tough through amputation, medical complications, and injuries related to service. Ever resilient, she persevered to train in world-class swimming less than a month after her coma and lung challenges and was cleared fit for duty. Most importantly, Sergeant

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<sup>178</sup> Martin and Malone, “Elite Wheelchair Rugby Players.”

<sup>179</sup> Martin and Malone.

<sup>180</sup> Iwona Sikorska and Krzysztof Gerc, “Athletes with Disability in the Light of Positive Psychology,” *Baltic Journal of Health and Physical Activity* 10, no. 1 (2018), <https://doi.org/10.29359/BJHPA.10.1.07>.

<sup>181</sup> Sikorska and Gerc, 74.

Marks remains adaptable to the changing responsibilities and environments in sport and military service.<sup>182</sup>

Sergeant Marks is not the exception but exemplifies the attributes many disabled athletes could bring to the force yet cannot serve because of current entry requirements. It is in the military's best interest to leverage more disabled talent—like Elizabeth Marks—upon entry to increase the cognitive skills, toughness, resilience, and perseverance needed for non-kinetic service.

#### **D. BLADE RUNNER PROSTHETICS AND THE HUMAN BODY**

Prosthetic technologies enhance sport performance to levels some consider unfair advances against non-disabled athleticism. Running blade technology for single and bilateral leg amputees replicates a cheetah's hind legs to capture and release energy for propulsion, as in a spring-tension pole or diving board.<sup>183</sup> The C- or J-shape prosthetics consist of carbon fiber (graphite), stronger than steel and lighter than aluminum.<sup>184</sup> In other words, prosthetic running legs could provide additional endurance and stamina over human fatigue.<sup>185</sup>

Controversy surrounds two bilateral below-the-knee amputee Paralympians—Oscar Pistorius and Blake Leeper—and their quest to run alongside non-physically disabled athletes in the Olympics. Oscar Pistorius eventually competed in the 2012 London Olympic Games on carbon-fiber technology, despite the International Association of Athletics Federation (IAAF)'s stance that prosthetic limbs retain more energy than a human ankle.<sup>186</sup> The Court of Arbitration for Sport overruled the IAAF's position by declaring

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<sup>182</sup> Crossman, "The Things She Carries."

<sup>183</sup> Carol Pogash, "A Personal Call to a Prosthetic Invention," *New York Times*, July 2, 2008, <https://www.nytimes.com/2008/07/02/sports/olympics/02cheetah.html>.

<sup>184</sup> Pogash.

<sup>185</sup> Pogash.

<sup>186</sup> Pogash.



human and prosthetic limbs mechanically different but physically alike.<sup>187</sup> However, the track-and-field governing body, World Athletics, deemed Blake Leeper ineligible for the 2020 Tokyo Olympic Games as prosthetic height improves a runner’s speed to surpass that of the human body.<sup>188</sup> World Athletics ruled that Leeper runs “unnaturally tall,” placing Olympic athletes at a disadvantage before the starting line.<sup>189</sup>

The advancements of prosthetic technology and their outpacing of Olympic standards highlight disabled athletes’ characteristics. Excellence and adaptation to new levels of machinery involve determination, toughness, and resilience. These are qualities disabled athletes possess to meet new and unimaginable technical and biological demands. Prosthetic technologies enhance the body and soul. Unlike sport, the military strives to surpass rivals and adversaries. Mirroring the soldier’s ethos, disabled athletes place their whole being in the competition, learn and adapt to new difficulties, and exhaust all options before accepting defeat.<sup>190</sup> With these characteristics and advancements, the military should seriously consider disabled athletes to improve the qualities and capabilities of the force.

## **E. DISABILITY IN THE PRIVATE SECTOR**

The disabled population continues to serve in advanced capacities through civilian and—in some cases—active military roles. Based on examples of changing U.S. military standards during times of need, similar shifts in entry policies would likely leverage more demographics—including the disabled—for future conflict. The disabled could bring the

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<sup>187</sup> Peter G. Weyand et al., “The Fastest Runner on Artificial Legs: Different Limbs, Similar Function?,” *Journal of Applied Physiology* 107, no. 3 (September 2009): 903–11, <https://doi.org/10.1152/jappphysiol.00174.2009>; Rose Eveleth, “Should Oscar Pistorius’s Prosthetic Legs Disqualify Him from the Olympics?,” *Scientific American*, July 24, 2012, <https://www.scientificamerican.com/article/scientists-debate-oscar-pistorius-prosthetic-legs-disqualify-him-olympics/>.

<sup>188</sup> Futterman, “Double Amputee’s Fight for the Olympics.”

<sup>189</sup> Adam Kilgore, “Paralympic Sprinter Blake Leeper’s Application to Compete in Tokyo Olympics Denied,” *Washington Post*, April 26, 2021, <https://www.washingtonpost.com/sports/2021/04/26/blake-leeper-prostheses-tokyo-olympics-appeal/>.

<sup>190</sup> “Warrior Ethos,” U.S. Army, accessed February 16, 2022, [https://www.army.mil/article/50082/warrior\\_ethos](https://www.army.mil/article/50082/warrior_ethos).

talents outlined to the force if such a policy shift occurred today. The qualitative studies support disabled Americans' contribution in active service for non-kinetic settings.

Hiring people with disabilities is suitable for business growth and capital. It improves profitability and cost-effectiveness and can address retention issues. Companies have experienced increased profits and cost savings when disabled employees are in the workforce. One company reported \$8.4 million in savings because of retention and recruitment improvements.<sup>191</sup> Moreover, multiple studies have confirmed that disabled employees have higher retention rates than non-disabled counterparts. Plus, the benefit–cost ratio (5.28) of hiring persons with disabilities outweighs cost concerns. Such outcomes predominantly occur because of character attributes like employee loyalty and mission dedication.<sup>192</sup>

Silicon Valley continues to develop cutting-edge technologies and personnel roles, including with disabled staff. Google has sought untapped, disabled talent to address the evolving landscape of the cloud computing industry. The Google Cloud Autism Career Program hires the talents of autistic persons for data science and engineering to meet the vast demands and innovations in cloud computing.<sup>193</sup> Microsoft also hires people on the autism spectrum for data management, network searching for bugs, and tasks with repetitive components. However, unlike the military, Silicon Valley advances computer scripts, programs, and algorithms by leveraging available—and capable—disabled talent.<sup>194</sup> Such tech company practices highlight the contributions and innovations from disabled Americans that military entry policies overlook.

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<sup>191</sup> Sally Lindsay et al., “A Systematic Review of the Benefits of Hiring People with Disabilities,” *Journal of Occupational Rehabilitation* 28, no. 4 (December 2018): 648, <http://doi.org/10.1007/s10926-018-9756-z>.

<sup>192</sup> Sally Lindsay et al., 648.

<sup>193</sup> Steven Aquino, “Exclusive: Google Cloud Exec Rob Enslin Talks Neurodiversity in the Workforce and How the Autism Career Program Seeks Top Talent,” *Forbes*, July 26, 2021, <https://www.forbes.com/sites/stevenaquino/2021/07/26/exclusive-google-cloud-exec-rob-enslin-talks-neurodiversity-in-the-workforce-and-how-the-autism-career-program-seeks-top-talent/>.

<sup>194</sup> Stacy Rader, Matthew D. Nelson, and Marvin Gorgas Jr., “Attention Deficit Hyperactivity Disorder (ADHD) and the U.S. Army: Recruiting and Readiness Implications” (master’s thesis, Naval Postgraduate School, 2018), 20, <https://calhoun.nps.edu/handle/10945/61251>.

The Israel Defense Force incorporates persons with autism and intellectual disabilities under Unit 9900 for terrain analysis, accurate mapping, graphic collection, and interpretation.<sup>195</sup> It is a highly selective program and requires up to three months of assessment and training for satellite imagery, data analytics, and top-secret computing capabilities. Other duties may involve GPS tagging, augmented reality, and photo and cyber analytics, and ranks reach to the level of colonel.<sup>196</sup>

Unit 9900 played a significant role in the Israeli delegation to assist the United States following the 2021 Miami condo collapse. Disabled soldiers used advanced capabilities to design the structure to provide rescue and navigation routes, including a three-dimensional model map analysis of the collapsed area to aid the United States with disaster recovery.<sup>197</sup> Despite policies blocking disabled Americans from service, disabled soldiers in the Israel Defense Force contributed to saving American lives in times of need and disaster.

Certain persons with disabilities excel exceptionally well in these roles—as indicated by recruitments from military partners and international technology companies. The military seeks high-aptitude recruits with the very skills Silicon Valley and the Israel Defense Force tap from the disabled population. These members are essential to the military’s reliance on, and success in, semi-autonomous technologies, computing, and AI.<sup>198</sup> Given the mental bandwidth and skillsets of persons with disabilities in dominant

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<sup>195</sup> Ben Sales, “Deciphering Satellite Photos, Soldiers with Autism Take on Key Roles in IDF,” *Jewish Telegraphic Agency* (blog), December 8, 2015, <https://www.jta.org/2015/12/08/israel/deciphering-satellite-photos-soldiers-with-autism-take-on-key-roles-in-idf>.

<sup>196</sup> Amir Mizroch, “Rise of Computer Vision Brings Obscure Israeli Intelligence Unit into Spotlight,” *Forbes*, May 28, 2018, <https://www.forbes.com/sites/startupnationcentral/2018/05/28/rise-of-computer-vision-brings-obscure-israeli-intelligence-unit-into-spotlight/>.

<sup>197</sup> “Using IDF Intelligence Methods and Technology: The Home Front Command Delegation Will Continue to Assist in Miami,” Israel Defense Forces, June 30, 2021, <https://www.idf.il/en/minisites/home-front-command/the-home-front-command-delegation-will-continue-to-assist-in-miami/>.

<sup>198</sup> Barbara A. Bicksler and Lisa G. Nolan, *Recruiting an All-Volunteer Force: The Need for Sustained Investment in Recruiting Resources—An Update* (Arlington, VA: Strategic Analysis, Inc., 2009), 2, <https://prhome.defense.gov/Portals/52/Documents/RFM/MPP/Accession%20Policy/docs/Bicksler%20Recruiting%20Paper%202009.pdf>.

technology spaces, the military should seriously consider this top talent for remote, lethal forces.

It is not enough to suggest the lessons learned from this chapter can be transferred to non-disabled servicemembers and keep exclusionary entry policies for the force. The point of the matter is that the inherent qualities, knowledge, skills, and talents possessed by disabled Americans are beneficial in advancing military capabilities. No amount of training a non-disabled soldier will equate to the lessons and knowledge a disabled person has gained over a lifetime of lived experience. There is an end date to proudly wearing a military uniform, yet there is none for living as a disabled American. Such experience and navigation generate the mastery of skills.

#### **F. EMERGING TECHNOLOGIES, DISABILITY, AND MILITARY ADVANCEMENTS**

Today's emerging technologies bring thoughts to reality. Brain-computer interfaces (BCIs) are a new technology that translates brain signals to physical commands.<sup>199</sup> BCI is far beyond the brain's communications to activate muscles or the central nervous system. It takes specific brain waves, translates the signal, and puts the command in an external device for physical action.

Although this technology is mostly in the clinical phase, BCIs direct external devices, such as computer cursors; robotic limbs; motorized mobility devices, such as powerchairs; communication, including speech and writing; and even environmental controls, including lights, television, phones, and volume. In essence, a person can control machinery, robotics, and devices all through one's thoughts without any physical movement. However, the technology works only when the person outputs specific brain signals the BCI can understand and translate. This element requires training for both the user and device for efficiency.<sup>200</sup> In other words, such technologies warrant certain skillsets and talents for optimal use.

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<sup>199</sup> T. Anitha et al., "Brain-Computer Interface for Persons with Motor Disabilities—A Review," *Open Biomedical Engineering Journal* 13, no. 1 (2019): 268, <https://doi.org/10.2174/1874120701913010127>.

<sup>200</sup> Anitha et al.

BCIs show promising data on improving the lives of certain persons with disabilities and enhancing one's contributions to society. Such technology and use by a disabled person—if willing and interested—could influence and advance U.S. defense capabilities for future conflict in virtual spaces. Given that BCIs train the brain to output specific commands for external device movement and actions, and persons with disabilities are the main population testing this cutting-edge technology, persons with disabilities are experts in navigating and mastering the brain–computer realm compared to non-disabled counterparts. Even so, the disabled person shows the inherent creativity, adaptability, and resilience with this future technology as the military consistently claims it must obtain. The BCI technology is largely successful due to the disabled person's character, qualities, and skills to execute brain-wave machinery.

For that matter, neurotechnology may outpace the benefits and dominant emphasis on using the physical body to conduct major conflict. The military certainly needs to evaluate the benefits, vulnerabilities, legal, and ethical implications of using any new technology, but BCI could enhance human–machine operations like past incorporations of AI and semi-autonomous systems.<sup>201</sup> Research supports the notion that BCI will play a major component in future conflict. It will provide a competitive advantage against adversaries and improve decision-making, collaboration, and cognitive teaming in manned and unmanned combat environments. But BCI will also require greater critical thinking and problem-solving skills.<sup>202</sup> With technology's influence on military capabilities, enlisting the most talented and applicable soldiers for optimal BCI use in 5GW spaces is imperative.

As previously discussed, the disability community demonstrates these qualities needed in future warfare. People with disabilities already communicate to machines through brain waves and thought, transferring data from the body to the digital world. They cohesively collaborate the human experience with machinery to think, operate, and act

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<sup>201</sup> Anika Binnendijk, Timothy Marler, and Elizabeth M. Bartels, *Brain–Computer Interfaces: U.S. Military Applications and Implications, An Initial Assessment* (Santa Monica, CA: RAND Corporation, 2020), 3, [https://www.rand.org/pubs/research\\_reports/RR2996.html](https://www.rand.org/pubs/research_reports/RR2996.html).

<sup>202</sup> Binnendijk, Marler, and Bartels, 5.

together through computing, sensing, semi-autonomous limbs, and advanced mobility devices. Imagine the plethora of skills and talents the lived experience of this seamless collaboration holds for the military. Imagine the cognitive adaptability, swift thinking, and creativity a disabled person has mastered to connect with emerging technology like BCI.

#### **G. RISK AND BENEFIT CONSIDERATIONS FOR THE FORCE**

Like any policy and program implementation shift, military leaders must analyze the potential risks and benefits of leveraging disabled talent in active service roles. If such practice is economically feasible and just for taxpayers, some may consider this type of active service morally or ethically wrong and a liability to the government.

Admitting disabled persons into service may appear to weaken and risk force missions. The department prides itself on resiliency and strength, but the public may not embrace enlistments of amputees, persons with autism, those hard of hearing, the visually impaired, and wheelchair users. Citizens may perceive disabled service as impossible, unfeasible, and too risky for conflict and lethal force.

Disabled soldiers may incur high medical costs and strain government resources. In World War I and II, department officials stressed the risks of future government liabilities to the defense benefits of disabled Americans in the Limited Service.<sup>203</sup> Although such expansion partially solves manpower issues and advances capabilities, the government would need to cover retirement benefits for disabled soldiers, creating potential financial and resource strain.<sup>204</sup> Yet, government systems are robust and mitigate similar issues. Only 3.9 percent of U.S. working adults receive Social Security disability, and the Veterans Administration determines coverage for disability and pre-existing

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<sup>203</sup> Anderson and Wiltse, *Physical Standards in WWII*, 20.

<sup>204</sup> Anderson and Wiltse.

conditions.<sup>205</sup> Despite the need for structural improvements, the government addresses and provides solutions to disability coverage, calling for military policy shifts, not rejection.

In fact, current costs for injury-related medical discharges may outpace the price to expand disabled service for 5GW roles. The estimated total government cost for service-related disabilities and injuries tops \$76 billion and is expected to rise.<sup>206</sup> Disabled Americans may increase military costs, but this is not certain until scholars, policy analysts, and the Congressional Budget Office conduct further research.

The debate over integration costs is not new, nor should it block personnel expansion. Women servicemembers continue to break equipment barriers in the U.S. military. Although the department accepts women into combat roles, 60 percent of women in the Army experience musculoskeletal injuries due to personal protective equipment initially designed for men.<sup>207</sup> Congress officially addressed enhancing female body armor in the 2021 National Defense Authorization Act.

These concerns are valid and deserve careful thought, but arguments against the expansion of the force to new populations repeat those of previous generations. Fairly recently, African Americans and women were considered a hindrance to military missions and outright excluded from service. In World War I, the Army believed that African American soldiers were naturally less intelligent than white troops through IQ scores.<sup>208</sup> The DOD recently pulled the combat exclusion policy for women, but for generations,

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<sup>205</sup> Department of Veterans Affairs, *M21-1 Adjudication Procedures Manual* (Washington, DC: Department of Veterans Affairs, 2021), [https://www.knowva.ebenefits.va.gov/system/templates/selfservice/va\\_ssnew/help/customer/locale/en-US/portal/55440000001018/content/554400000073398/M21-1,%20Adjudication%20Procedures%20Manual,%20Table%20of%20Contents](https://www.knowva.ebenefits.va.gov/system/templates/selfservice/va_ssnew/help/customer/locale/en-US/portal/55440000001018/content/554400000073398/M21-1,%20Adjudication%20Procedures%20Manual,%20Table%20of%20Contents); Katherine Giefer, *A Profile of Supplemental Security Income Recipients: 2017*, P70BR-171 (Washington, DC: Census Bureau, 2021), 12.

<sup>206</sup> Molloy et al., “Musculoskeletal Injuries and United States Army Readiness”; Linda J. Bilmes, “The Long-Term Costs of United States Care for Veterans of the Afghanistan and Iraq Wars” (Providence, RI: Watson Institute of International and Public Affairs, 2021), [https://watson.brown.edu/costsofwar/files/cow/imce/papers/2021/Costs%20of%20War\\_Bilmes\\_Long-Term%20Costs%20of%20Care%20for%20Vets\\_Aug%202021.pdf](https://watson.brown.edu/costsofwar/files/cow/imce/papers/2021/Costs%20of%20War_Bilmes_Long-Term%20Costs%20of%20Care%20for%20Vets_Aug%202021.pdf).

<sup>207</sup> Patricia Horoho, “Soldier 2020: Injury Rates/Attrition Rates Working Group: Medical Recommendations” (presentation, U.S. Army Medical Command, Ft. Sam Houston, San Antonio, TX, June 24, 2015). <https://apps.dtic.mil/dtic/tr/fulltext/u2/1000745.pdf>.

<sup>208</sup> John L. Rury, “Race, Region, and Education: An Analysis of Black and White Scores on the 1917 Army Alpha Intelligence Test,” *Journal of Negro Education* 57, no. 1 (1988): 51–65, <https://doi.org/10.2307/2295276>.

consensus viewed women as physically and psychologically unfit for kinetic warfare and feared women would ruin unit cohesion and risk combat missions.<sup>209</sup> Undoubtedly, economic concerns of increased budgets surrounded personnel expansion, yet the military made such accommodations for African Americans and women. Simply put, previous debates on expanding the force are solvable and mirror current apprehensions with disabled Americans.

As in the United States, Germany expanded entry standards to disabled and physically unfit men during times of severe distress. In World War II, the German Army formed *bodenständig* divisions—similar to the American Limited Service—consisting of men unfit for mobile infantry (moving combat from one place to another). However, it could still advance German strategies by securing a border, a stationary area, and noncombat roles.<sup>210</sup> Eligibility for the division ranged from being hard of hearing or having vision loss, to specific physical and mental disabilities, to even stomach conditions.<sup>211</sup>

While these divisions were successful in some cases, the Germans did not fully prepare or mitigate vulnerabilities. This blind spot created more strategic risk than advancement when French and Allied powers took Normandy transit routes, leaving the Germans ill-equipped to switch the *bodenständig* divisions to fit frontline fighters. The Stomach Battalion 276 also left its position once Allied forces discovered its members' names and physical conditions.<sup>212</sup>

A country must exhaust all options and thoroughly consider the risks and benefits with strategic planning in times of need. The German failure to confront the risks of the *bodenständig* divisions does not invalidate the idea of disabled Americans in military

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<sup>209</sup> P. J. Tobia, "Defense Secretary Carter Opens All Combat Jobs to Women," PBS NewsHour, December 3, 2015, <https://www.pbs.org/newshour/nation/watch-live-defense-secretary-carter-to-lift-ban-on-women-in-combat-jobs>; Stephanie L. Stephens, "Combat Exclusion: An Equal Protection Analysis" (master's thesis, U.S. Army Judge Advocate General's School, 1997), <https://apps.dtic.mil/dtic/tr/fulltext/u2/a445043.pdf>.

<sup>210</sup> Marble, *Scraping the Barrel*, 179–81.

<sup>211</sup> Marble, 189.

<sup>212</sup> Marble, 193–94.



service. The United States had a similar division during this time but did not face such issues at a grand scale. Warfare includes a certain amount of risk, and it is up to military leaders to fully anticipate, plan, and mitigate potential weaknesses that an adversary may exploit. That is why in non-kinetic warfare, using disabled talent in active service roles poses less physical risk to the force.

The risks in expanding the force to disabled Americans are strategic, logistic, and process-related. These concerns are solvable, as outlined in the previous examples. The research and analysis provided in this thesis challenge the assumed talents and contributions from disabled Americans. The risks for implementation are manageable, and institutional shifts can be achieved.

## **H. CONCLUSION**

This chapter demonstrated that disabled Americans possess the skills needed to fill non-kinetic roles and responsibilities in the military's emerging and future wars. Skills sought for the new modes of conflict; the preparation of sport for war; the toughness, grit, and adaptability of disabled athletes; and the talents of disabled Americans encourage the military to recruit this population to meet demands. The risks associated with the disabled entering the armed services require serious thought and examination, but like in past integration efforts, systematic shifts are feasible and advantageous to force capabilities.

## **IV. CONCLUSION**

The previous chapters revealed the complex feasibility, benefits, and risks of including disabled Americans in military service upon entry. Perhaps more importantly, the presented information identified areas for urgent policy shifts as the increase of non-kinetic warfare demands new talent that disabled Americans match. This final thesis chapter provides several policy recommendations toward military expansion for disabled Americans.

This thesis pursued an answer to the following research question: What are the feasibility requirements, national security implications, and benefits to the DOD for expanding active-duty military service to disabled Americans? At the very least, this thesis has answered that feasibility standards are attainable, as outlined from previous programs to meet global, kinetic conflict, indicating disabled Americans' immense talents could advance non-kinetic defense capabilities and meet certain personnel goals. Concerns regarding national security implications may include a risk to the mission if poor strategic planning occurs.

Additionally, this thesis calls for future research on government spending for such expansion, but the military should not hinder progress, as the United States has solved similar challenges with women and African Americans. Ultimately, the feasibility and national security benefits of expanding non-kinetic military service to disabled Americans are possible and advantageous. Thus, this thesis calls for serious consideration and implementation from the DOD.

### **A. FINDINGS**

This thesis has established the current posture of disabled Americans in the workforce and the military's entry and return-to-service policies. It has also outlined the changing nature of warfare and the department's efforts to maximize human capital through flexible entry policies. Based on the findings of this thesis, it is structurally feasible to expand military service to disabled Americans for non-kinetic environments as past department programs have indicated the positive influence of disabled American service

in global and significant conflicts. Additionally, disabled Americans improve the workforce while military requirements continue to adjust allowable characteristics and traits of the force.

This thesis also outlined the roles, characteristics, and responsibilities of performing in non-kinetic warfare as established by military leaders. The examples of disabled athletes, emerging technologies, and private-sector information make manifest the connection of disabled American talent to non-kinetic military positions. Therefore, the presented knowledge and analysis display the high probability of disabled Americans excelling in non-kinetic functions. Such a connection calls for serious policy consideration and program implementation by the DOD.

## **B. RECOMMENDATIONS**

The following recommendations provide an array of considerations for department implementation. Given the findings of this thesis, the recommendations are not radical but promote realistic avenues for strategic integration. The recommendations represent a synthesis of thesis conclusions.

### **1. Expand the Current Model**

The DOD should expand service to disabled Americans who meet current military requirements and undergo the medical waiver process on a case-by-case basis. This avenue is beneficial for elite and Paralympic amputee athletes who are most likely to surpass physical fitness standards and match the skills of active-duty amputee members disabled from the field.

### **2. Initiate a Policy Shift**

The DOD should refine and establish new entry standards to match the demands of non-kinetic warfare. With the military's emphasis on cognitive talent, the DOD should first establish a standard intellect requirement like the physical fitness test for all service personnel. The test should be administered twice per calendar year, and consecutive failures in meeting this baseline should result in repercussions similar to those for failing to meet physical fitness requirements, such as denial of promotions or, eventually,

separation from the armed forces. Such a test would significantly maintain and improve the mental quality of the force.

Second, the DOD should waive the physical fitness tests for recruits receiving scores of 90 percent or higher on the ASVAB. Such a shift mirrors recruitment efforts of Silicon Valley and the Israel Defense Force's Unit 9900 toward persons with autism and intellectual disabilities for non-kinetic and technical settings. The DOD would then match the recruits to 5GW positions.

Third, the DOD should implement a resilience and adaptability test for baseline entry to non-kinetic roles. The department would place recruits in non-kinetic scenarios through virtual reality headsets. In these settings, the military could test a range of physically disabled and non-disabled candidates for the qualities—determination, resilience, mental toughness, and problem-solving—needed to excel in virtual and remote warfare. Candidates in the highest percentile of resilience and cognitive tests would waive the physical fitness standard and perform non-kinetic functions. In all cases, these avenues expand the talent pool to disabled and non-disabled recruits who best meet the emerging 5GW modes of warfare.

### **3. Create a Corps for Non-Kinetic Missions**

The department should create a Corps for Non-Kinetic Missions of disabled and non-disabled servicemembers. As outlined in this thesis, non-kinetic settings will continue to rise, and such a corps would select the best and most-equipped talent—disabled and non-disabled alike—to meet the demands and advance military capabilities in non-physical spaces.

### **4. Establish a Disabled-American Pilot Program**

The department should consider a pilot program for disabled American service upon entry. The chapter's findings indicate the military benefits and feasibility of expanding such service. Depending on the program structure, disabled Americans may receive separate-but-equal status (similar to previous minority efforts) instead of whole-

system integration. Therefore, government leaders and officials must carefully consider this avenue's system benefits and risks.

## **5. Garner Military and Congressional Support**

Congress and military officials should consider and implement variations of these recommendations. Medical waivers, specific policy shifts, and the creation of a program, like the Limited Service, can be accomplished at the department level.

### ***a. Create a Stakeholder Committee***

The DOD should establish a stakeholder committee to collect and synthesize relevant information and data on expanding service to disabled Americans to implement these changes. The committee would consist of the following partners: the DOD, military experts and stakeholders, disability rights leaders, and advocacy groups. The committee would provide best practices and an implementation plan to the secretary of defense and the U.S. House and Senate Armed Services Committees.

### ***b. Schedule a Congressional Hearing***

Recommendations for a corps and additional funding will need congressional support and approval. In addition to considering the stakeholder committee plan, the U.S. House or Senate Armed Services Committee should schedule a hearing to further examine and evaluate the benefits of and barriers to disabled Americans entering military service. Depending on congressional leadership and political climate, the hearing results could create new legislation or amendments to relevant defense bills. The information and analysis in this thesis provide an array of disabled American talent to advance military capabilities in non-kinetic modes, calling for a critical examination from lawmakers and government leaders.

## **C. FUTURE AREAS OF RESEARCH**

The following areas require further research on disabled Americans and their entry to military service:

- A cost–benefit analysis on disability entry, service coverage, and defense spending. The research can include budget estimates from the Department of Veteran Affairs, the National Defense Authorization Acts, and the Social Security Administration. The Congressional Budget Office could provide additional information.
- The cultural barriers and solutions for disability integration and the military system.
- The difference between civil and military service in 5GW settings aside from conducting lethal force.
- The reassessment of deployment terms and defense policies for remote and virtual warfare.

#### **D. SUMMARY**

The U.S. Armed Forces should implement service for disabled Americans in peacetime, not just during conflicts. Disabled Americans will continuously meet the call of service in times of distress and conflict pressures. The Invalid Corps—composed of injured and disabled men—met the ongoing battlefield demands of the Revolutionary and Civil Wars. The Army expanded service criteria to certain disabled Americans under the Limited Service for World War I and II. Just as the DOD expanded roles to disabled Americans and succeeded in dire moments of conflict, leveraging disabled talent in peacetime may strengthen military capabilities to unimaginable heights.

The shifting nature of warfare demands military change. The increase in remote, virtual, and non-earth-centric conflict will require new knowledge, skills, and abilities from American fighters. In welcoming the unique capabilities of disabled Americans into active-duty service, the military can transform and improve the force for all transcending and future environments.

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